# FLORIDA'S CORAL REEF MANAGEMENT PRIORITIES

## INTRODUCTION

The purpose of this Coral Reef Management Priorities document is to articulate a set of strategic coral reef management priorities developed in consensus by the coral reef managers in Florida. NOAA will use this document in conjunction with its 2010–2015 Coral Reef Conservation Program National Goals and Objectives (available at www.coralreef.noaa.gov) to direct its investment in activities in each jurisdiction through grants, cooperative agreements and internal funding. NOAA will also make the document available to other potential funders (NGOs, federal partners, etc.) and encourage leveraging and new or expanded partnerships to build common coral reef conservation goals.

The work presented here is being facilitated by the NOAA Coral Reef Conservation Program (NOAA CRCP) as part of an ongoing effort to develop place-based, local coral reef management priorities in each of the seven U.S. state and territorial coral reef jurisdictions (American Samoa, Commonwealth of the Northern Mariana Islands, Florida, Hawaii, Guam, Puerto Rico and the U.S. Virgin Islands) and conduct capacity assessments to identify the support needed to accomplish those priorities. The first step in this effort has been to work with the core group of coral reef managers (local, place-based) in each jurisdiction to articulate a set of strategic coral reef management priorities. The second, and next, step will be to complete a capacity needs assessment that helps each state and territory realize these priorities.

This priority setting process stems from an external review of NOAA CRCP conducted in 2007 to independently assess how effectively the program has met its goals. The review included recommendations for future improvements. In response to the review, NOAA CRCP developed a "Roadmap for the Future," laying out new principles and priorities. A key part of this new Roadmap includes developing management priorities for each and all of the coral reef jurisdictions and conducting capacity assessments to achieve these priorities. NOAA CRCP is providing support to the jurisdictions to coordinate with the broader management community in each place to determine these strategic goals and objectives for each state and territory.

This Priority Setting document is divided into the following sections:

1. Scope, Development and Prioritization Process: This section details the process by which the Priority Goals and Objectives were reached, including the preparation for the workshop, work done at the workshop, and post-workshop refining.

2. Strategic Coral Reef Management Priorities: This section presents the entire framework of goals and objectives developed and agreed upon by the core group. In this section, the Priority Goals and Objectives are highlighted. These are the top priorities for management action as agreed upon by the core managers group.

3. Linkages to NOAA's National Goals and Objectives: This section describes how the local jurisdiction management priorities align with NOAA CRCP's priorities and direction forward.

4. Strategic Priorities Not Captured in the Priority Framework: This section lists other goal areas from individual participating core managers and the agencies they represent that are not already reflected in the identified priorities. Many of these issues are of significant importance to specific geographic areas, but may not be relevant to the entire Florida Reef Tract and Ecosystem.

# SECTION ONE:
# SCOPE, DEVELOPMENT
# AND
# PRIORITIZATION PROCESS

This document captures the final set of priorities agreed upon by the core managers group at the priority setting workshop. The core managers group is defined as the "place based" coral reef managers who have the direct responsibility for managing the coral reef ecosystem in a particular geographic location. The managers and those who were asked to participate in the initial analysis and review of this document are listed in Appendix 1. The Florida Coral Reef Tract and Ecosystem spans the full range of reef habitats and associated reef resources from the Dry Tortugas to Stuart, including the backcountry Gulfside of the Keys (see Figure 1).

