

National Marine Sanctuaries
National Oceanic and Atmospheric Administration

FLOWER GARDEN BANKS NATIONAL MARINE SANCTUARY



FLOWER GARDEN BANKS FINAL ENVIRONMENTAL ASSESSMENT



April 2012

<http://flowergarden.noaa.gov>

FLOWER GARDEN BANKS NATIONAL MARINE SANCTUARY
**FINAL ENVIRONMENTAL
ASSESSMENT -**

APRIL 2012



United States Department
of Commerce

John Bryson
Secretary

National Oceanic and
Atmospheric Administration

Dr. Jane Lubchenco
Administrator

National Ocean Service

David Kennedy
Assistant Administrator

Flower Garden Banks National Marine Sanctuary

4700 Avenue U, Building 216

Galveston, TX 77551

(409) 621-5151

<http://flowergarden.noaa.gov>

This document presents the programmatic environmental assessment (PEA) of the Flower Garden Banks National Marine Sanctuary (FGBNMS) Final Management Plan.¹ It is a useful tool to understand the environmental consequences of the broad range of activities in the management plan and provides the general analyses that informed the decision of approving the plan. It also establishes that as individual actions become ripe for decision, alternatives will be evaluated under the National Environmental Policy Act (NEPA) to meet the broader goals outlined in this final management plan. The PEA was released to the public on October 22, 2010 for a 90-day public review and two public hearings were held. Chapter 4 in the final management plan documents the public comments received and the responses to those comments. In view of the information presented in this analysis, it has been determined that the action will not significantly impact the quality of the human environment, as defined by NEPA. Accordingly, preparation of an environmental impact statement is not required for this action.

Table of Contents

1.	Purpose and Need for Action	p. 3
	1.1 Purpose for Taking Action	p. 3
	1.2 Need for Action	p. 6
2.	Description of Alternatives	p. 11
	2.1 Alternative 1 – No Action	p. 11
	2.2 Alternative 2 – Preferred Alternative	p. 11
3.	Affected Environment	p. 15
	3.1 Northwestern Gulf of Mexico	p. 15
	3.2 Institutional Setting	p. 17
	3.3 East and West Flower Garden Banks	p. 20
	3.4 Stetson Bank	p. 21
	3.5 Human Environment	p. 21
	3.6 Recreational and Commercial Users	p. 22
	3.7 Oil and Gas Exploration	p. 23
	3.8 Vessel Traffic	p. 23
	3.9 Research	p. 23
	3.10 Education and Outreach	p. 24
4.	Environmental Consequences	p. 25
	4.1 Alternative 1: No Action	p. 25
	4.2 Alternative 2: Preferred Alternative	p. 25
	4.3 Cumulative Effects Analysis and Conclusion	p. 31
5.	Public Comments	p. 34
	5.1 Responses to Comments	p. 34
	5.2 Changes Made Between Draft and Final Documents	p. 43

¹ References to the specific chapters and sections of the final management plan appear throughout this document.

References	p. 46
List of Preparers	p. 46
List of Agencies Consulted	p. 47
Distribution List	p. 47

Chapter 1: Purpose and Need for Action

The National Oceanic and Atmospheric Administration (NOAA) Office of National Marine Sanctuaries (ONMS) is proposing to revise the current Flower Garden Banks National Marine Sanctuary (FGBNMS or sanctuary) management plan and implement changes to the FGBNMS regulations. The purpose and need for the action are based on both the statutory requirements of the National Marine Sanctuaries Act (NMSA) and the need to address current management issues and concerns of the sanctuary.

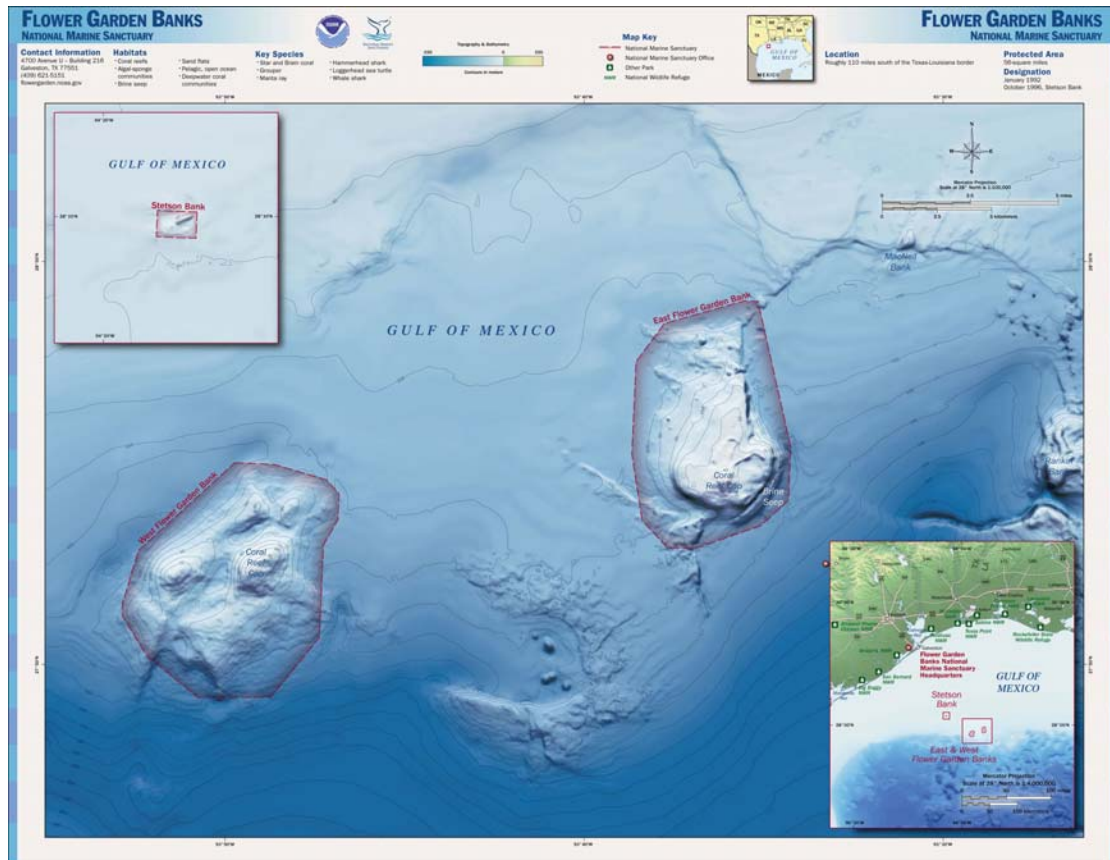


Figure 1: Flower Garden Banks National Marine Sanctuary

1.1 Purpose for Taking Action

The National Marine Sanctuaries Act

The NMSA (16 U.S.C. § 1431 et seq.) is the legislative mandate that governs the ONMS and the National Marine Sanctuary System. Under the NMSA, the Secretary of Commerce is authorized to designate and manage areas of the marine environment as national marine sanctuaries. Such designation is based on attributes of special national significance, including conservation, recreational, ecological, historical, scientific, cultural, archaeological, educational, or esthetic qualities. With the primary mandate to provide protection for the resources of these special ocean and Great Lakes areas, the NMSA identifies nine purposes and policies:

Purpose and Need for Action

- (1) to identify and designate as national marine sanctuaries areas of the marine environment which are of special national significance and to manage these areas as the National Marine Sanctuary System;
- (2) to provide authority for comprehensive and coordinated conservation and management of these marine areas, and activities affecting them, in a manner that complements existing regulatory authorities;
- (3) to maintain the natural biological communities in the national marine sanctuaries, and to protect, and, where appropriate, restore and enhance natural habitats, populations and ecological processes;
- (4) to enhance public awareness, understanding, appreciation, and wise and sustainable use of the marine environment, and the natural, historical, cultural and archeological resources of the National Marine Sanctuary System;
- (5) to support, promote and coordinate scientific research on, and long-term monitoring of, the resources of these marine areas;
- (6) to facilitate to the extent compatible with the primary objective of resource protection, all public and private uses of the resources of these marine areas not prohibited pursuant to other authorities;
- (7) to develop and implement coordinated plans for the protection and management of these areas with appropriate Federal agencies, State and local governments, Native American tribes and organizations, international organizations, and other public and private interests concerned with the continuing health and resilience of these marine areas;
- (8) to create models of, and incentives for, ways to conserve and manage these areas, including the application of innovative management techniques; and
- (9) to cooperate with global programs encouraging conservation of marine resources.

The NMSA also states that the ONMS shall “maintain for future generations the habitat and ecological services of the natural assemblage of living resources that inhabit [sanctuaries]” (16 U.S.C. 1431(a)(4)(C)). The NMSA further recognizes that “while the need to control the effects of particular activities has led to enactment of resource-specific legislation, these laws cannot in all cases provide a coordinated and comprehensive approach to the conservation and management of the marine environment” (16 U.S.C. 1431(a)(3)). Accordingly, the ONMS subscribes to a broad and comprehensive management approach to meet the NMSA’s primary mandate of resource protection. This approach differs from that of various other national and local agencies and laws directed at managing single or limited numbers of species, habitats, or specific human activities within the marine environment.

Purpose and Need for Action

Sanctuary management, therefore, serves as a framework for providing long-term protection of a wide range of living and non-living marine resources, while allowing multiple uses of the sanctuary to the extent that they are compatible with resource protection. The ecosystems managed by the ONMS span diverse geographic, administrative, political and economic boundaries. Strong partnerships between the ONMS and resource management agencies, the scientific community, stakeholders and the public at-large are needed to realize the coordination and program integration that the NMSA calls for in order to comprehensively manage national marine sanctuaries, individually and as a system.

Flower Garden Banks National Marine Sanctuary

Located in the northwestern Gulf of Mexico, 70 to 115 miles off the coasts of Texas and Louisiana, FGBNMS includes three separate undersea features: East Flower Garden Bank, West Flower Garden Bank and Stetson Bank. The banks range in depth from 55 feet to nearly 500 feet and are basically underwater hills formed by rising domes of ancient salt. They provide a wide range of habitat conditions that support a variety of species and several distinct biological communities, including the northernmost coral reefs in the continental United States. The combination of location and geology makes FGBNMS extremely productive and diverse and presents a unique set of challenges for managing and protecting its natural wonders.

The sanctuary was designated in 1992 for the purposes of protecting and managing the conservation, ecological, recreational, research, education, historic and esthetic resources and qualities of the Flower Garden Banks (Pub. L. 102-251). NOAA issued final regulations and released a final management plan and environmental impact statement (EIS) to implement this designation (56 FR 63634). In 1996, Congress added the coral sponge communities of Stetson Bank to the sanctuary, extending to it the regulatory protections of the Flower Garden Banks (Pub. L. 104-283). The sanctuary's management plan is a comprehensive approach to resource protection and management; it includes programs for science, education, outreach, regulation, enforcement, permitting and coordination with other local, state, and federal agencies.

Management Plan Review

New challenges and opportunities emerge with time. For this reason, section 304(e) of the NMSA requires periodic updating of sanctuary management plans to re-evaluate site-specific goals and objectives and to develop management strategies and activities to ensure the sanctuary best protects its resources (16 U.S.C. 1434(e)). Section 304(e) of the NMSA also recognizes that revision of existing regulations or development of new regulations as part of the management plan review (MPR) process may be necessary to meet the sanctuary goals and objectives, and the purposes and policies of the NMSA.

The MPR process includes five fundamental steps:

- 1) Public scoping to identify the broad range of issues and concerns related to management of the sanctuary;
- 2) Analysis and prioritization of the issues raised during scoping;
- 3) Preparation of the draft management plan and relevant environmental analysis;
- 4) Public comment on the draft plan and environmental analysis; and
- 5) Revision and preparation of the final management plan and environmental analysis.

Purpose and Need for Action

In preparation for a review of this management plan, the sanctuary staff worked with the sanctuary advisory council to update the sanctuary goals and objectives and create a mission statement.

Mission: Identify, protect, conserve, and enhance the natural and cultural resources, values, and qualities of Flower Garden Banks National Marine Sanctuary and its regional environment for this and future generations.

Goal 1: Protect, maintain and, where appropriate, restore and enhance the resources and qualities of Flower Garden Banks National Marine Sanctuary and the ecosystem that supports it.

Goal 2: Support, promote, and coordinate characterization, research, and monitoring of FGBNMS and the regional environment to inform conservation and protection.

Goal 3: Enhance and foster public awareness, understanding, appreciation, and stewardship of FGBNMS and the regional marine environment.

Goal 4: Manage and facilitate multiple sustainable uses of FGBNMS compatible with the primary purpose of resource protection.

Goal 5: Promote and coordinate partnerships with stakeholders, agencies, and organizations.

Goal 6: Promote ecosystem-based management of the FGBNMS regional environment.

1.2 Need for Action

The MPR for FGBNMS began in October 2006 with the publication of the State of the Sanctuary Report and the initiation of public scoping through three public meetings (Houston/Galveston and Corpus Christi, Texas and New Orleans, Louisiana). The meetings were announced in the *Federal Register* and through various newspapers. More than 50 people attended the public scoping meetings and over 80 written comments were collected. Comment topics included artificial reefs, endangered species, enforcement, harvesting, oil and gas infrastructure, pollutant discharge, regional water quality, shipping and transportation, visitor use, wildlife interactions, boundary expansion, habitat connectivity, invasive species, education, global warming, hurricanes and administrative issues. Fishing, boundary expansion, and public outreach and education received more comments than other topics.

During the scoping phase of management plan review, FGBNMS staff collected and summarized input from the public on potential resource protection and management issues to be addressed in the revised management plan and regulations. Through the winter of 2006, sanctuary and headquarters staff worked with the FGBNMS advisory council to characterize and prioritize resource protection issues for the focus of the revised management plan. At the February 2007 sanctuary advisory council meeting, six subcommittees were established to analyze the specific priority issues and to propose appropriate management strategies and activities needed to address the issue areas. Each subcommittee consisted of several council members and a supporting

Purpose and Need for Action

sanctuary staff member. Throughout 2007, several subcommittee and advisory council meetings and public workshops resulted in management recommendations to the sanctuary superintendent.

Sanctuary staff used the recommendations from the council to help inform the action plans in the preparation of a draft management plan. New information about the resources of the sanctuary and the human uses of the resources made it apparent to NOAA that the original plan is out-of-date and outmoded. The MPR process also revealed that many of the activities of the 1991 management plan had been completed. NOAA decided to incorporate this new knowledge and, consequently, developed a new FGBNMS mission and statement of goals and objectives to guide management. In addition, NOAA revised the content and format of the sanctuary management plan and developed a proposed rule to implement some of the activities identified in the plan. The draft plan, proposed rule and environmental assessment were the result of the MPR process. Formal public hearings and comments on the draft plan received during the 90-day public comment period helped staff revise the document into a final management plan, which outlines the sanctuary's priorities for the next 5 years, and final rule. Additionally, NOAA made a finding of no significant impact based on the information provided in the environmental analysis, and thus, no environmental impact statement is required.