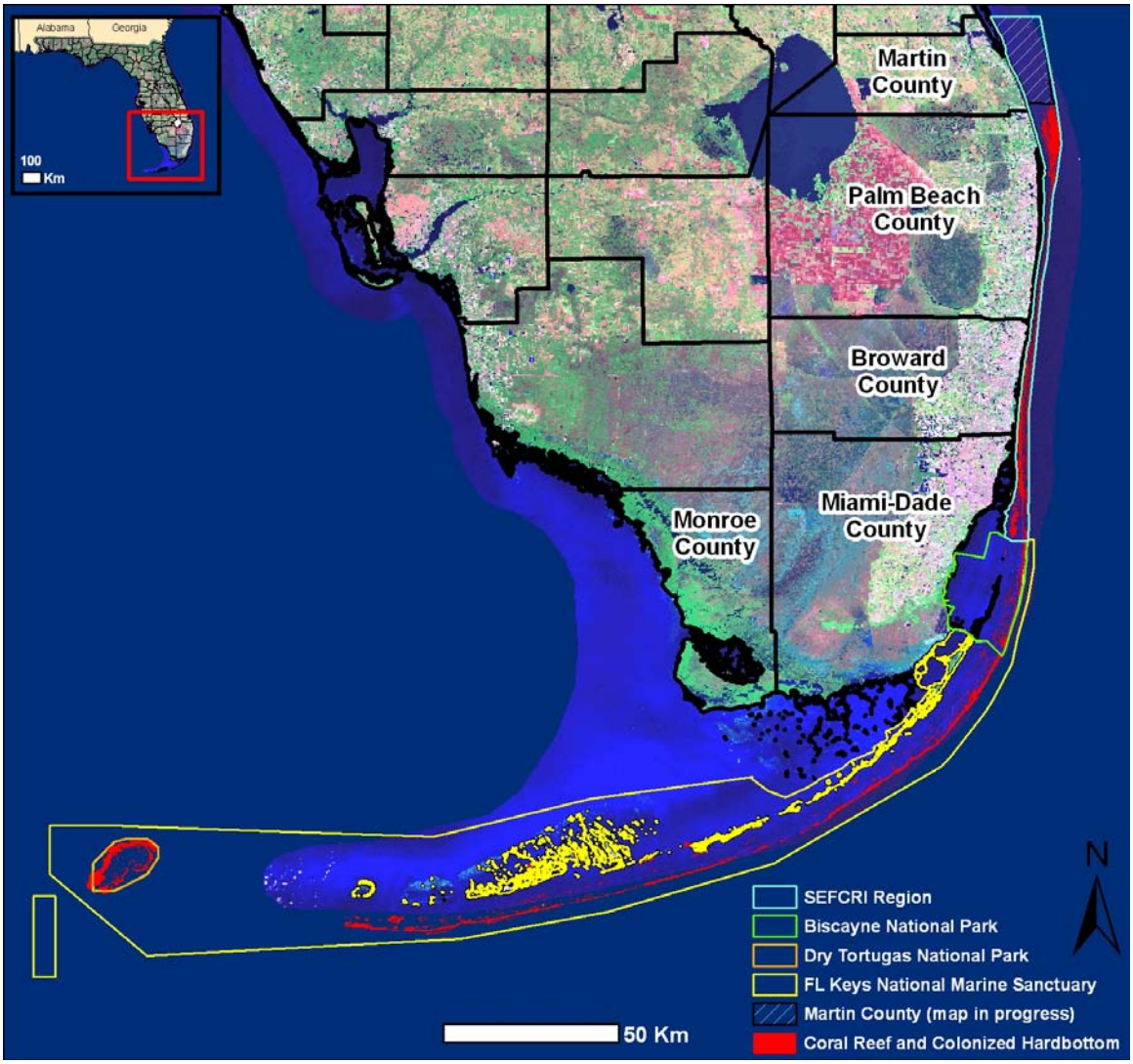


Fig. 1: Map of Florida Reef Tract and Ecosystem (B. Walker, National Coral Reef Institute, 2009).

In preparation for the workshop, previously identified goals and objectives were taken from current management documents and presented in a Situation Analysis. The Situation Analysis is a preparatory document that summarizes: coral reef threats, condition and trends; key management issues; and key agencies' management goals ahead of meetings and interviews. Its primary purpose is to compile and consolidate available management documents from various management bodies and geographic locations. Appendix 2 presents a summary of the Situation Analysis' findings. The Situation Analysis was distributed to the other managers and advisors listed in Appendix 1 for comments.

The Situation Analysis was augmented by a series of interviews that captured managers' working perceptions of management goals as they are stated in management documents. Taken together, this information formed the basis for the workshop discussions by offering an initial set of goal areas to consider.