Scope of the Issues

Taking into consideration the advice and recommendations from the FGBNMS advisory council, sanctuary staff identified six priority issues: regional habitat protection (sanctuary expansion), education and outreach, enforcement, fishing impacts, pollutant discharge, and visitor use. These issues have been addressed in the development of the action plans as part of the final management plan and are summarized below.

Sanctuary Expansion

Numerous banks and associated topographic features in the northwestern Gulf of Mexico, like the Flower Garden Banks, have unique or unusual structural features, and may be ecologically linked to each other. Many of these geological and biological features exist outside current sanctuary boundaries. Additional features were revealed through the collection of high-resolution multi-beam bathymetry after the present sanctuary boundaries were established. These features may be highly vulnerable to certain anthropogenic impacts that alter the physical, chemical, biological, or acoustic environment. Implementation of the management plan will include an evaluation of selected features for possible management and protection by ONMS as part of FGBNMS.

Education and Outreach

The level of awareness, understanding and appreciation of FGBNMS varies greatly among users and other members of the public. In many cases, this is inadequate to produce changes in individual attitudes, behaviors or community decision-making processes that affect the health of sanctuary resources. The progress made in addressing recreational divers and K-12 educators and students needs to be sustained while developing programs that target other direct users of the sanctuary, as well as increasing general public awareness and visibility of the sanctuary. For instance, the education and outreach team will develop a concept and implementation plan for a FGBNMS visitor center in Galveston, Texas. A visitor center would provide a physical location

Purpose and Need for Action

where people can experience the wonders of the sanctuary virtually, especially since a majority of citizens will never visit the sanctuary in person.

Research and Monitoring

Science in FGBNMS plays a vital role in making informed resource management decisions. This scientific knowledge base is gained through general exploration and habitat characterization, investigations of specific research questions, and routine monitoring of resource health. Information gathered by the sanctuary science team and its partners is essential for expanding upon existing baseline data, comparing existing habitat conditions with past conditions, and targeting the most important management issues.

In order to determine the impacts of fishing and diving on sanctuary resources, the FGBNMS staff will execute a process to evaluate the need and design for a research area. The implementation of this process will build on several workshops and the development of a research area working group, and will include input from members of the sanctuary advisory council, scientists, fishers, divers and constituents from other user groups.

Resource Protection

Diving Impacts

Potential impacts on sanctuary resources from visitation by SCUBA divers are an ongoing concern. Anecdotally, divers have noted damage to the coral reef likely caused by recreational and research divers. Additionally, some marine animals such as rays and Whale Sharks may be negatively affected by interactions with divers who attempt to attract and touch the animals. Sanctuary staff lack quantitative information on direct and indirect human impacts to sanctuary resources from diving activities, and specifically, on whether there are any differences between impacts from recreational diving activities and scientific diving activities. The collection of information on diving impacts is addressed in the Research and Monitoring Action Plan, while the outreach program to inform divers about wildlife interactions is an activity in the Education and Outreach Action Plan.

Enforcement

Enforcement is logistically difficult due to the distance of FGBNMS from shore and limited access to the site. The sanctuary relies heavily on assistance from the U.S. Coast Guard (USCG) and the NOAA Office for Law Enforcement (OLE) for enforcement efforts. In addition to its research and education mission, the sanctuary's vessel, R/V *Manta*, would be used as a platform for USCG and OLE law enforcement staff to supplement the sanctuary enforcement presence on the water. The R/V *Manta* will be used to make specific surveillance runs with law enforcement personnel. Sanctuary staff will coordinate with OLE and the USCG to have enforcement authorities on board for enforcement missions. Additionally, FGBNMS staff are developing a voluntary incident reporting system and seek to improve enforcement coordination with federal and state agencies to better address enforcement needs within the sanctuary.

Fishing Impacts

Fishing activities may negatively affect and threaten the natural living resources of FGBNMS. The influence of fishing activities within the sanctuary is not well documented, but concerns exist about both direct and indirect fishing-related impacts on marine ecosystems. Direct

Purpose and Need for Action

impacts of fishing can result in reduced fish biomass, while indirect impacts include secondary effects on species interactions, habitat alteration/damage, marine biodiversity, and economic impacts. Specific concerns include targeted fishing efforts on particular fish species; focused fishing during spawning aggregations; injury to corals and other organisms by lost and discarded fishing gear; and discarded fishing bycatch.

Pollutant Discharge

Discharge of pollutants from sources inside and outside the sanctuary may have potentially detrimental effects on sanctuary resources. The quality of coastal waters of the northern Gulf of Mexico is in decline due to pollutants associated with the discharge of major river systems (such as the Mississippi and Atchafalaya) and general coastal runoff throughout the region. Predominant current patterns direct much of this water away from FGBNMS, but minor changes in circulation patterns could bring contaminated water to the sanctuary.

Many vessels enter the sanctuary for diving, fishing and research. Pollution concerns from visiting and transiting vessels include exhaust, oil spills, fuel spills, human waste, and bilge discharge from vessels. The discharge of untreated sewage from vessels is not allowed within the sanctuary. However, discharge from a U.S. Coast Guard approved marine sanitation device is allowed. Other discharges from vessels or oil and gas platforms include “graywater” from showers and galleys, debris from maintenance operations, and incidental release of petrochemicals from engine use.

Visitor Use

The primary visitors to FGBNMS are recreational SCUBA divers and recreational fishers. Although the precise status and trends of visitor use in the sanctuary are not known, visitation by scuba divers and fishers is estimated to be relatively low compared to other sanctuaries. This is primarily due to the distance of the banks from shore and possibly a lack of public awareness about the sanctuary. However, observations from sanctuary staff, long-time users of the sanctuary, and others suggest that the level of fishing activity has been increasing in recent years. In addition, the sanctuary is becoming internationally known as a prime dive destination.

As interest and use in the sanctuary increases, there will potentially be conflicts among users arising from competing objectives. As an example, recreational fishers and dive charters may compete for use of the same reef areas because both of these users target the same types of large fish. In addition, vessel operations in an area where diving is occurring can pose a potential safety risk. However, this risk may be remedied through adherence to dive flag requirements. Further, increased visitation will increase demand for mooring buoys. These combined pressures are an important management priority in order to minimize user conflict, promote safe practices, and protect sanctuary resources.

Operations and Administration

As sanctuary staff update and revise management plans, they identify and evaluate needs for more effective management. Additional staffing and infrastructure resources are required to meet the expanded public demands and expectations raised by the process and to respond to legal mandates and policies. Strengthening the sanctuary’s base-level staffing, facilities infrastructure

Purpose and Need for Action

and program support to effectively meet the basic needs of sanctuary management is one of the priorities of this management plan.

Chapter 2: Description of Alternatives

As discussed in the Need for Action, awareness of new issues affecting sanctuary management and the fulfillment of many of the prior plan's objectives necessitated the revision to the management plan. This chapter describes the two alternatives for action considered by NOAA: Alternative 1, leaving the current management plan and regulations in place (No Action); and Alternative 2, revising the management plan and regulations to address the changes described above (Preferred Alternative).

2.1 Alternative 1 – No Action

Under the No Action alternative, NOAA would neither update the FGBNMS management plan nor revise the sanctuary regulations. The current situation described below would continue. This alternative would maintain the 1991 management plan despite its outdated format and content, inclusion of completed tasks, and the nominal list of goals and objectives. Management actions described in the existing management plan, including educational and research activities and enforcement actions, would continue.

2.2 Alternative 2 – Preferred Alternative

Under the Preferred Alternative, NOAA revises the FGBNMS management plan, including updating the sanctuary mission, goals and objectives; removing completed tasks and incorporating new and planned management strategies and activities (Chapter 3); laying out performance measures to better evaluate the effectiveness of sanctuary management; and laying the groundwork for potential future regulatory actions to address high priority issues.

The management plan is comprised of several action plans that identify a series of steps to address priority issues in the sanctuary over the next five years. These plans take on two different forms – issue-driven and program-driven. Issue-driven action plans focus on a particular concern, such as reducing conflicts among sanctuary visitors. Program-driven action plans are related directly to program areas of FGBNMS, such as research or education, and cross through the issue areas. Through public scoping and consultation with the sanctuary advisory council, six categories (as described in Section 1.2 of this document) were selected as the top priority issues for the sanctuary to address during the management plan revision: boundary expansion, education and outreach, enforcement, fishing impacts, pollution discharge, and visitor use. Subcommittees were formed including members from the sanctuary advisory council and FGBNMS staff for each issue area. Additional issues, such as administration and performance evaluation, were addressed primarily by sanctuary staff. Over several years, the issues were examined through subcommittee meetings and public workshops. As a result, some issues were repackaged or incorporated into other issue areas. The following list represents the final set of action plans contained in the final management plan, with the corresponding section of the FMP in parentheses:

- Sanctuary Expansion Action Plan (SEAP) (Section 3.2)
- Education and Outreach Action Plan (EOAP) (Section 3.3)
- Research and Monitoring Action Plan (RMAP) (Section 3.4)

Description of Alternatives

- Resource Protection Action Plan (RPAP) (Section 3.5)
- Visitor Use Action Plan (VUAP) (Section 3.6)
- Operations and Administration Action Plan (OAAP) (Section 3.7).

The action plan strategies and activities directly relate to the attainment of the revised goals and objectives of the sanctuary. Following is a discussion of each of the six action plans, including five specific regulatory changes in the resource protection and visitor use action plans. NOAA revises the regulations implementing FGBNMS to improve user safety, protect sanctuary resources from user impacts, update pollution discharge language, and make minor technical corrections.

Sanctuary Expansion Action Plan (SEAP)

The SEAP contains one strategy to evaluate potential sanctuary expansion, to incorporate selected reefs and banks in the northwestern Gulf of Mexico for long-term protection and management by the ONMS. The evaluation process includes the development of the appropriate environmental review and public involvement under the requirements of the NEPA and NMSA.

The purpose of the SEAP is linked to FGBNMS Goal 6.

Action Plan	Purpose	FGBNMS Goal & Objective
Sanctuary Expansion	Protect and manage additional sensitive habitats in the northwestern Gulf of Mexico, allowing for the protection of unique geological and biological features of the region that may be ecologically linked to one another	<i>Goal 6:</i> Promote ecosystem-based management of the FGBNMS regional environment. <i>Objective 6C:</i> Evaluate and implement management actions that enhance ecosystem-based management.

Education and Outreach Action Plan (EOAP)

The EOAP contains four strategies and associated activities that focus on developing programs to address specific management needs and reach target audiences; increasing general public awareness and knowledge of the sanctuary; building internal processes and capabilities; and cultivating relationships and networks with appropriate partners and media contacts.

The purpose of the EOAP is linked to FGBNMS Goal 3.

Action Plan	Purpose	FGBNMS Goal & Objective
Education and Outreach	Use education and outreach to enhance effective management of the sanctuary by cultivating a knowledgeable public that progresses from simple awareness to active stewardship of FGBNMS and the regional marine environment.	<i>Goal 3:</i> Enhance and foster public awareness, understanding, appreciation, and stewardship of FGBNMS and the regional marine environment.

Research and Monitoring Action Plan (RMAP)

The RMAP has five strategies and associated activities to guide research and monitoring efforts including: investigating ecosystem processes; assessing and characterizing sanctuary resources; maintaining and enhancing monitoring programs; implementing a process to evaluate impacts of fishing and diving; identifying and evaluating ongoing and potential threats to sanctuary resources; and developing partnerships to enhance sanctuary research and monitoring programs.

Description of Alternatives

The purpose of the RMAP is linked to FGBNMS Goals 1, 2, and 6.

Action Plan	Purpose	FGBNMS Goal & Objective
Research and Monitoring	Provide a guide for research activities at FGBNMS and throughout the region that will inform management and protection of sanctuary resources, as well as the reefs and banks of the northwestern Gulf of Mexico that are ecologically connected to the sanctuary.	<p><i>Goal 1)</i> Protect, maintain, and where appropriate, restore and enhance the resources and qualities of FGBNMS and the ecosystem that supports it.</p> <p><i>Goal 2)</i> Support, promote, and coordinate characterization, research, and monitoring of FGBNMS and the regional environment to inform conservation and protection.</p> <p><i>Goal 6)</i> Promote ecosystem-based management of the FGBNMS regional environment.</p>

Resource Protection Action Plan (RPAP)

The RPAP has two strategies and associated activities to protect sanctuary resources from various threats and address the enforcement needs of the sanctuary, including two specific regulatory changes to enhance the quality of the FGBNMS ecosystem. In particular, the RPAP addresses law enforcement and impacts from pollutant discharge, shipping, fishing and diving activities. The action plan includes activities to incorporate surveillance and enforcement into the mission plan for the R/V *Manta*, develop a process for voluntary incident reporting, and improve inter-agency coordination with federal and state enforcement agencies.

The RPAP includes two regulatory changes:

- RPAP Activity 2.2 increases protection to rays and Whale Sharks from physical harm by adding a prohibition in the FGBNMS regulations on killing, injuring, attracting, touching, or disturbing these animals. An exception to this new prohibition is made for incidental by-catch of a ray or whale shark resulting from fishing with conventional hook and line gear.
- RPAP Activity 2.5 updates the FGBNMS discharge regulations to:
 - Clarify that only discharges of clean water incidental to vessel operations and clean effluent from an operable Type I and II marine sanitation device (MSD) are allowed;
 - Require that vessel operators lock all MSDs in a manner that prevents discharge or deposit of untreated sewage;
 - Clarify that the general discharge prohibition applies to discharges and deposits made from within or into the sanctuary;
 - Clarify that the exception to the discharge prohibition for fish, fish parts and chumming materials applies only to discharges made during the conduct of lawful fishing within the sanctuary;
 - Eliminate the exception that allows for the discharge of biodegradable effluents in the sanctuary;
 - Eliminate the phrase “routine vessel operations” and clarify which specific types of discharges are allowed in this exception.

Description of Alternatives

The purpose of the RPAP is linked to FGBNMS Goal 1.

Action Plan	Purpose	FGBNMS Goal & Objective
Resource Protection	Improve sanctuary resource and ecosystem protection.	<i>Goal 1:</i> Protect, maintain and, where appropriate, restore and enhance the resources and qualities of Flower Garden Banks National Marine Sanctuary and the ecosystem that supports it.

Visitor Use Action Plan (VUAP)

The VUAP has three strategies and associated activities to foster safe and compatible human uses, including improving information on visitor use, reducing user conflict between vessels and divers, and protecting NOAA property. To help carry out these activities, the VUAP includes a specific regulatory change:

- to add the requirement for vessels with passengers engaged in the activity of diving to exhibit the “alpha” dive flag or the red and white “sports diver” flag whenever a diver from that vessel is in the water, consistent with U.S. Coast Guard guidelines relating to sports diving as contained within “Special Notice to Mariners” (00-208) for the Gulf of Mexico.

The purpose of the VUAP is linked to FGBNMS Goal 4.

Action Plan	Purpose	FGBNMS Goal & Objective
Visitor Use	Promote multiple uses of the sanctuary compatible with resource protection and protect NOAA property.	<i>Goal 4:</i> Manage and facilitate multiple sustainable uses of FGBNMS compatible with the primary purpose of resource protection.

Operations and Administration Action Plan (OA)

The OAAP provides recommendations to strengthen the sanctuary’s base-level staffing, facilities, infrastructure and program support to effectively meet the basic needs of sanctuary management. Emphasis is placed on the human and physical infrastructure of the sanctuary.

The purpose of the OAAP supports the attainment of all goals of the sanctuary.

Action Plan	Purpose	FGBNMS Goal & Objective
Operations and Administration	Ensure the administrative, operational, and financial capacities of the sanctuary are adequate to effectively implement the goals and objectives of the sanctuary.	<i>All goals</i>

Chapter 3: Affected Environment

The description of the affected environment comes from the Sanctuary Setting of the final management plan (Chapter 2).

3.1 Currents / Oceanography

The Flower Garden and Stetson Banks are only three among dozens of reefs and banks scattered along the edge of the continental shelf of the northwest Gulf of Mexico (Figure 2). All of these banks are part of a regional ecosystem heavily influenced by current patterns within the Gulf (Figure 3). Inflows from the large watershed that drains two-thirds of the continental United States also play a significant role in the health of this region.

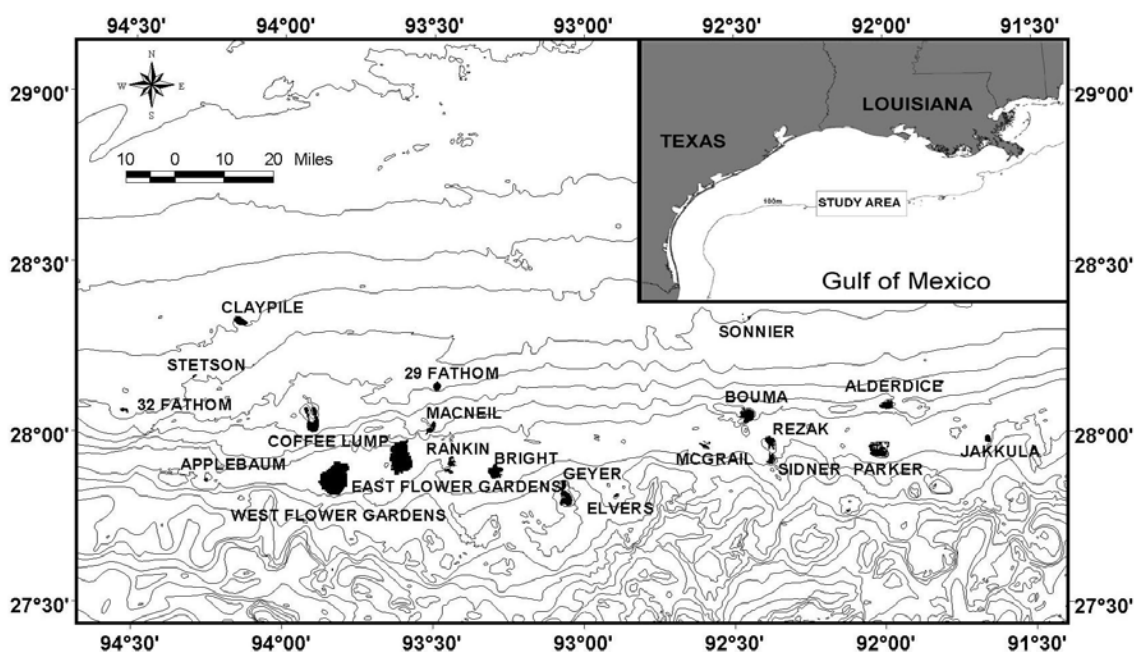


Figure 2: Selected reefs and banks of the northwestern Gulf of Mexico

Currents

From the south, the Gulf of Mexico is fed by the Yucatan Current, a current of warm water from the Caribbean that enters the Gulf between Mexico's Yucatan Peninsula and Cuba. The deeper water flows up the middle of the sea, forming the Gulf Loop Current, which curves east and south along Florida's coast and exits through the Straits of Florida.

The Gulf Loop Current is variable, sometimes barely entering the Gulf before turning, while at other times it travels almost to Louisiana's coast before swinging toward Florida. Simultaneously, portions of the loop often break away from the main current and form circular eddies that move westward, affecting the Flower Garden, Stetson and other banks to the west. The influx of water to the Gulf brings with it animal larvae, plant spores and other imports from the south, and accounts for the many Caribbean species found in the northern Gulf of Mexico.

Affected Environment

During its progress, the loop current also picks up similar 'passengers' from the northern Gulf to deliver along its route to the northern Caribbean and western Atlantic.

Meanwhile, the shelf waters of the southern Gulf tend to travel northward, following the Mexico and Texas coastlines before turning east. These wind driven currents may also cross over the Flower Garden, Stetson and other banks and add to the Caribbean influence in the region.

Fresh water from rivers emptying into the northern Gulf of Mexico (Mississippi, Atchafalaya, Calcasieu, Sabine, Brazos, and others) generally flows west and south along the Louisiana and Texas coasts. As these waters move, they mix with nearshore waters of the continental shelf and are also forced offshore as they encounter northward flows along the Texas coast. At times, exceptionally high flow rates can extend the influence of fresh water quite far offshore in the northwestern Gulf.

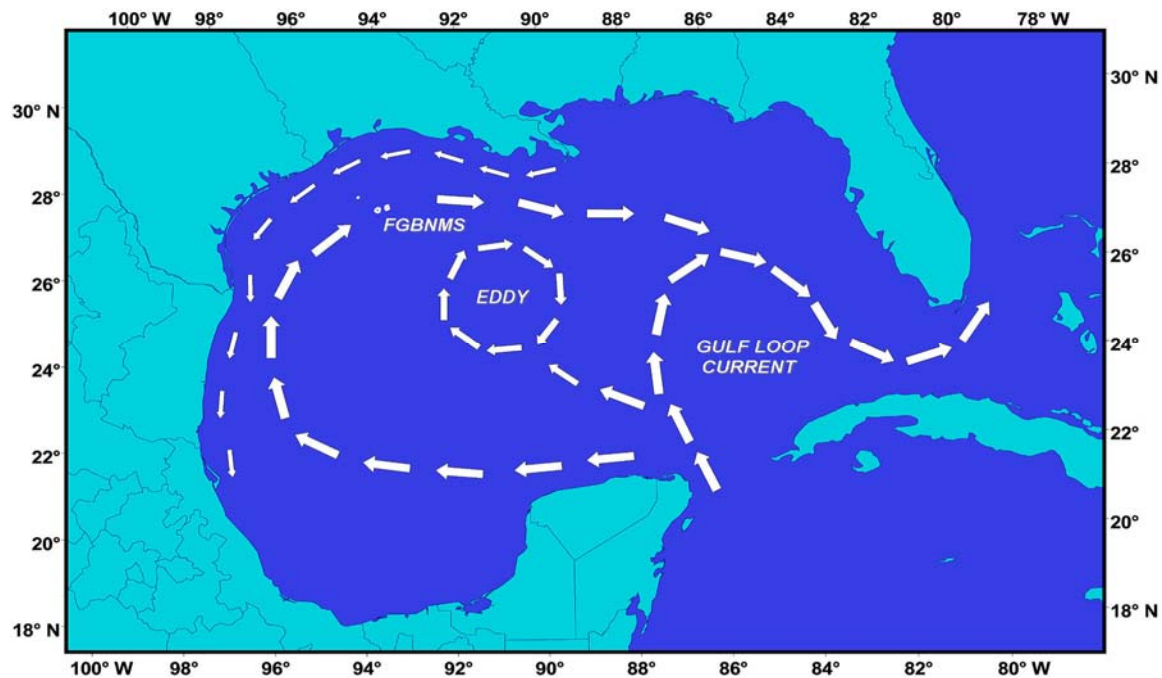


Figure 3: Currents in the Gulf of Mexico

Watershed

From the north, the Gulf of Mexico is fed by multiple rivers that drain the interior of North America. The most significant of these is the Mississippi River. These rivers bring with them all of the runoff accumulated from urban, suburban, and rural areas and wildlands along their routes. Before it reaches the Gulf, this replenishing source of water is partially depleted by extractions for municipal, industrial and agricultural consumption, thus reducing freshwater inflows that sustain the estuaries. When healthy, the estuaries filter sediments and pollutants from the water, export organic material for the food chain in nearshore areas, and provide nursery areas for many species, some of which later move offshore to the system of banks along the continental shelf.

Connectivity

Scientists have long been aware that water circulation connects the dozens of banks along the continental shelf in the northern Gulf of Mexico. Recent explorations, however, have demonstrated that there may be much more physical connection than previously believed. Technological advances have allowed the creation of high resolution maps that reveal systems of low relief geological features (such as rock outcrops) between many reefs and banks in this area. These features may allow much more direct interaction between the banks than previously thought. As we build upon the knowledge base established by the discoveries to date, we may discover that these interactions play a crucial role in maintaining the health of the sanctuary's living marine resources.

3.2 Physical Environment

East and West Flower Garden Banks

The Flower Garden Banks are significant among ecosystems in the Gulf of Mexico. They contain the northernmost coral reefs in the continental United States. The nearest neighboring tropical coral reefs are 400 miles (643 km) away in the Bay of Campeche off the Yucatan peninsula of Mexico, while the closest U.S. coral reefs are located 750 miles (1,207 km) southeast in the Florida Keys.

East Flower Garden Bank (Figure 4) is a pear-shaped dome, 5.4 by 3.2 miles (8.7 by 5.1 km) in size, capped by 250 acres (1 square km) of coral reef that rise to within 55 feet (17 m) of the surface. West Flower Garden Bank (Figure 5) is an oblong-shaped dome, 6.8 by 5 miles (11 by 8 km) in size that includes 100 acres (0.4 square km) of coral reef area starting 59 feet (18 m) below the surface.

Brain and star corals dominate the coral caps of the Flower Garden Banks, with a few coral heads exceeding 20 feet (6 m) in diameter. There are at least 21 species of coral on the coral cap, covering over 50% of the bottom to depths of 100 feet (30 m) and exceeding 70% coral cover in places to at least 130 feet (40 m) (Schmahl et al. 2008, and references therein). Interestingly, the coral caps do not contain some species commonly found elsewhere in the Caribbean, such as many of the branching corals, sea whips or sea fans. In fact, despite the high cover, only about a third of Caribbean hard coral species are found in FGBNMS.

A recent observation of note is the discovery of two live *Acropora palmata* colonies, one each at East and West Flower Garden Banks. These coral colonies are some of the deepest on record of this species (Zimmer et al. 2006).

Less well-known is the deepwater habitat of the Flower Garden Banks that makes up over 98% of the area within sanctuary boundaries. Habitats below recreational scuba limits (approximately 120 feet) include algal-sponge zones, "honeycomb" reefs (highly eroded outcroppings), mud flats, mounds, mud volcanoes and at least one brine seep system. Different assemblages of sea life reside in these deeper habitats, including extensive beds of coralline algae pavements and algal nodules, colorful sea fans, sea whips, black corals, deep reef fish, batfish, sea robins, basket starfish and feather stars.