During the interviews with the core coral reef managers and management advisors in Florida, facilitators noted and identified challenges to and current deficiencies in achieving stated goals and objectives, noting specific capacity gaps that likely will need attention. This information will serve as the starting point for the capacity assessment, to be completed in the following year. It is summarized in Appendix 3.

Workshop participants worked from the Situation Analysis to create a comprehensive set of goals and objectives for four priority areas. These were agreed upon by the core group as need areas that were most important to the successful management and conservation of the Florida Reef Tract and Ecosystem. They are:

- Integrated Reef Management.
- Impacts of Climate Change.
- Land-Based Sources of Pollution.
- Fishing, Diving and Other Uses.

In a workshop, the core group developed specific and time-bound goals and objectives to address each of these need areas. Participants were asked to develop goals and objectives for the entire Florida Reef Tract and Ecosystem, rather than for each workshop participant's local managed area. Issues, plans and programs specific to a smaller geographic area within the Florida Reef Tract and Ecosystem are represented in Section Four.

For the purpose of this exercise, the following definitions were used:

> **Goals** are defined as the highest-level result the jurisdiction seeks to achieve (e.g., stable, sustainable coral reef ecosystems) in the next five to seven years.
>
> **Objectives** are defined as the environmental, social and institutional outcomes the jurisdiction must achieve to reach the end goal. Objectives are generally actionable within a three- to five-year time frame.

The initial set of goals and objectives was developed by the workshop participants in a face-to-face workshop. The goals were then prioritized through an online vote after the meeting. Each workshop participant was allotted eight votes to distribute among sixteen goals, thus enabling them to weight goals as they saw fit. By near unanimous consensus, the eight priority goals represented in Section Two were determined to be top priority coral reef conservation and management goals for the state of Florida.

Objectives for all goals were drafted at the workshop. Similar to the goals, the objectives listed in Section Two were determined by an online vote. Once the priority goals were determined, the objectives falling under the new priority goals were voted upon to determine top priority objectives. Voting was conducted on a goal-by-goal basis in order to ensure that each priority goal had definition and representation on the objective level.

A draft of the final document was distributed to advisors and science advisors listed in Appendix 1 for comments. After the comments were incorporated into the document, it was distributed again to the core-working group for final consensus. Two facilitated phone calls where conducted with members of the core group to finalize the language, to confirm the priorities and to address any remaining concerns.

This document presents (1) the comprehensive set of goals and objectives based on existing local action strategies (LAS) and other management plans, revised by the core group, and (2) a subset of Priority Goals and Objectives within that larger list. **The core group identified the Priority Goals and Objectives as those that require immediate attention over the short term (3–5 years).** These Priority Goals and Objectives will help guide NOAA CRCP funding allocations for management activities. The CRCP understands and respects the flexibility required by coral reef managers in implementing complex conservation and management programs. Should our partners seek funding for projects related to off-priority issues (either in the comprehensive framework of goals and objectives in this document or a new emerging issue not reflected in this document) it will need to be fully explained why the requested funding is most appropriate for the off-priority work versus efforts to address the priority threats identified through this process.

The Priority Goals and Objectives are identified by blue font and are in italics. The attendees selected the priorities through an online vote that occurred after the workshop. The top eight priority goals as identified by the workshop participants are:

- Manage the Florida Reef Tract and Ecosystem using an ecosystem-based approach, including zoning/marine spatial planning and other appropriate tools.
- Build political will and public support to establish the governing policies and administrative structure needed to make reef conservation a priority for Florida.
- Reduce pollutant loading to south Florida coastal waters.
- Restore and preserve coastal estuarine habitats that aid in naturally improving water quality and support the life histories of coral reef biota.

- Educate the public and elected officials on the need to maintain coral reef habitats and coastal water quality. This includes opportunities for economic development in tourism and recreation.
- Develop and implement conservation programs to increase the size, abundance and protection, as appropriate, of coral reef species (both fish and invertebrates), including targeted species critical to reef health and ecological function, such as game species and organisms collected for aquaria.
- Reduce physical marine benthic impacts from recreational and commercial fishing gear and marine debris.
- Improve the efficacy of law enforcement activities.