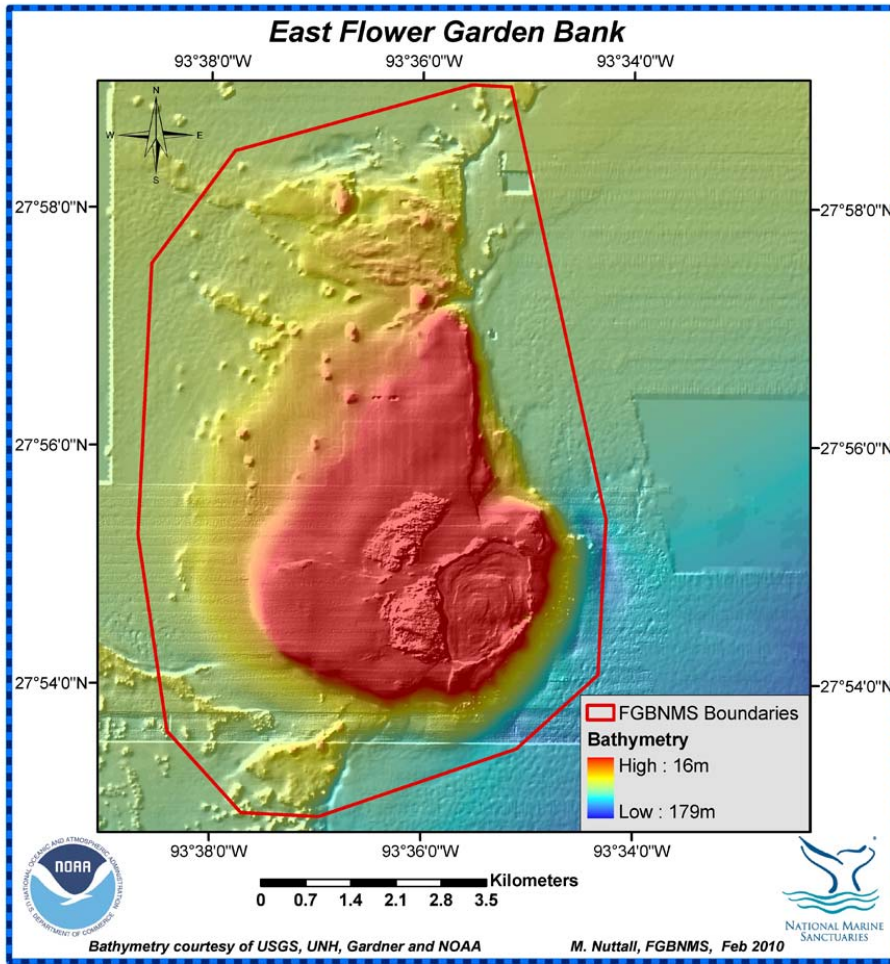


Figure 4: East Flower Garden Bank

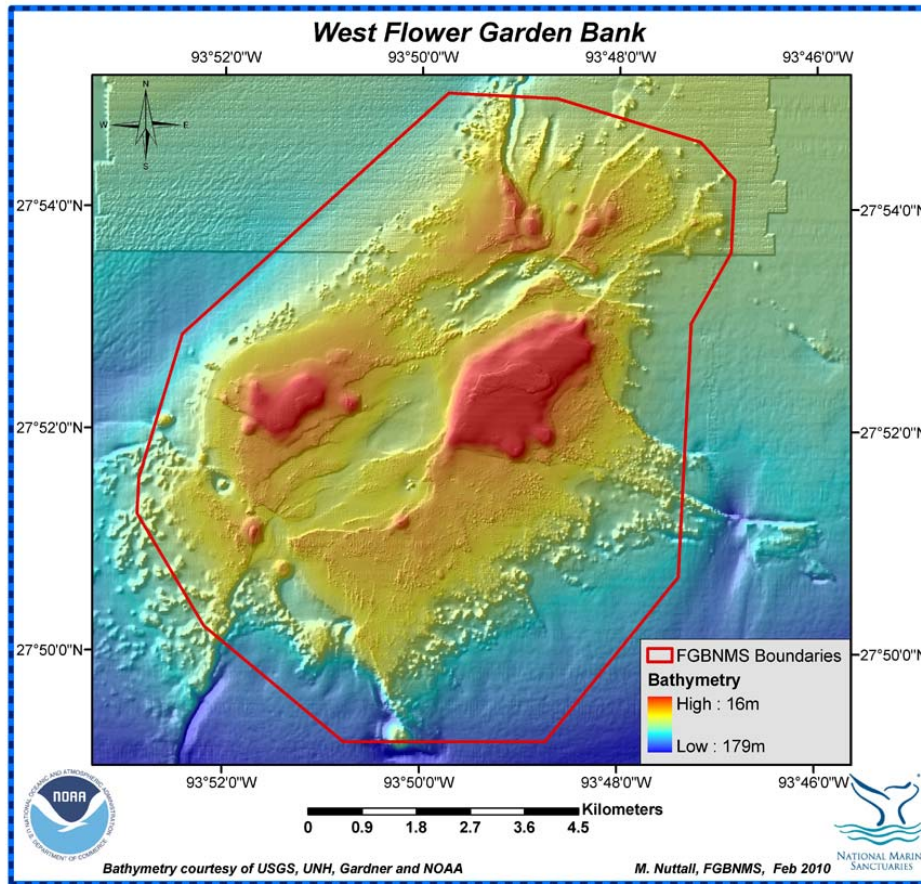


Figure 5: West Flower Garden Bank

Stetson Bank

Stetson Bank (Figure 6) is located 70 miles (113 km) south of Galveston, Texas, and 30 miles (48 km) to the northwest of West Flower Garden Bank. Depths at Stetson Bank range from about 55 feet (17 m) to 170 feet (52 m). Environmental conditions at Stetson Bank, which include more extreme fluctuations in temperature and turbidity, do not support the growth of reef forming corals like those found at East and West Flower Garden Banks. Divers have described Stetson as having a "moonscape" appearance, with distinct pinnacles that push out of the seafloor for 1,500 feet (457 m) along the northwest face of the bank. An area referred to as the "flats" stretches out behind the pinnacles region, and is dotted with low relief outcroppings.

The pinnacles of Stetson Bank are dominated by fire coral and sponges, with cover exceeding 30% (Bernhardt 2000). There are at least nine coral species at Stetson Bank, but with the exception of fire coral and a large area of *Madracis decactis*, most colonies are small and sparsely distributed. Algae, sponges and rubble dominate the flats.

A "halo" of claystone outcroppings that ring the main feature of Stetson Bank (Gardner et al. 1998) was identified through surveys after the designation of the sanctuary boundaries. Sponges, gorgonians and black corals dominate this impressive ring of outcroppings at about 165-196 feet (50-60 m). Deep reef fish and invertebrates are prominent inhabitants of the "Stetson Ring."

Affected Environment

Much of the feature is outside of the current sanctuary boundaries, an issue that has been identified as a priority for consideration through the management plan review.

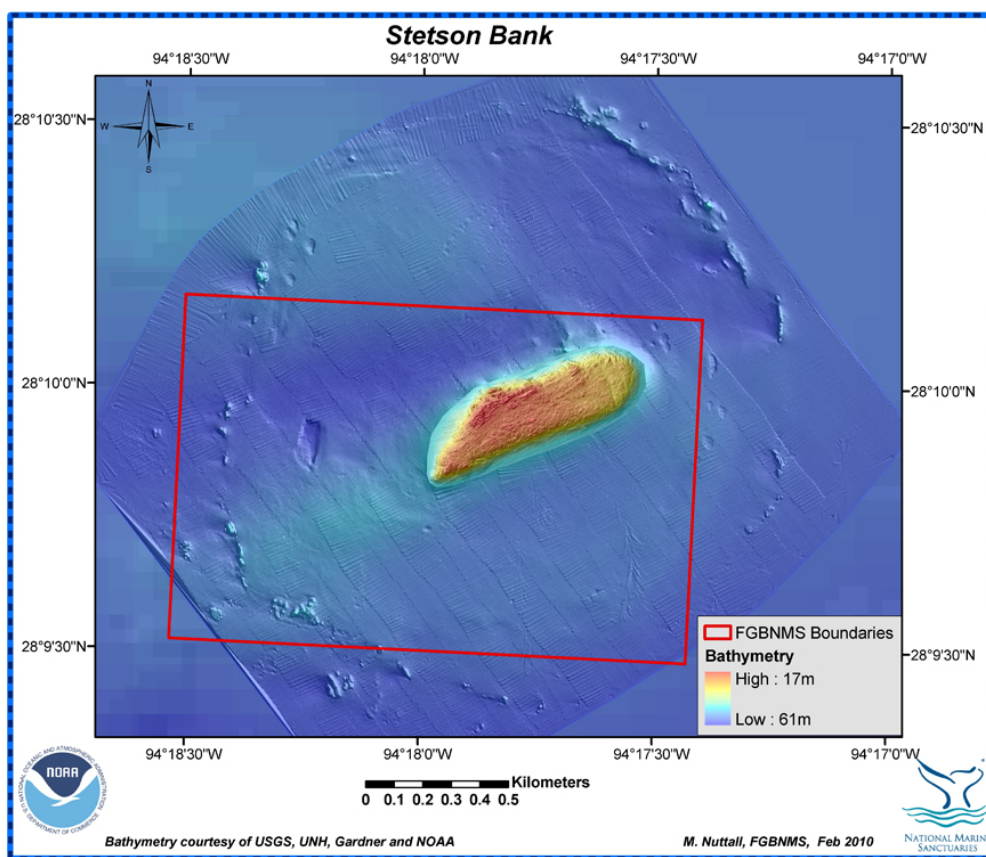


Figure 6: Stetson Bank

3.3 Protected Species

The Endangered Species Act (ESA; 16 U.S.C. §§ 1531-1544) protects animals and plants threatened with extinction. Implementation of the ESA is the responsibility of the U.S. Fish and Wildlife Service (terrestrial and freshwater species) and NOAA Fisheries (marine species). ESA-listed species that regularly occur in the vicinity of FGBNMS include loggerhead and hawksbill sea turtles. Leatherback turtles have also been observed. Sperm and fin whales may also be present in this area.

Under the Marine Mammal Protection Act (MMPA; 16 U.S.C. §§ 1361-1423h), the Secretary of Commerce (authority delegated to NOAA Fisheries) is responsible for the conservation and management of cetaceans and pinnipeds (other than walrus). A variety of marine mammals occurs in the northern Gulf of Mexico, but most are not common in the vicinity of FGBNMS. Rare occurrences of marine mammals that have been observed in the sanctuary include Atlantic spotted dolphin (*Stenella frontalis*), bottlenose dolphin (*Tursiops truncatus*), and an unidentified beaked whale (*Mesoplodon* sp.)

3.4 Other Biological Resources

Approximately 20 species of sharks and rays have been documented at the Flower Garden and Stetson Banks, some seasonal, others year-round. In addition to the Giant Manta (*Manta birostris*), there are other pelagic (free swimming) ray species commonly observed utilizing the habitats within FGBNMS, including at least two species of devil or mobula rays (*Mobula* spp.), the Spotted Eagle Ray (*Aetobatus narinari*), and the Cownose Ray (*Rhinoptera bonasus*). Several species of bottom-dwelling rays also live within the sanctuary, including the Southern Stingray (*Dasyatis americana*) and Roughtail Stingray (*Dasyatis centroura*). Whale Sharks and rays are transient creatures and migrate between areas for feeding and mating. During the winter months, Spotted Eagle Rays are common visitors to all three banks. Summer months usually bring Whale Sharks (*Rhincodon typus*) to the area. These filter-feeding creatures can reach over 30 feet (9 meters) in length. Giant Mantas and the very similar-looking mobula rays (*Mobula* spp.) are regular visitors to the sanctuary throughout the year. At least 58 different individual manta rays have been documented and identified by distinctive markings on their undersides. Recent acoustic tracking of the manta rays has revealed that they are moving between the three banks of the sanctuary.

Divers can physically harm rays and Whale Sharks by attracting, touching, riding or pursuing the animals, which can then expose the animals to other potential injuries. In particular, people can cause injury to the skin of an animal by merely touching it. Attracting rays and whale sharks also changes their behavior and may negatively impact their health. The animals may actively avoid diver interactions by changing direction or diving, and may exhibit stress behavior such as violent shuddering. As an example of how rays have been affected by divers, stingrays in the Cayman Islands have developed shoaling behavior and altered feeding habits, as well as exhibit skin abrasions from handling. When these types of responses occur, rays and Whale Sharks expend energy that could otherwise be used for feeding and other natural activities.

Whale Sharks and rays are not listed under the Endangered Species Act (ESA). These animals also are not designated as depleted under the Marine Mammal Protection Act (MMPA) because they are not mammals. Therefore, they are not protected from harassment and injury in the same manner as threatened and endangered species protected under the ESA or depleted marine mammals protected under the MMPA.

3.5 Institutional Setting

In addition to the protection and comprehensive management afforded to the sanctuary by the National Marine Sanctuaries Act (NMSA) as described in the Purpose and Need for Action chapter (Chapter 1 of this document), the management of FGBNMS occurs in coordination with several other federal agencies and the statutes under their jurisdiction. The newly established Bureau of Ocean Energy Management (BOEM) (formerly called the Minerals Management Service) is responsible for the protection of topographic features, including the Flower Garden Banks, through stipulations in leases that prevent drilling in sensitive areas, called No Activity Zones (NAZs). The National Oceanic and Atmospheric Administration (NOAA) and the Gulf of Mexico Fishery Management Council (GMFMC or Gulf Council) have designated many of these same topographic features as Habitat Areas of Particular Concern (HAPCs), which may limit the types of fishing activities that can occur in the area. NOAA Fisheries also manages endangered

Affected Environment

and threatened species through the Endangered Species Act (ESA) and protected marine mammals through the Marine Mammal Protection Act (MMPA). In addition, the Environmental Protection Agency (EPA) is responsible for protecting the quality of the nation's waterways through the Clean Water Act (CWA).

BOEM manages oil, gas, and mineral exploration and development through the Outer Continental Shelf Lands Act (OCSLA; 43 U.S.C. §§1331-1356a). This law authorizes the Secretary of the Interior to prescribe rules and regulations to administer leasing of the Outer Continental Shelf (OCS). Such rules and regulations will apply to all operations conducted under a lease.

The Gulf of Mexico Fishery Management Council is one of eight regional fishery management councils that were established by the Fishery Conservation and Management Act in 1976 (now called the Magnuson-Stevens Fishery Conservation and Management Act; 16 U.S.C. §§ 1801-1884). The Gulf Council prepares fishery management plans (FMPs) to manage fishery resources in the Exclusive Economic Zone (EEZ) of the Gulf of Mexico, the area from state waters (3 nautical miles) out to the 200 nautical mile limit. As required by the Magnuson-Stevens Act, the Gulf Council has identified essential fish habitat (EFH) in the Gulf of Mexico, and has established a number of HAPCs, including the East and West Flower Garden and Stetson Banks.

3.6 Recreational and Commercial Uses

The reefs and banks of the northwestern Gulf of Mexico, including the Flower Garden and Stetson Banks, are utilized by a variety of recreational and commercial user groups.

Recreational Diving

Recreational divers constitute the largest user group within FGBNMS. An estimated 2,500–3,000 divers visit the sanctuary each year. Although the sanctuary is often a challenging dive site, recreational divers consistently rate it among the favorite dive sites in North America. The sanctuary is also a popular site for underwater photography. Most divers access the sanctuary on commercial dive charter vessels, but some visit the area in personal boats. Diving is also popular on oil and gas platforms and other artificial structures.

Fishing

Commercial and recreational fishing are common and economically important activities in the northwestern Gulf of Mexico. Primary species of importance to the fisheries in the Flower Garden Banks area include reef fish within the snapper-grouper complex, including Red Snapper, Vermilion Snapper, deepwater groupers (Yellowedge, Snowy, Speckled Hind, Warsaw) and shallow water groupers (Gag, Scamp, Yellowfin, Yellowmouth, Black, Rock Hind, Red Hind). A number of sharks and other pelagic fish, such as Wahoo, mackerel and Greater Amberjack, and other reef fish, such as Gray Triggerfish, are also sought after species. Conventional hook and line fishing, both recreational and commercial, is allowed within FGBNMS. All other fishing methods, including bottom trawling, trapping and bottom long-lining are prohibited to protect sensitive bottom habitat. Spearfishing is also prohibited. Although fishing pressure is perceived to be moderate, the impact on local fish populations is not

well known at this time. The spatial resolution of fishing data is currently not precise enough to quantitatively assess fishing pressure within the sanctuary.

3.7 Oil and Gas Exploration

The northwestern Gulf of Mexico is home to one of the most active areas of oil and gas exploration and development in the world. Approximately 150 oil and gas platforms are located within 25 miles of the existing boundaries of FGBNMS. One production platform, located in BOEM lease block High Island 389A, is within the boundary of East Flower Garden Bank. Constructed in 1981, prior to sanctuary designation, this platform continues to facilitate active exploration for and production of oil and gas. The platform itself also provides a substrate for a variety of organisms that live on and around it, as well as a dive opportunity for sanctuary visitors. There are two existing platforms closest to the sanctuary are: (a) High Island 384, located 0.26 miles (1373 feet) from the boundary of West Flower Garden Bank; and (b) High Island 376, located .22 miles (1162 feet) from East Flower Garden Bank.

3.8 Vessel Traffic

The sanctuary is located adjacent to a major shipping lane for shipping and transport headed to the Port of Houston, one of the busiest ports in the nation. In the past, this led to occasional anchoring incidents resulting in damage to the coral reefs of FGBNMS. This is now largely managed through a “no-anchor” designation from the International Maritime Organization (IMO) and sanctuary regulations. Other concerns from large vessel traffic include sewage discharge, gray water effluent, marine debris, exhaust emissions, ballast water release, and occasional towing cable impacts.

Smaller vessel traffic within the sanctuary includes charter fishing and diving vessels, and personal watercraft used for recreational activities. The number of these vessels visiting the sanctuary each year is limited because of the sanctuary’s distance from shore and the variability of sea conditions. Mooring buoys are provided by the sanctuary for vessels up to 100 feet in length to avoid anchoring incidents. Vessel discharge and marine debris are other concerns.

Other vessels are occasionally observed transiting the sanctuary without stopping. These include passing shrimp trawlers, as well as service boats and barges associated with oil and gas activities. In the past, significant injury to sanctuary resources has resulted from improperly attended cables between tugs and towed barges.

3.9 Research

FGBNMS has a long history of research and exploration that continues today. Scientists from a variety of universities, research foundations, and government agencies are constantly monitoring and evaluating the fauna and flora of the sanctuary. Many recent studies have focused on the deepwater areas surrounding and between the various reefs and banks, utilizing remotely operated vehicles (ROV) and other technologies. Because of the remote location, the coral reefs of the sanctuary have remained relatively buffered from problems that plague many other reefs in the world and have become a benchmark for evaluating the health of other reef systems.

3.10 Education and Outreach

As the only coral reef ecosystem in the northwestern Gulf of Mexico, Flower Garden Banks National Marine Sanctuary is a valuable experiential learning site for educational programming. Instead of just learning about coral reefs, program participants can experience them first-hand, thus adding another dimension to their appreciation of this resource. For example, FGBNMS staff organizes workshops that train between 500 and 1,000 teachers every year.

Chapter 4: Environmental Consequences

This chapter examines the environmental consequences for the two alternatives addressed in this PEA. Actions taken to manage the sanctuary as described in the final management plan, considered together with the stressors facing sanctuary resources, generally result in a cumulative beneficial impact to these resources, although the impact does not meet the threshold for significance under the NEPA.

4.1 Alternative 1: No Action

Taking no action would result in no change of the current management regime of the sanctuary. The current management plan would remain in effect and the regulations would remain unchanged. The environmental impact statement regarding the 1991 management plan contains a full analysis of the environmental impacts of that plan. Any future decisions made under the existing management regime would be reviewed for their NEPA compliance under either the 1991 environmental impact statement or under a separate NEPA analysis before a decision would be made.

As compared to Alternative 2, taking no action could result in negative impacts to the natural and human environments, specifically the physical environment, other biological species, and recreational uses of the sanctuary, since the resource protection activities implemented through regulatory amendments mentioned in the proposed action would not take place. For instance, rays and Whale Sharks would not be afforded additional protections from adverse human interactions (RPAP Activity 2.5), and improperly treated discharge would continue to be allowed (RPAP Activity 2.2). In addition, the requirement to use a diving flag when diving in the sanctuary would not be proposed, which could affect the safety of recreational users of the sanctuary. Taken alone, these activities or their absence do not rise to the level of a significant impact under the NEPA, but support the cumulative benefits of the final management plan. Other aspects of the proposed action that do not require amending the sanctuary regulations could continue to take place under the current management plan, so the no action alternative would not have different effects than the preferred alternative for those actions. The effects of both regulatory and non-regulatory aspects of the proposed action are analyzed below. This alternative would not affect other environmental parameters detailed in Chapter 3.

4.2 Alternative 2: Preferred Alternative

The preferred alternative revises the FGBNMS management plan to reflect the six action plans, which include five substantive changes to the existing regulations. Technical corrections to the regulations will also be implemented.

It is important to note that the revised plan itself does not specifically enable any of the activities listed in the action plans to occur; activities could take place in the sanctuary under the current management plan without this revision (see Alternative 1: No Action). However, the revised management plan will update existing non-regulatory programs, call for new programs to be

Environmental Consequences

developed, and include a process to consider future regulatory actions.² Taken together, NOAA expects that the strategies and activities included in the final plan will have some positive environmental effects by increasing protection of resources both directly and through interagency cooperation in research and management, and by reaching more people and expanding the stewardship message of the sanctuary. The potential environmental consequences of the preferred alternative are described in more detail below.

Sanctuary Expansion Action Plan

The SEAP includes activities to evaluate the potential expansion of the network of protected areas within the sanctuary by incorporating selected reefs and banks in the northwestern Gulf of Mexico for their long-term protection and management. The action plan does not make any determination regarding the analysis of the alternatives for expanding the sanctuary in an effort to enhance ecosystem protection; it lays out the framework for conducting a separate environmental review pursuant to the NEPA and the NMSA, which will take place after completion of this action. The implementation of the action plan is an administrative process that occurs within existing facilities and will not significantly change the use of those facilities or increase traffic. Once the plan is implemented, however, the goal (see FGBNMS Goal 6) is to have beneficial but not significant impacts on the natural environment in the region (i.e., habitat, species, ecosystem), which could in turn benefit the human environment (e.g., more pristine dive sites, improved habitats to support fishery species, increased opportunities for research and educational activities). Taken alone, however, the SEAP has little to no potential to have a significant effect on the human environment.

Education and Outreach Action Plan

The EOAP includes activities to develop, support and implement education and outreach programs. Activities include, for instance, developing programs to reach previously underserved audiences; creating sanctuary exhibits in aquariums and museums; enhancing K-12 education programs; developing a strong volunteer program; continuing to build a dynamic and up-to-date internet presence; and developing new tools to evaluate effectiveness of efforts. In addition, the education and outreach team will develop a concept and implementation plan for a Flower Garden Banks National Marine Sanctuary visitor center in Galveston, Texas. More details about the proposed visitor center are available in the Operations and Administration Action Plan, since it is primarily a facility consideration at this stage.

The types of activities in this action plan will not significantly change the use of facilities or increase traffic. If any activity is considered under this plan that would change the use of existing facilities or occur outside the facilities in the natural environment, then an environmental review under NEPA will be conducted as appropriate. Similarly, if any new infrastructure (e.g., visitor center) is necessary to implement any of the activities contemplated by this plan, an appropriate NEPA review will be conducted. Taken alone, the EOAP has little to no potential to have a significant effect on the human environment. Regardless, implementation of the activities in the EOAP is expected to support FGBNMS Goal 3 as to improve stewardship towards the

² If additional regulatory actions were initiated, the appropriate NEPA analysis and formal public input would occur at appropriate times in the future.

Environmental Consequences

sanctuary, which could lead to minor beneficial impacts on the quality of the natural and human environments associated with the sanctuary.

Research and Monitoring Action Plan

The RMAP provides a guide for research and monitoring activities at FGBNMS and throughout the region that will inform management and protection of the sanctuary resources, as well as the reefs and banks of the northwestern Gulf of Mexico that are ecologically-linked to the sanctuary. The RMAP may result in overall, long-term beneficial impacts to the natural environment by addressing the need for information on ecosystem processes, sanctuary resources, impacts of diving and fishing on the sanctuary, and other potential threats to the sanctuary, including marine debris, invasive species, natural and human-induced events, and climate change. The types of activities in this plan include developing research and monitoring programs, collaborating with partners, conducting scientific analyses, and establishing a public process to evaluate the establishment of a research-only area within FGBNMS. These activities will occur within existing facilities and will not significantly change the use of those facilities or increase traffic. An environmental review under NEPA will be conducted as appropriate and if necessary for any activity considered under this plan occurring in the natural environment (e.g., collection of biological samples or deep coring). The expectation is that the overall benefits gained by natural environment due to these activities will have net beneficial impacts on the human environment as well. However, the RMAP has little to no potential to meet the NEPA threshold for significance when considered alone.

Resource Protection Action Plan

The RPAP may result in beneficial impacts to the environment by addressing potential threats to sanctuary resources and improving enforcement capability. The action plan includes the following activities: incorporate surveillance and enforcement into the mission plan for the R/V *Manta*; develop a process for voluntary incident reporting; improve coordination with federal and state enforcement agencies; partner with the oil and gas industry for surveillance and monitoring; evaluate the need for additional protection measures from inappropriate fishing gear; and revise the pollutant spill contingency plan. These types of activities will occur within existing facilities and will not significantly change the use of those facilities or increase traffic. When considered alone, the RPAP has little to no potential to meet the NEPA threshold for significance. The implementation of this action plan may result in NOAA considering actions that require further analysis and public review under NEPA and other statutes, to be conducted at a later date.

In addition to activities described above, this action plan includes two amendments to the FGBNMS regulations to update the prohibition on discharges from marine sanitation devices (MSDs) and other sources, and to add a prohibition on killing, injuring, attracting, touching, or disturbing rays and Whale Sharks. Below is a discussion of the potential environmental consequences of these two regulatory changes.

Regulation to protect rays and Whale Sharks

RPAP Activity 2.2 revises FGBNMS regulations to increase protection to rays and Whale Sharks from physical harm by adding a prohibition on killing, injuring, attracting, touching, or disturbing these animals. NOAA includes all species of rays in the regulation that prohibits

Environmental Consequences

disturbance. It has been demonstrated in other areas of the world that stingrays and other rays can be subject to negative disturbance from visitor activities.

By regulation, NOAA will strengthen the protection of rays and Whale Sharks from physical harm (or likelihood thereof) in the sanctuary by prohibiting attracting, touching, or disturbing these animals. In this context, NOAA defines “disturbing” as follows: “*Disturb or disturbing a ray or whale shark* means to, or attempt to, touch, handle, ride, pursue, chase away, hunt, restrain, detain (no matter how temporarily), capture, collect, or conduct any other activity that disrupts or has the potential to disrupt any ray or whale shark in the sanctuary by any means. Notwithstanding the above, the mere presence of human beings (e.g., swimmers, divers, boaters, kayakers) is exempted from this definition. NOAA also defines “attracting” as follows: “*Attract or attracting* means the conduct of any activity that lures or may lure any animal in the sanctuary by using food, bait, chum, dyes, decoys (e.g., surfboards or body boards used as decoys), acoustics or any other means, except the mere presence of human beings (e.g., swimmers, divers, boaters, kayakers, surfers).” The intent is to prevent and reduce intentional human interaction with rays or Whale Sharks in such a manner that the animals change direction, dive away from human interaction, shudder, or have any other adverse behavioral or physical reaction.

The regulation has no impact to the socioeconomic environment. Divers’ experience of the sanctuary marine environment is not diminished through the inability to attract, touch or disturb rays and Whale Sharks. Additionally, as a result of public comment, NOAA is clarifying two issues associated with this regulation. The first is that behavioral responses by a ray or Whale Shark produced by passive interaction with a human does not constitute a violation of the regulations. NOAA is only concerned with prohibiting active human conduct that disturbs the animals through (but not limited to) touching, handling, riding, pursuing, chasing, hunting, or restraining a ray or whale shark. The second is that NOAA is including an exception for lawful fishing with conventional hook and line gear. Public comments received by NOAA indicate that some small rays such as sting rays can sometimes be caught as by-catch by lawful hook-and-line fishing. NOAA’s intention with this new regulation was not to impose restrictions on users of conventional hook and line gear. The species of rays and Whale Sharks that NOAA is concerned about protecting would not be likely by-catch of hook and line recreational fishing. By adding an exception for the use of conventional hook and line gear, NOAA clarifies that the prohibition on killing, injuring, attracting, touching or disturbing rays and Whale Sharks does not apply to accidental by-catch during lawful fishing in the sanctuary.

Any positive impact of this regulation, however, is not considered significant under the NEPA framework, since this regulation eliminates only one threat to these animals and only while the animals are within the boundaries of the sanctuary. When taken into consideration with other potential threats, this regulation would not meet the NEPA thresholds for having significant beneficial or negative impacts on the environment.

Regulation to reduce pollutant discharges from marine sanitation devices (MSDs) and other sources

RPAP Activity 2.5 updates the existing FGBNMS discharge regulations. It clarifies that vessel discharges from Type III MSDs are prohibited in the sanctuary and allow discharge of clean effluent in the sanctuary from operable Type I and II MSDs. The regulatory change also requires

Environmental Consequences

that vessel operators lock all MSDs in a manner that prevents discharge or deposit of untreated sewage, which also provides a practical compliance element for enforcing this prohibition.

These vessel discharge regulations are consistent with similar regulations recently implemented for other national marine sanctuaries, as well as best management practices of the industry. The current exemption in the FGBNMS regulation for discharging vessel wastes “generated by marine sanitation devices” (§ 922.122(a)(3)(i)(B)) is not intended to allow the discharge of untreated sewage (i.e., discharges from Type III MSDs) into the sanctuary. Type I and Type II MSDs treat sewage, whereas Type III MSDs store waste until it is removed at designated pump-out stations on shore or discharged at sea. Therefore, this modification to the FGBNMS regulations clarifies that only discharges from properly functioning Type I or II MSDs are allowed in the sanctuary.

Further, under the preferred alternative the requirement that effluent from MSDs be “clean” will replace the requirement that they be “biodegradable.” The term “clean” means not containing detectable levels of harmful matter; and “harmful matter” means any substance, or combination of substances, that because of its quantity, concentration, or physical, chemical, or infectious characteristics may pose a present or potential threat to sanctuary resources or qualities. In the final rule implementing these changes for other national marine sanctuaries (73 FR 70487), NOAA determined that the use of the term “biodegradable” potentially raises enforcement and compliance issues. It is not a term that has a recognized legal definition and products are labeled “biodegradable” without reference to a fixed set of standards. Defining the terms “clean” and “harmful matter” in FGBNMS regulations facilitates compliance and enforcement by providing vessel operators with a definition of what is prohibited, and focuses on the type of contaminants that pose the greatest threat to water quality.

For consistency and added clarity, NOAA replaces the exception for “water generated from routine vessel operations” with the requirement that clean deck wash down, clean cooling water, and clean bilge water all be free of detectable levels of “harmful matter” as defined by the regulations. This facilitates compliance by clearly identifying what types of discharges and deposits from routine vessel operations are permitted under the regulations, and focuses on those contaminants that pose the greatest threat to water quality. The requirement also makes the discharge regulations consistent with recent requirements implemented for other national marine sanctuaries.

In addition to the changes above, NOAA is also making a few changes to the discharge regulation based on feedback received during the public comment period. NOAA is clarifying that the general discharge prohibition applies to discharges and deposits made from within “or into” the sanctuary. By adding the words “or into” NOAA is clarifying that the prohibition does not only apply to discharges and deposits originating from within the boundaries of the sanctuary. The prohibition also applies, for example, to immediate discharges and deposits into the sanctuary from aircraft, when waste is thrown into the sanctuary from a vessel, or from other similar activities. This regulatory change will not have an effect on the existing oil and gas activities in the vicinity of the sanctuary as described in Chapter 3, such as High Island 384 and High Island 376. Because of the distance between those platforms and the sanctuary boundaries, NOAA does not foresee that either platform would be impacted by the new rule because NOAA

Environmental Consequences

does not envision conditions that enable a discharge from these platforms to be considered a direct discharge under sanctuary regulations.

The purpose of the regulation is not create new restrictions on otherwise lawful activities occurring beyond, but adjacent to the, sanctuary boundaries. Rather, NOAA's goal is to ensure consistency among the regulations of other sanctuaries. Discharges or deposits originating from beyond the sanctuary would still remain subject to the regulations at 922.122(a)(3)(ii), which requires proof of entry into the sanctuary and injury to sanctuary resources to constitute a violation.

NOAA is also clarifying that exception for discharges of fish parts applies only to discharges made during the conduct of fishing with conventional hook and line gear within the sanctuary. This rule prevents the dumping of fish, fish parts, or chumming materials at all other times except for during fishing with conventional hook and line gear within the sanctuary.