# SECTION TWO:
# STRATEGIC CORAL REEF MANAGEMENT PRIORITIES

This section presents the entire framework of goals and objectives developed and agreed upon by the core managers group during this process. In this section, the **Priority Goals and Objectives are highlighted in blue/italic font.** These are the top priorities for management action as agreed upon by the core managers group. These priority goals and objectives will guide funding allocations for management activities. Off-priority goals and objectives are shown in plain text.

Not all goals or need areas identified through this initiative—either through the Situation Analysis or the workshop—rose to the level of being a priority for all managers or are encompassed in the needs of the entire jurisdiction. Those that were not captured below are presented in Section Four of this document. Many of these issues are of significant importance to specific geographic areas, but may not be relevant to the entire Florida Reef Tract and Ecosystem.

## A. INTEGRATED REEF MANAGEMENT

***GOAL A1: Manage the Florida Reef Tract and Ecosystem using an ecosystem-based approach, including zoning/marine spatial planning and other appropriate tools.***

Objectives

1. *Create a Florida Reef Management Council within three years to oversee a coordinated ecosystem-based management approach for the entire Florida Reef Tract and Ecosystem (spanning the full range of reef habitats and associated reef resources from the Dry Tortugas to Stuart, including the backcountry Gulfside of the Keys).*
    - *Include representation from local, state and federal agencies that have management decision-making authority (possible council models: South Florida Ecosystem Restoration Task Force, Great Barrier Reef Marine Park Authority, Fisheries Management Councils, U.S. Coral Reef Task Force).*
    - *Develop a memorandum of understanding (MOU) among management agencies to identify purpose, respective roles and authorities.*
    - *Request the Florida legislature formalize the council through enabling legislation and appropriate administrative frameworks to establish and authorize the council to direct the management of the Florida Reef Tract and Ecosystem. (Possible model: Florida Coordinating Council on Mosquito Control established by statute, has local, state, federal and stakeholder representatives; draw lessons gained during the development of the Florida Oceans and Coastal Council.)*
    - *Provide direction (resolutions, position statements) to managing agencies to achieve overall goal of managing Florida Reef Tract and Ecosystem as a single, holistic ecosystem, and work toward developing a comprehensive Florida Reef Tract and Ecosystem Management Plan. The legislature*

*should carefully consider how to vest the council with authority sufficient to maximize the council's effectiveness.*

2. *Develop and implement a comprehensive zoning plan for entire Florida Reef Tract and Ecosystem and implement through placed-based entities and management plans within three to five years.*
    - *Develop education and outreach plan for developing and implementing a comprehensive zoning plan.*
    - *Define zoning alternatives within three years.*
    - *Implement zoning plan.*
    - *Take into consideration relevant policies on marine spatial planning developed by the U.S. Ocean Policy Task Force and any relevant state policies.*

    *(One purpose of a comprehensive zoning plan is to provide consistent signage and materials, i.e., maps and brochures across jurisdictional boundaries, to enhance public knowledge and understanding of opportunities and use restrictions along entire reef tract.)*

3. Establish a regulatory coordination committee under the Florida Reef Tract and Ecosystem Management Council within three to five years.
    - Determine whether there is a need for a new streamlined clearinghouse-style process for local, state and federal permit review, compliance and enforcement to enhance coordination and consistency, or how existing processes might be retooled to achieve the same results.
    - Promote sustainable coastal development to minimize impacts to the Florida Reef Tract and Ecosystem.
    - Use independent experts to review regulatory projects and decisions.

4. Enhance law enforcement capacity of the managing agencies within three to five years.
    - Reach out to law enforcement personnel to gain buy-in and refine needs and goals within three years.
    - MOU to share resources, staff, equipment, etc., and cross-deputize managing agencies' law enforcement officers (e.g., park rangers, county sheriffs, refuge officers, marine patrol, etc.) so all can enforce applicable local, state and federal laws within three years.
    - Provide additional enforcement authority as well as rules and regulations to effectively implement existing laws and policies within five years.
    - Provide additional support (funding, hiring authorities) within five years.