The revised pollutant discharge regulation will have beneficial impacts to water quality by eliminating harmful discharges of waste into the sanctuary. The proposed regulation will not have negative impacts as it does not require any additional investment in equipment or cost for waste removal for vessel operators. Due to the small size of the sanctuary and far distance from shore, requiring the vessel operators to hold waste from Type III MSDs for discharge beyond sanctuary boundaries is a reasonable alternative to discharging within the sanctuary. There are minor additional beneficial impacts to water quality of the sanctuary resulting from the changes to the discharge regulations clarifying that discharges "into" the sanctuary are also prohibited and from preventing the dumping of fish parts not associated with fishing with hook and line gear. Any positive impact on water quality, however, does not meet the NEPA threshold for significance because the regulation limits only a single source of water quality pollution; the action taken in consideration of other water quality issues will not have a significant impact, according to NEPA standards, on any individual or combined resources.

Visitor Use Action Plan

The VUAP includes activities to improve the quality and quantity of visitor information, to reduce potential user conflict by developing dive flag requirements and guidelines for proper use of mooring buoys, and to protect and maintain NOAA property by developing related regulations and a mooring buoy plan. Activities such as developing guidelines, plans, or web-based reporting systems will occur within existing facilities and will not significantly change the use of those facilities or increase traffic. Within the NEPA framework, therefore, these activities will have little to no potential to significantly impact the quality of the human environment. However, when these activities are paired with the proposed regulatory changes discussed below, sanctuary users are expected to benefit from the increased safety standards and improved condition of NOAA property. These changes to the FGBNMS regulations will require the use of dive flags while divers are in the water, require minimum distances and operating speeds for vessels in proximity to dive flags, and protect NOAA property.

Regulations regarding dive flag and vessel operation requirements

VUAP Activity 2.1 revises FGBNMS regulations by requiring that all vessels engaged in diving activities in FGBNMS clearly exhibit either the blue and white International Code flag "A"

(“alpha” dive flag) or the red and white “sports diver” flag when divers from that vessel are in the water and remove it once divers exit the water and return on board. Because the entire sanctuary is within federal waters, use of the “alpha” flag would be consistent with the U.S. Coast Guard requirement for small vessels engaged in diving operations whenever these vessels are restricted in their ability to maneuver if divers are attached to the vessel. However, in sports diving, where divers are usually free swimming, the Alpha flag does not have to be shown and the U.S. Coast Guard encourages the continued use of the traditional sports diver flag. The sports diver flag is an unofficial signal that, through custom, has come to be used to protect the diver in the water. See the “Eighth Coast Guard District Special Notice to Mariners Gulf Of Mexico 00-2008” for more detailed information (<http://www.uscg.mil/d8/waterways/marinfo.asp>). Use of a dive flag, consistent with U.S. Coast Guard requirements and recommendations promotes better enforcement of sanctuary regulations.

Though not significant within the NEPA framework, this regulation will have beneficial impacts on the quality of the human environment by improving safety and reducing user conflict between divers and vessel operators.

Operations and Administration Action Plan

The OAAP provides the framework for the organizational structure and functions of the sanctuary to address marine resource protection, research and monitoring, and education and outreach. In general, the actions in the OAAP strengthen staffing and support capabilities, maintain and develop site infrastructure, and enhance the use of volunteers. Activities such as hiring staff and enhancing operations have little to no potential to significantly affect the quality of the human environment so long as these activities occur within existing facilities. As the development of future infrastructure (e.g., the construction of new or renovation of existing facilities) is considered to meet the goals and objectives of this action plan, the appropriate environmental review of the alternatives under consideration would be conducted before decisions are made.

4.3 Cumulative Effects Analysis and Conclusion

This programmatic environmental assessment analyzes the administrative and programmatic activities associated with the Preferred Alternative (Alternative 2) to revise the FGBNMS management plan and take regulatory actions. Administrative activities conducted within existing facilities, such as consultations, outreach, administrative frameworks, development of plans, and data analysis will have little to no potential to significantly affect the quality of the human environment according to NEPA standards. Activities to manage the sanctuary as outlined in the final management plan, considered together with the many natural and human-induced stressors to sanctuary resources, generally result in a cumulative beneficial impact to these resources. However, as with the administrative activities, the positive impacts do not meet the NEPA threshold for significance. This is because at a programmatic level, no single activity, when taken in consideration with others, will have significant beneficial or negative impacts on any individual or combined resource.

Several actions from other agencies will also influence the environment of the outer continental shelf in the vicinity of the FGBNMS. BOEM regulates activities associated with the exploration, development and production of oil and gas resources in this area. The FGBNMS is included in

Environmental Consequences

the Western Planning Area, and the area around the sanctuary will continue to be leased for hydrocarbon development. Environmental standards have been in place for many years to provide protection to the FGBNMS and other topographic features of this area, and these criteria have been found to be effective in minimizing potential impacts of oil and gas development. Additional protective measures are not proposed in the revised management plan and are not anticipated at this time. Implementation of the management plan, which is NOAA's preferred alternative, would not result in any measurable cumulative effects in conjunction with BOEM's management framework for oil and gas activities because the actions described in the management plan are small in scope and scale and are not directly related to oil and gas development.

In the same way, EPA regulates discharges associated with offshore energy activities, and specific provisions have been incorporated into the National Pollutant Discharge Elimination System (NPDES) general permit for the Gulf of Mexico to protect the FGBNMS. Again, implementation of the management plan, which is NOAA's preferred alternative, would not result in any measurable cumulative effects in conjunction with EPA's management of vessel discharges because the actions described in the management plan are small in scope and scale and any benefits from regulating discharges within the sanctuary are insignificant due to the small size of the sanctuary and its distance from shore.

The region also falls under the jurisdiction of the Gulf of Mexico Fishery Management Council (GMFMC) relating to the management of fishery resources. The GMFMC has designated the FGBNMS, as well as a number of other reefs and banks in the vicinity, as Habitat Areas of Particular Concern (HAPC) that recognizes the role these areas play as essential fish habitat. All of these policies have been in place prior to review and revision of the FGBNMS management plan, and ONMS will continue to coordinate with the respective programs. The effects of such interactions will not have a significant cumulative impact on the natural or human environment beyond that which already exists since the proposed action does not include anything that would impact essential fish habitat.

It is important to note that natural and human-induced stressors may somewhat lower the beneficial effects of implementing the preferred alternative. Such stressors include, for example: impacts of climate change, such as increased water temperatures and ocean acidification; major natural disasters, such as hurricanes; and major anthropogenic damage, such as oil spills and overfishing. However, the outcome of these external stressors is not expected to be altered significantly by the implementation of the preferred alternative. Therefore, cumulative impacts of this action are not considered significant under the NEPA.

To the extent that future activities considered under any of the action plans (which range from infrastructure construction, management measures to implement sanctuary expansion, or establishment of an experimental closure to evaluate the impacts of diving and fishing) are conducted in the human environment, a NEPA review to analyze the impacts of alternatives would be conducted.

Therefore, this programmatic environmental assessment on the final management plan for FGBNMS results in a Finding of No Significant Impact. Accordingly, no environmental impact

Environmental Consequences

statement was prepared for the purposes of approving the final management plan. This does not preclude NOAA from analyzing specific activities (as described in the Environmental Consequences section above) under NEPA and analyzing the potential for significant effects of an action and its alternatives in a future environmental assessment or environmental impact statement, as necessary.

Section 5: Public Comments

5.1 Responses to Comments

The National Oceanic and Atmospheric Administration (NOAA) conducted two public hearings to gather input on the FGBNMS draft management plan (DMP)/programmatic environmental assessment (PEA) and proposed rule during the public comment period from October 22, 2010 to January 20, 2011. All written and verbal comments received during the public comment period were compiled and grouped into eight categories. Similar comments from multiple submissions have been treated as one comment for purposes of response. NOAA considered all comments (including editorial comments on the DMP/PEA) and, where appropriate, made changes that are reflected in the final rule, the final management plan (FMP), and the programmatic environmental assessment (EA). Substantive comments received are summarized below, followed by NOAA's response.

Sanctuary Expansion

Comment 1. Sanctuary expansion is not necessary because the proposed reefs and banks have relatively low visitation by scuba divers and fishers compared to other sanctuaries. Are there other ways to protect additional reefs and banks in the Gulf of Mexico without sanctuary expansion?

The National Marine Sanctuaries Act (NMSA) authorizes the Secretary of Commerce to designate and protect areas of the marine environment with special national significance due to their conservation, recreational, ecological, historical, scientific, cultural, archeological, educational, or esthetic qualities as national marine sanctuaries. It is this concept of special places that persuades us to protect and enhance certain marine areas, even before impacts occur or without immediate pressures on the resource. Sanctuary expansion would allow other reefs and banks in the northwestern Gulf of Mexico to benefit from comprehensive management, something currently not available by other means.

The sanctuary expansion action plan does not make any determination regarding the various options for expanding the sanctuary or regulations within expansion areas. The action plan only lays out the framework for conducting a thorough environmental review required by NEPA and NMSA. Alteration to the boundaries of FGBNMS (or expanding the sanctuary) would necessitate a change to the FGBNMS terms of designation, regulations, and coordinates. Should NOAA decide to pursue boundary expansion, NOAA will prepare a draft environmental impact statement (DEIS) and conduct extensive public review.

Other means of protecting additional reefs and banks in the Gulf of Mexico include, for example, No Activity Zones managed by the Bureau of Ocean Energy Management (BOEM) or Habitat Areas of Particular Concern managed by NOAA's National Marine Fisheries Service. These kinds of conservation measures have specific purposes and are not designed to address the need to protect an ecosystem from a holistic perspective.

Comment 2. The public should not have limited access to and use of potential new sanctuary areas. Regulations in any new sanctuary areas should not prohibit fishing and diving.

This final rule does not expand any area of the Sanctuary. NOAA has yet to determine potential areas to be added to the sanctuary or what regulations are needed in possible new expansion areas. The management plan states that new areas would be subject to the regulations of the current sanctuary, which generally allow fishing and diving; however, site specific regulations may be appropriate. The current FGBNMS management plan would apply or a new management plan would be written and applied to any new areas. Should NOAA decide to pursue boundary expansion, NOAA would prepare a DEIS and conduct extensive public review.

Comment 3. NOAA has not conducted socioeconomic studies to support sanctuary expansion or research only areas.

Activity 1.1 of the sanctuary expansion action plan in the final management plan states that NOAA will develop a DEIS to evaluate alternatives for incorporating additional reefs and banks in the northwestern Gulf of Mexico into FGBNMS. The DEIS will discuss the consequences of sanctuary expansion on the human environment or the socioeconomic resources of the region. The socioeconomic impact analysis will focus on the industries/user groups that depend on the resources of the current FGBNMS and the banks currently being evaluated for inclusion in FGBNMS through sanctuary expansion.

Comment 4. If sanctuary expansion occurs, NOAA should install mooring buoys at all new sites to enhance fishing and diving activities as anchoring will be prohibited.

NOAA agrees that mooring buoys are a useful tool to promote sanctuary use that is compatible with resource protection. Activity 3.1 of the visitor use action plan in the final management plan proposes to create a mooring buoy plan that will evaluate the need for additional buoys, both in the existing sanctuary and in the event any new areas are considered in a sanctuary expansion process. The sanctuary expansion action plan does not make any determination regarding the various options for expanding the sanctuary or regulations within expansion areas. The action plan only lays out the framework for conducting a thorough environmental review required by NEPA and NMSA. Alteration to the boundaries of FGBNMS (or expanding the sanctuary) would necessitate a change to the FGBNMS terms of designation, regulations, and coordinates. Should NOAA decide to pursue boundary expansion, NOAA will prepare a draft environmental impact statement (DEIS) and conduct extensive public review. NOAA has yet to determine the areas to be potentially added to the sanctuary or what regulations are needed in possible new expansion areas. The management plan states that as an extension of the current sanctuary, it is assumed that if any areas are considered for future addition those new areas will be subject to the regulations of the current sanctuary; however, site specific regulations may be appropriate. The current FGBNMS management plan would apply or a new management plan would be written and applied to any new areas. Should NOAA decide to pursue boundary expansion, NOAA would prepare a DEIS and conduct extensive public review.

Comment 5. Designating new reefs and banks in the northwestern Gulf of Mexico as sanctuaries will increase visibility and activity by fishers and divers leading to increased impacts to the resources. Similarly, too much information about the habitats of the sanctuary and surrounding areas, and fishing sites, is provided on the FGBNMS website.

Public Comments

The criteria for evaluation of potential new sites were based on the primary NMSA mandate of resource protection. The benefits of a comprehensive management approach offered by sanctuary designation could outweigh any risk that might exist from increased visibility and activity by fishers and divers. Should NOAA decide to pursue boundary expansion, NOAA will prepare a DEIS that would include an analysis of the potential impacts of increased visibility and visitation.

Research results and information provided on both the FGBNMS website and the National Coastal Data Development Center (NCDDC) website are in the public domain and intended for use by sanctuary users and constituents. One of the purposes and policies of the NMSA is to enhance public awareness, understanding, appreciation, and wise and sustainable use of the marine environment, and the natural, historical, cultural, and archeological resources of the National Marine Sanctuary System. NOAA's goal is to make people aware of their impacts and give them the knowledge and skills to become good stewards of the sanctuary and the regional marine environment.

Fishing

Comment 6. NOAA's gear prohibition for fish harvesting in FGBNMS should be reconsidered. The impact of spearfishing on the sanctuary environment is minimal. What research has been done to support the current prohibition and why is spearfishing not allowed in the sanctuary?

NOAA is not proposing to change regulations associated with spearfishing, or any other type of fishing, at this time. If the boundary of FGBNMS is expanded, however, any regulations related to fishing, including spearfishing, would be evaluated through a public process for each new area under consideration.

Spearfishing has been prohibited in FGBNMS since its designation in 1992. The prohibition was due primarily to concerns raised by studies that demonstrated that spearfishing could be detrimental to fisheries resources through the selective removal of large predator species. Research conducted since sanctuary designation supports this concern and reinforces the rationale for a spearfishing prohibition. A summary of this research is available on the sanctuary website (<http://flowergarden.noaa.gov>)

Comment 7. NOAA should allow boaters to carry stowed spearguns on board vessels in FGBNMS to facilitate spearfishing in areas outside of the sanctuary before or after a sanctuary visit.

Sanctuary regulations prohibit the possession of any type of fishing equipment (including spearguns), except for conventional hook and line gear, unless passing through without interruption. The reason for this restriction is related to the ability to reasonably enforce the regulation. It is difficult to enforce a spearfishing prohibition if the possession of spearfishing equipment is allowed in the sanctuary. If only the use of such equipment is prohibited, it would require that direct observation of spearfishing activity be made by a law enforcement entity. In a remote location such as FGBNMS, where the activity would occur 70-100 feet below water, enforcement by observation only would be nearly impossible. The existing regulation has been in effect since designation 20 years ago, and it has not resulted in undue restriction on visitor use

and activity. Therefore, the regulation will remain as written. If expansion is considered in future analysis, when regulations are considered for any potential new areas to be added to the sanctuary, the use and possession of spearguns would be evaluated on an individual area basis.

Comment 8. NOAA should limit the use of inappropriate fishing gear to protect sanctuary resources or prohibit fishing altogether in the existing sanctuary.