***GOAL A2: Build political will and public support to establish the governing policies and administrative structure needed to make reef conservation a priority for Florida.***

Objectives

1. *Implement a broad marketing campaign to brand the Florida Reef Tract and Ecosystem within three to five years.*
    - *Conduct a comprehensive economic analysis to develop market and non-market value of the coral reef tract and ecosystem.*
    - *Develop marketing plan with expertise of advertising agency within two years.*
        a. *Create consistent messaging to share in various venues across the entire Florida Reef Tract and Ecosystem.*
        b. *Emphasize socioeconomic benefits of coral reef conservation.*
        c. *Find a spokesperson to represent the Florida Reef Tract and Ecosystem.*
    - *Launch marketing efforts within three years.*
        a. *Inform and educate recreational reef users.*
        b. *Inform and educate general public.*
        c. *Inform and educate policymakers and regulators.*

**GOAL A3: Improve understanding of status and linkages of human activities to the condition and trends of the Florida Reef Tract and Ecosystem.**

Objectives

1. Create a full inventory of status, trends and threats to coral reef resources across the entire Florida Reef Tract and Ecosystem within five years.
    - Implement outcomes of the Atlantic/Caribbean Coral Reef Ecosystem Integrated Observing System Workshop (May 2009).
    - Include permitted projects from last 15 years to gauge cumulative impacts.
    - Identify information gaps.
    - Develop and maintain a user-friendly database that includes existing regulations and statutes that apply.

2. Update socioeconomic information (e.g., catalog uses and user groups, perceptions, demographics, etc.) and expand to cover entire Florida Reef Tract and Ecosystem within two years.

3. Fill information gaps and update inventory accordingly (ongoing).

4. Raise awareness about the impacts of exotic species, particularly the invasive Indo-Pacific red lionfish and orange cup coral, on reef health.

**GOAL A4: Improve coordinated emergency response to disturbance events and restoration of reef injuries (e.g., vessel groundings, invasive species outbreaks, algal blooms, bleaching, disease outbreaks, hurricane damage, etc.).**

Objectives

1. Create and sustain an emergency response team to take action anywhere along the reef tract within three years (model after Florida Reef Resilience Program's [FRRP's] Disturbance Response Monitoring [DRM]).
    - Identify existing personnel for an initial Florida Reef Tract and Ecosystem-wide ad hoc team within one year.
    - Develop a response manual using existing protocols (e.g., FDEP-CRCP/SEFCRI, FKNMS, FRRP DRM) within two years.
    - Train additional personnel, including law enforcement, within three years.

2. Create a cross-agency legal team to coordinate settlement and restoration activities among multiple agencies within one year.
    - Coordinate allocation of restoration funds to affected parties and managing agencies.
    - Study needs for statutory authority to affect streamlined legal response and distribution of collected funds, and propose legislative changes if necessary.

3. Create consistent standards and best management practices for primary restoration and compensatory mitigation projects across the entire Florida Reef Tract and Ecosystem to be implemented by responsible parties within one year.
    - Examples:
        a. Draft Environmental Impact Statement for Biscayne National Park's Fisheries Management Plan.
        b. Coral nurseries.
        c. Damage Assessment and Restoration Action Plan, FKNMS Revised Management Plan.

## B. IMPACTS OF CLIMATE CHANGE

**GOAL B1: Develop or improve climate-change projections applicable to the Florida Reef Tract and Ecosystem within seven to nine years.**

Objectives

1. Develop climate-change models at spatial and temporal scales relevant to the Florida Reef Tract and Ecosystem (that are coupled to broader-scale climate-change models) to describe and project modifications in temperature (surface and bottom), salinity, pH and other ocean acidification parameters.
    - Develop scope of work (three to six months) and RFP (three to six months) to evaluate specifications for scaling resolution and parameters for regional climate-change model (one year for deliverable).
    - Determine data availability and conduct gap and suitability analysis (six to nine months) and gather additional data to address deficiencies (one to two years).

- Develop regional-scale model based on recommendations of scoping RFP coupled/linked to broader-scale climate-change models (three to five years).

**GOAL B2: Conduct a climate-change risk and vulnerability assessment and develop a dissemination and communication strategy within seven years (depending on concurrence with GOAL B1).**

Objectives

1. Utilize a coupled physical/chemical, ecosystem and socioeconomic model (based on Florida Reef Tract and Ecosystem climate-change model) to understand system-wide responses to climate change.
    - Develop scope of work (three to six months) and RFP (three to six months) to evaluate specifications and parameters, data availability and data suitability analysis for coupled model (one year for deliverable).
    - Gather additional data to address deficiencies (one to two years).
    - Develop coupled model based on recommendations of scoping RFP coupled/linked to broader-scale coupled models if they exist (three to five years).

2. Compile and translate climate-change forecasts and projections into products that are relevant and usable for improved Florida Reef Tract and Ecosystem management, decision-making and public awareness (starting within six months and ongoing).
    - Gather and synthesize existing information to put into format that addresses present and existing climate-change resource issues focused toward:
        a. Resource managers and decision-makers.
        b. General public.
            - Note: Utilize public media and private agency and NGO outreach programs to raise awareness.
    - Synthesize and translate output from regional-response model to assist ecosystem management decision-making (dependent on output of coupled model, i.e., eight to ten years from start of program).
    - Recommend and implement modifications to regulatory processes relevant to coastal and inshore impacts associated with climate change and sea-level rise.

3. Utilize outputs of Objectives 1 and 2 and other available regional and global information to develop a risk and vulnerability assessment for the Florida Reef Tract and Ecosystem.
    - Assessment to be conducted with existing data and information (one to two years).
    - Periodic updates (three to five years) incorporating new scientific and modeling information on a regional and global scale, including evaluations of efficacy of management actions.

**Goal B3: Focus Florida Reef Tract and Ecosystem climate-change-related management actions and responses.**

Objectives

1. Develop a multi-agency/university/entity, multidisciplinary group or committee to compile, assess and evaluate climate-change-related information for south Florida (Martin to Monroe County). Information from the review would direct efforts of regional climate-change predictions, risk and vulnerability assessments and management actions for regional marine natural resources (with consideration of impacts to the "built" community, cultural resource and economy).
    - Compile and synthesize existing information on climate-change effects for the south Florida region; identify information/projection gaps for areas and resources in the Florida Reef Tract and Ecosystem region, which will serve to provide input and guidance for climate-change prediction efforts.
    - Formulate a regionally based approach to remediate, ameliorate and/or mitigate effects of climate change on the natural marine resources.
    - Formulate a comprehensive "Road Map" to develop and integrate regional climate-change prediction, risk and vulnerability assessments and potential responses.
    - Apply results of regional response models to identify coastal construction methodologies and coastal wetlands restoration activities that are likely to preserve coral resources from the consequences of climate change.

2. Increase knowledge and understanding of resilience processes and distribution of "resilient" areas:
    - Conduct surveys and monitor for correlative relationships between perceived resilient areas and present and antecedent conditions (ongoing and expand existing surveys and monitoring within one year).
    - Direct research toward evaluating organism/community tolerance of and response to multiple environmental stressors (i.e., better understanding of synergistic effects; testing of Adaptive Bleaching Hypothesis) while attempting to tease out climate-change stressors as much as possible.

3. Identify areas of perceived resilience (i.e., high coral cover and abundance) and areas of high vulnerability (which may or may not contain high coral cover/abundance) within the Florida Reef Tract and Ecosystem and provide additional protection to those areas via appropriate marine zoning and reduction of existing stressors (e.g., land-based sources of pollution, beach nourishment, etc.).

4. Implement recommendations from the risk and vulnerability assessment (three to five years).

5. Ensure there is a process to evaluate the effectiveness of management activities toward issues identified by the risk and vulnerability assessment.