National marine sanctuaries are managed by NOAA to protect and conserve their resources, and to allow uses that are compatible with resource protection. Current FGBNMS regulations limit fishing within the sanctuary to conventional hook and line gear. Fishing by use of any other gear, including spearguns, is prohibited.

During the scoping process for the revised management plan and in response to the DMP, many commenters asked NOAA to consider closing all or portions of FGBNMS to fishing. Although fishing pressure is perceived to be moderate, the impact on local fish populations is not well known at this time. The spatial resolution of fishing data is currently not precise enough to quantitatively assess fishing pressure within the sanctuary. The research and monitoring action plan and the visitor use action plan in the final management plan lay out strategies to obtain information that would allow NOAA to evaluate compatible uses of the sanctuary. In addition, Activity 2.3 of the resource protection action plan addresses the need for additional measures to protect resources from impacts associated with inappropriate fishing gear.

Comment 9. NOAA has not presented evidence that further fishing restrictions are needed or that fish populations are declining. Why are fishing and diving impact studies necessary?

At this time, NOAA is not proposing any regulations that would further restrict fishing activity. It is well documented that most fishery stocks for which there are stock assessments in the northern Gulf of Mexico have undergone or are still undergoing overfishing. Many species, such as snapper, some species of grouper, amberjack and others have declined significantly in the Gulf of Mexico since records have been kept. Although there are recent data to suggest that some species (such as red snapper) have shown limited recovery in population size, they are still much lower than historical levels. It is logical to assume that fish populations within FGBNMS have also been similarly affected by the general decline of fish stocks throughout the Gulf of Mexico. However, the data that do exist, such as fish landing survey information, have not been collected at a scale to adequately evaluate impacts on an area the size of the sanctuary. Therefore, NOAA believes that the fishing and diving impact studies would provide valuable information for the management of the sanctuary.

Diving

Comment 10. Through multiple DMP proposals, NOAA is pursuing policies that seem to discourage recreational diving. The recreational dive community should be embraced and encouraged to assist with resource protection.

ONMS embraces and welcomes diving at FGBNMS. The management strategies are not intended to discourage recreational diving within the sanctuary. Rather, NOAA is protecting the resource while enhancing visitor safety. Traditionally, recreational divers have been among the strongest supporters of the sanctuary—from leading the effort for sanctuary designation, to

serving as naturalists on board charter boats, to reporting observations when visiting the sanctuary. NOAA intends that the changes in sanctuary management will not diminish the recreational diver's experience. By working together with sanctuary users, especially recreational divers, NOAA can more effectively meet its goals and protect sanctuary resources.

Comment 11. NOAA should adopt the “Blue Star” program for FGBNMS.

The Blue Star program was established by Florida Keys National Marine Sanctuary management to recognize charter boat operators who promote responsible, sustainable and educational diving and snorkeling practices. An activity to examine the implementation of the Blue Star program for FGBNMS was added to the Education and Outreach Action Plan (Activity 3.3).

Ray/Whale Shark Regulations

Comment 12. The proposed regulation prohibiting the disturbance of whale sharks and all species of rays is too broad. The prohibition should only apply to manta rays and whale sharks.

There are a variety of ray species that utilize the habitats within FGBNMS. In addition to the giant manta, there are other pelagic (free swimming) ray species commonly observed, including at least two species of *mobula* (devil) rays, the spotted eagle ray, and the cownose ray. Several species of bottom-dwelling rays also live within the sanctuary, including the southern stingray and rough-tail stingray. NOAA believes that all species of rays should be included in the regulation that prohibits disturbance. It has been demonstrated in other areas of the world that stingrays and other rays can be subject to negative disturbance from visitor activities. See the programmatic environmental assessment for additional detail and references regarding impacts on ray species in FGBNMS.

Comment 13. The proposed regulation to protect rays and whale sharks relies on a definition of “disturb or disturbing a ray or whale shark” that includes any activity that “has the potential to disrupt.” NOAA should revise this catch-all phrase in the definition which would potentially place every sanctuary visitor in violation of the proposed rule. NOAA agrees. The definition has been revised to address this concern and additional information has been added to the preamble.

Comment 14. Using scientific studies from other locations (e.g. the Cayman Islands) to support regulations at FGBNMS is inappropriate because the interactions between sanctuary visitors and wildlife are different at the sanctuary than elsewhere. FGBNMS does not have heavy visitor use like other areas.

The purpose of the reference to the Cayman Island study on stingrays was to provide an example of an area that is experiencing visitor use that may be having potentially detrimental impacts on a species of ray. It is not anticipated or suggested that this particular issue is or will ever be a problem at FGBNMS. It is relevant, however, because stingrays are included in the proposed regulation for FGBNMS, and it clearly demonstrates that intense visitor activity can affect the behavior and health of a ray species, requiring management action to control potential impacts.

Comment 15. NOAA has not demonstrated that divers are causing physical harm to rays and whale sharks. The proposed regulation is excessive.

NOAA has supplemented the programmatic environmental assessment with additional information and references on the impacts of divers on rays and whale sharks.

Visitor Use

Comment 16. The proposed dive flag regulation should include the use of the red and white diver down or “sports diver” flag, because it is more widely recognized by divers. The proposed regulation also appears to be inconsistent with the existing requirement for use of the alpha flag in the USCG navigation rules.

NOAA agrees. The regulation has been revised to address this concern and make it consistent with USCG navigation rules.

Comment 17. NOAA should implement a vessel registration system for FGBNMS. Access to the sanctuary could be controlled by issuing visitation permits.

Although NOAA agrees that a vessel registration system would provide information on visitor use dynamics, establishing a visitation permitting system would be difficult. NOAA plans to evaluate the effectiveness of the voluntary registration system before considering a mandatory visitation permitting system. NOAA is gathering more information about sanctuary use and has asked visitors to use the voluntary trip report form available on the FGBNMS website. Activities 1.1 and 1.2 of the visitor use action plan describe the need for and benefits of voluntary vessel registration and a visitor use monitoring program.

Comment 18. NOAA should collaborate with other agencies and industry to increase enforcement efforts at FGBNMS. More enforcement is needed. Add surveillance equipment to platforms.

NOAA agrees. Currently, enforcement of sanctuary regulations is done with support from the U.S. Coast Guard and NOAA’s Office of Law Enforcement. NOAA plans to increase collaboration with those entities as well as the Texas and Louisiana state law enforcement agencies. Enforcement at the sanctuary is logistically difficult due to the distance from shore. NOAA recognizes that partnering with industry to place monitoring or surveillance equipment on the production platform that lies within current sanctuary boundaries could greatly enhance enforcement capabilities. Therefore NOAA has added an activity to the resource protection action plan in the final management plan to consider this more thoroughly.

Discharge

Comment 19. NOAA should prohibit all discharges within the sanctuary, including treated sewage.

NOAA is not prepared to prohibit all discharges within the sanctuary at this time. Given the distance from shore, water depth, number and type of vessels currently operating in the area, and current scientific knowledge, NOAA feels that allowing clean discharges will provide adequate protection for sanctuary resources while still allowing compatible uses.

Comment 20. The new language in the proposed rule that prohibits “discharging or depositing from within or into the sanctuary” is too broad and open-ended and is cause for concern by the oil and gas industry, especially where entities are already permitted under a National Pollutant Discharge Elimination System (NPDES) general permit for the Gulf of Mexico.

By adding the words “or into,” NOAA is clarifying that the prohibition does not only apply to discharges originating in the sanctuary, the prohibition also applies, for example, to immediate discharges and deposits into the sanctuary from aircraft, when waste is thrown into the sanctuary from a vessel, or from other similar activities.

This regulatory change will not have an effect on the existing oil and gas activities in the vicinity of the sanctuary. For example, the two existing platforms closest to the sanctuary are: (a) High Island 384, located 0.26 miles (1373 feet) from the boundary of West Flower Bank; and (b) High Island 376, located 0.22 miles (1162 feet) from East Flower Garden Bank. Because of the distance between those platforms and the sanctuary boundaries, NOAA does not foresee that either platform would be impacted by the new rule because NOAA does not envision conditions that would enable a discharge from these platforms to be considered a direct discharge under sanctuary regulations and consequently violate 15 CFR § 922.122(a)(3)(i).

The purpose of the regulation is not to create new restrictions on otherwise lawful activities occurring beyond, but adjacent to, the sanctuary boundaries. Rather, NOAA's goal is to ensure consistency among the regulations of other sanctuaries. Discharges or deposits originating from beyond the sanctuary would still remain subject to the regulations at 922.122(a)(3)(ii), which requires proof of entry into the sanctuary and injury to sanctuary resources to constitute a violation.

Education and Outreach

Comment 21. NOAA should build constituency and numbers of sanctuary advocates by increasing volunteer recruitment.

NOAA agrees and recognizes the need for increased volunteer involvement. The strategy to increase public support and stewardship of the sanctuary in the final management plan (EO.3, Activity 3.2) includes an activity to enhance the FGBNMS volunteer program. The planned addition of a volunteer coordinator (OA.1, Activity 1.1), subject to budget allocations, would enable NOAA to fully develop the FGBNMS volunteer program.

Comment 22. NOAA should establish outreach programs in coastal area communities other than Galveston. It should establish a presence in Louisiana near recommended sanctuary expansion areas.

Due to limited budget for outreach, NOAA is currently focusing the majority of its sanctuary outreach efforts in the Galveston area in order to develop a strong local constituency in the region closest to the sanctuary. Nonetheless, NOAA agrees that outreach efforts should not be limited only to the Galveston area, and welcomes opportunities to work with partners throughout the region. For example, NOAA already has sanctuary outreach programs in the form of exhibits in the Audubon Aquarium of the Americas in New Orleans, LA, the Texas State Aquarium in Corpus Christi, TX and the Tennessee Aquarium in Chattanooga, TN. NOAA has also begun to

develop avenues for communicating with fishermen and divers in Louisiana. In the event that the sanctuary is expanded to include banks off of Louisiana, education and outreach programs to reach that region would be developed at that time. The sanctuary expansion action plan does not make any determination regarding the various options for expanding the sanctuary or regulations within expansion areas. The action plan only lays out the framework for conducting a thorough environmental review required by NEPA and NMSA.

Comment 23. Education and outreach programs should emphasize how human activities impact marine habitats and the benefits of marine reserves.

NOAA education and outreach presentations, programs, and products routinely include information about human impacts on marine habitats. NOAA also recognizes the value and importance of educating people about a variety of marine management techniques, including marine reserves. For example, NOAA produces lesson plans and activities on topics such as watersheds and marine debris. In addition, information about human impacts is incorporated throughout the FGBNMS website.

Other

Comment 24. The FGBNMS management plan should thoroughly address the potential risks to FGBNMS associated with oil and gas industry operations in the Gulf of Mexico. NOAA should consider additional regulations due to the potential impact of oil spills.

FGBNMS is located within one of the most heavily developed offshore oil and gas exploration areas in the world. The potential for impact to the marine environment of the Flower Garden Banks from an oil-related incident has been considered since before the area became a national marine sanctuary. Beginning in the 1970s, the Minerals Management Service (now reorganized into the Bureau of Ocean Energy Management (BOEM) and the Bureau of Safety and Environmental Enforcement (BSEE)), identified the Flower Garden Banks and many other reefs and banks of the northwestern Gulf of Mexico as areas that warranted special protection. They developed a set of requirements, called stipulations, to help minimize the threat of impact from offshore oil and gas activities (Reference: Notice to Lessees, NTL No. 2009-G39, "Biologically-Sensitive Underwater Features and Areas," Effective Date: January 27, 2010). The earliest such stipulations were published in the Final Environmental Impact Statement for the Gulf of Mexico Outer Continental Shelf (OCS) lease sale 34 in May 1974. Since the time that these, and other stipulations, have been in place, they have shown to be very effective in protecting the sanctuary from routine operations associated with offshore oil and gas exploration and development.

Planning for an appropriate response to an oil spill or other hazardous material release in the vicinity of the Flower Garden Banks is of the highest priority for the sanctuary. The Oil Pollution Act of 1990 requires the U.S. Coast Guard to develop an Area Contingency Plan (ACP) for each region of coastal waters. NOAA continues to coordinate with the USCG on updating and refining the ACP for Texas and Louisiana offshore waters. In addition, NOAA will assist the USCG in the development of a specific sub-area contingency plan for oil spill response for the Flower Garden Banks National Marine Sanctuary area, as described in Activity 2.4 of the Resource Protection Action Plan.

Public Comments

Prior to the Deepwater Horizon event in April 2010, which occurred slightly east of the northwestern Gulf of Mexico, there had not been a significant hydrocarbon spill or other incident in the region since the designation of FGBNMS. However, a similar incident could potentially occur in an area that would threaten the health of sanctuary resources. For that reason, NOAA is working closely with BOEM and EPA in reviewing, and revising, if necessary, environmental policies related to offshore oil and gas leasing and development to ensure the highest level of protection of sensitive biological communities.

Given these various existing mechanisms geared toward protecting FGBNMS from the disastrous effects of a potential oil spill, NOAA did not include a specific action plan on this topic in the revised management plan. Rather, staff effort will focus on continuing to coordinate with other agencies. Similarly, NOAA did not revise the sanctuary regulations. NOAA believes the current regulations in place addressing disturbance of the seafloor and discharges in the sanctuary are adequate at this time.

Comment 25. Climate change is the biggest threat to sanctuary resources.

NOAA recognizes that climate change is a potential threat to sanctuary resources. In 2010, NOAA finalized a Climate Strategy for national marine sanctuaries and implemented a “Climate-Smart Sanctuaries” initiative. Language has been added to the operations and administration and education and outreach action plans to incorporate various aspects of this initiative. In addition, NOAA will develop a climate change site scenario and climate change action plan for FGBNMS and plans to pursue Climate-Smart Sanctuary certification as detailed in Activity 2.6 of the resource protection action plan in the final management plan.

Comment 26. Artificial reefs should be protected.

There are no artificial reefs in FGBNMS. If presented with opportunities to make recommendations during decommissioning processes for platforms within sanctuary boundaries, NOAA would examine the options on a case-by-case basis.

Comment 27. NOAA must take aggressive action to prevent the establishment of the invasive lionfish in FGBNMS.

Lionfish have been observed in sanctuary waters since July 2011. As stated in Activity 5.2 of the research and monitoring action plan in the final management plan, NOAA is currently developing research priorities and a response plan to study and manage the impacts of invasive species, including lionfish, on sanctuary resources.

At this time, NOAA’s policy is to remove any lionfish encountered in sanctuary boundaries using prescribed protocols. Permits for the removal of lionfish have been issued to some dive masters of recreational dive charters that frequent the sanctuary to assist in this effort. The diving public is also encouraged to help monitor the situation by reporting any lionfish sightings, including date, time, location, size of the lionfish, and any other information about the habitat or the behavior of the fish to sanctuary staff.

Comment 28. The cost to implement the management plan is unreasonably high. NOAA should carefully consider availability of funds during the proposed sanctuary expansion and prioritize activities, which should include R/V *Manta* operations.