6. Ensure coordination and compatibility of jurisdictional activities and approaches to mitigate impacts of climate change.
    - Develop and establish Florida Reef Tract and Ecosystem Council as coordinating entity.

## C. LAND-BASED SOURCES OF POLLUTION

***GOAL C1. Reduce pollutant loading to south Florida coastal waters.***

Objectives

1. *Minimize the impacts of reduced water quality associated with controlled freshwater deliveries and coastal construction activities on coastal, estuarine and lagoonal habitats (i.e., seagrass, oyster, mangrove, hardbottom and coral reef communities). Irregularly timed, high volume releases of fresh water into the marine and estuarine coastal systems can carry excessive nutrient and pollutant loads and are detrimental to coastal habitats and biota.*
    - *Modify the timing, process of delivery and water quality of storm and flood control releases to minimize nutrient and contaminant loading as well as the rate and magnitude of water quality changes in receiving waters.*
    - *Minimize water quality degradation associated with coastal construction activities.*

2. *Assess the impacts of the pollutants known to affect corals and coral reef systems (concentration, interactive/synergistic effects of pollutants and physicochemical characters), including fresh water, nutrients, sedimentation, turbidity, heavy metals, pesticides and herbicides on the Florida Reef Tract and Ecosystem to inform management actions, policy decisions and outreach.*

3. *Design and implement a long-term, spatially robust water-quality-monitoring program for the southeast Florida coastal waters in order to determine sources of pollution and prioritize reduction efforts as well as to indicate successes of current pollutant reduction efforts.*

4. Eliminate the use of septic tanks by providing sanitary sewer infrastructure in order to reduce nutrient and pharmaceutical product loading to groundwater.

5. Assess pollution loading (monitoring at the watershed, estuaries and near-shore oceanic reef areas) and identify pollution reduction strategies.
    - Integrate pollution loading assessment with the Restoration Coordination and Verification (RECOVER) arm of the Comprehensive Everglades Restoration Plan (CERP), EPA's National Pollutant Discharge Elimination System (NPDES), Total Maximum Daily Load (TMDL), Integrated Ocean

Observing System (IOOS), Florida Area Coastal Environment Program (FACE) and other ongoing related programs.
    - Where gaps exist within existing loading assessments (e.g., numeric nutrient criteria for coral reefs), build additional loading models—including dynamic physical and biological interactions—that can be used to answer specific management questions and water quality issues across the Florida Reef Tract and Ecosystem specific to land-based sources of pollution.
    - Understand the connection between land-based sources of pollution and algae/cyanobacteria blooms in order to reduce sources of causative nutrients.

6. Coordinate the various coral reef monitoring programs in the region to maximize efficiency and determine the effects of pollutant reduction efforts.
    - The integrated biological monitoring program shall include examining physical environmental factors, water quality and biological parameters to aid in determining causal factors in biota changes.
    - Biological monitoring shall include investigations at the molecular, cellular, organismal and community level to identify stresses to the coral reefs before irreversible impacts to the communities are manifested.

7. Engage the South Florida Water Management District and Army Corps of Engineers at a high level to consider impacts of all flood control activities on coastal resources (i.e., coral reef and associated estuarine resources).

***GOAL C2. Restore and preserve coastal estuarine habitats that aid in naturally improving water quality and support the life histories of coral reef biota.***

Objectives

1. *Focus existing land acquisition programs such as Florida Forever on acquiring properties aimed at preserving and restoring coastal and wetland habitats to benefit coral reefs.*

2. *Provide incentives through the regulatory process for restoring and preserving wetlands associated with the coastal watershed.*

3. Facilitate and encourage partnerships to access and coordinate restoration program grants and other related funds.

4. Protect living shorelines and implement a program to help maintain their ecological value and to contain runoff from uplands in areas where natural wetland buffers have been eliminated through coastal construction activities.