Public Comments

The budget estimates given in the draft management plan are those necessary to support all of the activities identified within the various action plans. While the plan was developed with realistic expectations, NOAA recognizes that not all of the activities can or will be carried out due to budgetary restrictions or other factors. Therefore NOAA agrees with the suggestion that activities should be prioritized in the plan, and this has been added to the document. However, over the years, NOAA has taken a number of steps to increase resources available for sanctuaries. These have included pursuing outside funding sources for critical operations such as grants, partner cost-sharing, donations, and special use permit fees. NOAA has also been successful in leveraging partner capabilities and in-kind support. For example, the U.S. Coast Guard has provided aerial overflights for surveillance and enforcement at FGBNMS.

During the preliminary evaluation of possible sanctuary expansion alternatives by the Sanctuary Advisory Council, budgetary factors were taken into consideration. For example, the areas presented for potential expansion by the Sanctuary Advisory Council were limited by the distance that could be serviced within the operational capabilities of the existing sanctuary vessel (approximately 200 miles from Galveston, TX), reducing the need for additional vessels or infrastructure. Priority consideration was also given to the anticipated amount of funds available in the sanctuary budget to operate the *R/V Manta* in other areas of the Gulf of Mexico. The effective operation of the *R/V Manta* is necessary in the implementation of almost all aspects of sanctuary management. As such, the continued maintenance of this asset is a high priority for NOAA, and will be given due consideration in the allocation of available resources.

5.2 Changes Made Between Draft and Final Documents

This section summarizes the significant changes made to the management plan between its draft and final versions. In general, changes reflect input received from public comments, revisions to update information, and corrections of minor typographical and technical errors. Changes are summarized by section of the management plan. If a section had only minor editorial changes it is omitted from the list below. Substantive and technical revisions were made directly in the text.

General Changes

NOAA made the following changes wherever relevant throughout the document:

- Removed references to this document as a draft
- Replaced MMS (Minerals Management Service) with BOEM (Bureau of Ocean Energy Management)

Changes by Section

Front Piece

- Updated David Kennedy's title from Acting Assistant Administrator to Assistant Administrator on the title page
- Added a new section 4 Public Comments on Draft Management Plan to the Table of Contents

Public Comments

- Added BOEM, Bureau of Ocean Energy Management to the List of Acronyms
- Added reference to section 4, public comments, to the Organization of this Document
- Added Helene Scalliet to the Acknowledgements

3.1 Action Plans

- Added the subsection “How are they prioritized”
- Adjusted total costs in Table 1 to reflect changes made to Tables 5 (EOAP) and 13 (OAAP)

3.2 Sanctuary Expansion Action Plan

- Added priority levels to Table 3

3.3 Education and Outreach Action Plan

- Added reference to climate change as an outreach topic under Activity 2.1
- Added Activity 3.3, Implement NOAA’s Blue Star Program
- Revised Table 5 by adding priority levels and Activity 3.3

3.4 Research and Monitoring Action Plan

- Deleted reference to Wahoo under Activity 1.1, Investigate the reproductive ecology of marine organisms
- Added information on invasive lionfish to Activity 5.2
- Added priority levels to Table 7

3.5 Resource Protection Action Plan

- Added Activity 1.4, Partnering with the oil and gas industry for monitoring or surveillance
- Revised Activity 2.2 to clarify the regulation to prohibit killing, injuring, attracting, touching, or disturbing rays or Whale Sharks
- Revised Activity 2.5 to clarify the regulatory amendments made to the sanctuary regulations as they pertain to discharges in the sanctuary
- Added information to Activity 2.6 on “Climate-Smart Sanctuaries”
- Revised Table 9 by adding priority levels and Activity 1.4

3.6 Visitor Use Action Plan

- Revised Activity 2.1, Revise FGBNMS regulations to require that all vessels in the sanctuary exhibit either the blue and white International Code flag “A” (“alpha” dive flag) or the red and white “sports diver” flag whenever diving activities are being conducted
- Added information to Activity 2.1 on U.S. Coast Guard recommendations for use of the “sports diver” flag
- Added priority levels to Table 11

3.7 Operations and Administration Action Plan

- Added Activity 2.3, Implement the “Climate-Smart Sanctuaries” Initiative
- Revised Table 13 by adding priority levels and Activity 2.3

Summary of the Programmatic Environmental Assessment

- Changed all references of the “Proposed Action” to the “Preferred Alternative”

REFERENCES

- Bernhardt, S.P. (2000) Photographic monitoring of benthic biota at Stetson Bank. M.S. Thesis. Texas A&M University, College Station, Texas. 55 pp.
- Davis, D., Banks, S., Birtles, A., Valentine, P., Cuthill, M. (1997) Whale sharks in Ningaloo Marine Park: managing tourism in an Australian marine protected area. *Tourism Management* 18(5):259-271.
- Gardner, J.V., Mayer, L.A., Hughes Clarke, J.E., Kleiner, A. (1998) High-Resolution Multibeam Bathymetry of East and West Flower Gardens and Stetson Banks, Gulf of Mexico. *Gulf of Mexico Science* 23(1):131-143.
- Jacoby, D.M.P., D.P. Croft and D.W. Sims. 2011. Social behaviour in sharks and rays: analysis, patterns and implications for conservation. Fish and Fisheries. Blackwell Publishing Ltd. DOI: 10.1111/j.1467-2979.2011.004.36.x
- Pierce, S.J., A. Mendez-Jimenez, K. Collins, M. Rosero-Caicedo and A. Monadjem. 2010. Developing a code of conduct for whale shark interactions in Mozambique. Aquatic Conservation.: Marine and Freshwater Ecosystems (2010). Wiley Online Library. DOI:10.1002/aqc. 1149.
- Quiros, A.L. (2007) Tourist compliance to a code of conduct and the resulting effects on whale shark (*Rhincodon typus*) behavior in Donsol, Philippines. *Fisheries Research* 84:102-108.
- Shackley, M. (1998) 'Stingray City' – managing the impact of underwater tourism in the Cayman Islands. *Journal of Sustainable Tourism* 6(4):328-338.
- Schmahl, G.P., Hickerson, E.L., Precht, W.F. (2008) Biology and ecology of coral reefs and coral communities in the Flower Garden Banks region, northwestern Gulf of Mexico. Coral Reefs of the U.S. In Reigl, B.M., Dodge, R.E. (eds.) Coral reefs of the world, Vol 1. Coral reefs of the USA, Springer-Verlag, pp 221-262.
- Zimmer, B., Precht, W., Hickerson, E., Sinclair, J. (2006) Discovery of *Acropora palmata* at the Flower Garden Banks National Marine Sanctuary, northwestern Gulf of Mexico. Coral Reefs. DOI 10.1007/s00338-005-0054-9.

List of Preparers

National Oceanic and Atmospheric Administration
Jennifer Morgan, Flower Garden Banks National Marine Sanctuary, Galveston, TX
Vicki Wedell, Office of National Marine Sanctuaries, Silver Spring, MD
Letise LaFeir, Office of National Marine Sanctuaries, Silver Spring, MD
Helene Scalliet, Office of National Marine Sanctuaries, Silver Spring, MD

References

List of Agencies Consulted

Environmental Protection Agency
Mineral Management Service (now Bureau of Ocean Energy Management and Bureau of Safety and Environmental Enforcement)
NOAA's National Marine Fisheries Service
United States Coast Guard

Distribution List

List of Agencies, organizations, and persons receiving copies

Congressional Recipients

The Honorable Blake Farenthold
U. S. House of Representatives

The Honorable Ron Paul
U. S. House of Representatives

The Honorable Ted Poe
U. S. House of Representatives

The Honorable Pete Olson
U. S. House of Representatives

The Honorable Kevin Brady
U. S. House of Representatives

The Honorable Shelia Jackson-Lee
U. S. House of Representatives

The Honorable Al Green
U. S. House of Representatives

The Honorable Gene Green
U. S. House of Representatives

The Honorable John Culberson
U. S. House of Representatives

The Honorable John Cornyn
U.S. Senate

The Honorable Kay Bailey-Hutchison
U. S. Senate

References

The Honorable Charles Boustany
U. S. House of Representatives

The Honorable Jeff Landry
U. S. House of Representatives

The Honorable Bill Cassidy
U. S. House of Representatives

The Honorable Steve Scalise
U. S. House of Representatives

The Honorable Cedric Richmond
U. S. House of Representatives

The Honorable Rodney Alexander
U. S. House of Representatives

The Honorable Mary Landrieu
U. S. Senate

The Honorable David Vitter
U. S. Senate

Agency and Government Recipients

The Honorable Rick Perry
Governor of Texas

Deputy Executive Director for Natural Resources
Texas Parks & Wildlife Department

The Honorable Bobby Jindal
Governor of Louisiana

Secretary
Louisiana Department of Wildlife and Fisheries

Assistant Administrator for Fisheries
NOAA Fisheries Service

NOAA's National Centers for Coastal Ocean Science
Silver Spring, MD

NOAA's National Coastal Data Development Center
Stennis Space Center, MS

References

NOAA's National Undersea Research Center
Wilmington, NC

NOAA's Southeast Fisheries Science Center
Miami, FL

Assistant Deputy Under Secretary for Installations and Environment
Department of Defense

Deputy Assistant Secretary for Oceans and International Environmental and Scientific Affairs
Department of State

Under Secretary for Science
Department of Energy

Assistant Secretary for Governmental Affairs
Department of Transportation

Director, Office of Ocean, Wetlands, and Watersheds
Environmental Protection Agency

Office of Environmental Policy and Compliance
Department of the Interior

Deputy Regional Director, Gulf of Mexico Region
Bureau of Ocean Energy Management

Steve Bortone, Executive Director
Gulf of Mexico Fishery Management Council

Joy Nicholopoulos, Deputy Regional Director, Southwest Region
United States Fish and Wildlife Service

Industry Recipients

Anadarko Petroleum Corporation

Apache Corporation

ATP Energy

Beacon Exploration

British Petroleum

Chevron Corporation

References

Columbia Gulf

El Paso Energy

Exxon Mobile Corporation

Flextrend Company

Focus Energy

Kerr McGee

LLOG Corporation

Magnum Hunter Resources

Manta Ray Offshore Gathering

Mariner Energy

Merit Energy

Newfield Exploration Company

Noble Energy

Offshore Shelf Company

Pioneer Energy

Union Oil

Stone Energy Corporation

Tarpon Oil and Gas

Transco

Walter Oil and Gas

W&T Offshore Inc

References

FGBNMS Advisory Council Recipients

Recreational Diving
Frank Burek
Montgomery, TX

Recreational Diving
Jesse Cancelmo
Houston, TX

Diving Operations
Cher Walker
Lake Charles, LA

Diving Operations
Capt. Frank Wasson
Key West, FL

Oil and Gas Production
Clint Moore
Spring, TX

Oil and Gas Production
John Hoffman
Houston, TX

Recreational Fishing
Matt Bunn
Richmond, TX

Recreational Fishing
Irby Basco
Nederland, TX

Commercial Fishing
Capt. Mike Jennings
Angleton, TX

Commercial Fishing
Joe Hendrix
Houston, TX

Research
Dr. Larry McKinney
Corpus Christi, TX

References

Research
Dr. Will Heyman
College Station, TX

Education
Dale Loughmiller
Paris, TX

Education
Jacqui Stanley
Houston, TX

Conservation
Ellis Pickett
Liberty, TX

Conservation
Page Williams
Houston, TX

BOEM, Gulf of Mexico Region
James Sinclair
New Orleans, LA

U.S. Coast Guard
LCDR Carmen DeGeorge
New Orleans, LA

NOAA Fisheries
Rusty Swafford
Galveston, TX

NOAA Fisheries Law Enforcement
Charles Tyer
Galveston, TX

Advisory Council Alumni

Lori Traweek
Houston, TX

Capt. Darrell Walker
Lake Charles, LA

Rebecca Nadel
Calgary, Canada

References

Dr. Dick Zingula
Houston, TX

Art Melvin
Houston, TX

Tim Gibson
Houston, TX

John Stout
Seabrook, TX

Dr. Ian MacDonald
Tallahassee, FL

Haidee Williams
Austin, TX

Kristina Hardwick
Houston, TX

Dana Larson
Conroe, TX

Other Recipients

American Petroleum Institute

American Zoo and Aquarium Association
Silver Spring, MD

Artist Boat
Galveston, TX

Association of Marine Laboratories of the Caribbean
Holmes Beach, FL

Aquarium Pyramid at Moody Gardens
Galveston, TX

Audubon Aquarium of the Americas
New Orleans, LA,

Cameron Park Zoo
Waco, TX,

References

Center for Coastal Studies at Texas A&M University-Corpus Christi
Corpus Christi, TX

Vice President of Field Conservation Programs
Defenders of Wildlife
Washington DC

Director of Strategic Conservation Initiatives, Gulf and Southeast Oceans Program
Environmental Defense
Austin, TX

Environmental Institute of Houston
Gulf Coast Environmental Research - University of Houston Clear Lake
Houston, TX

Harte Research Institute for Gulf of Mexico Studies
Corpus Christi , TX

Houston Sierra Club
Houston, TX

Galveston Bay Conservation and Preservation Association
Seabrook, TX

Galveston Bay Foundation
Webster, TX

Gulf of Mexico Alliance
St. Petersburg, FL

Gulf of Mexico Program, NASA's John C. Stennis Space Center
Stennis Space Center, MS

Gulf Restoration Network
New Orleans, LA

Gulf States Marine Fisheries Commission
Ocean Springs, MS

Harte Research Institute for Gulf of Mexico Studies
Corpus Christi , TX

Houston Sierra Club
Houston, TX

References

Louisiana Environmental Research Center
Lake Charles, LA

Louisiana Sea Grant
Baton Rouge, LA

Louisiana Universities Marine Consortium
Chauvin, LA

Marine Conservation Biology Institute
Washington DC

Mote Marine Laboratory
Sarasota, FL

National Center for Coral Reef Research, Rosenstiel School of Marine & Atmospheric Science
Miami, FL

National Coral Reef Institute
Dania Beach, FL

National Geographic Society
Washington DC

National Marine Education Association

National Marine Sanctuary Foundation
Silver Spring, MD

National Ocean Industries Association
Washington DC

Ocean Futures Society
Santa Barbara, CA

Reef Environmental Education Foundation
Key Largo, FL

Sea Center Texas
Lake Jackson, TX

Surfrider Foundation, Galveston Chapter
Galveston, TX

Surfrider Foundation, Texas Chapter
Liberty, TX

References

Tennessee Aquarium
Chattanooga, TN

Texas A&M University-Galveston
Galveston, TX

Texas Institute of Oceanography, Texas A&M University-Galveston
Galveston, TX

Texas Sea Grant
College Station, TX

Texas State Aquarium
Corpus Christi, TX

Texas State Marine Education Center
Palacios, TX

The Gulf of Mexico Coastal Ocean Observing System
College Station, TX

Director, Fish Conservation & Gulf Restoration Program
The Ocean Conservancy

The National Aquarium
Washington DC