***GOAL C3. Educate the public and elected officials on the need to maintain coral reef habitats and coastal water quality. This includes opportunities for economic development in tourism and recreation.***

Objectives

1. *Develop an education program for elected officials to impress the need for the activities defined in this document and the environmental and socioeconomic value of southeast Florida's coral reefs and associated habitats. Emphasis shall be placed on the watershed concept and need for environmentally suitable flood-control measures.*

2. *Use monitoring data to assess effectiveness of abatement measures that can be easily and effectively communicated through outreach and education.*

3. *Develop an education and outreach strategy that identifies the target audience, based on abatement measures and mechanisms for delivering to them the information required for wide-scale adoption.*

4. Establish appropriate coastal construction guidelines and educate the public and elected officials on the need to consider the impacts of coastal construction.

**GOAL C4. Regulatory policy shall use coastal water quality impacts to reefs as one of the bases for review.**

Objectives

1. Within three years, conduct research regarding thresholds of effects for common and uncommon reef biota (e.g., hard corals) with respect to key known pollutants *in* and *ex situ* to provide a basis for coastal water quality standards.

2. Improve tools and guidance for assessing cumulative and indirect impacts on reef-system water quality. This includes possibly requiring scientifically based programs that monitor permitted activities to determine effectiveness and/or impacts.

3. Build capacity and develop interagency procedures and protocols within coral reef management agencies along the Florida Reef Tract and Ecosystem to effectively participate in planning-review and permitting processes for development, coastal construction and water-management projects and initiatives.

4. Improve consistency and level of enforcement of current rules and regulations.

5. Develop and implement new legislation to reduce the quantities and impacts of land-based sources of pollution entering the coastal environment.

## D. FISHING, DIVING AND OTHER USES

***GOAL D1: Develop and implement conservation programs to increase the size, abundance and protection, as appropriate, of coral reef species (both fish and invertebrates), including targeted species critical to reef health and ecological function, such as, but not limited to, game species and organisms collected for aquaria.***

Objectives

1. *Fill monitoring and assessment gaps, including fisheries-dependent and independent monitoring, to further understand the effects on other trophic levels. This would include assessing the sustainable limits and impacts of all fishers, including the "curio" trade and recreational and commercial aquarium collectors. Obtain enough information to run population connectivity models for coral reef dependent species.*

2. *Identify larval sources, spawning areas and aggregations. Understand sources of coral and reef fish larvae so that these can be conserved for necessary regeneration and restoration.*

3. *Support and enhance current efforts to update existing stock assessments, eventually developing appropriate criteria to guide harvest regulations (i.e., Maximum Sustainable Yield, Optimal Sustainable Yield). This would include zoning strategies and the potential use of no-take marine areas as well as appropriate legislation to affect those zoning strategies and regulations.*

4. Synthesize existing fish population data to identify information gaps and direct needs for additional monitoring.

5. Develop strategy to formalize coordination among fisheries management and regulatory agencies.

***GOAL D2: Reduce physical marine benthic impacts from recreational and commercial activities and marine debris.***

Objectives

1. *Reduce benthic habitat impacts by implementing, among other actions, appropriate marine zoning (i.e., the potential use of no-take zones, no-anchor zones, no-motor zones, mooring buoy systems) and by providing education and enforcement in sensitive, unique or highly productive habitat areas.*

2. *Reduce misuse of recreational and commercial fishing gear by:*

- *Establishing gear-restrictive zones in areas with sensitive benthic resources.*
- *Requiring education programs regarding natural resources to obtain commercial and recreational fishing license.*
- *Enforcing existing standards for illegal gear.*
- *Review and establish BMPs for commercial activities.*
- *Review rules and guidelines for activities on or around coral reefs.*

3. Develop a centrally located volunteer-based marine-debris reporting and removal program.

***GOAL D3: Improve the efficacy of law enforcement activities.***

Objectives

1. *Obtain additional resources (e.g., staff, equipment, statutory authority).*

2. *Implement regular interagency law enforcement coordination activities (e.g., cross-deputization, review/updating of law enforcement authorities/capacity, etc.).*

3. Improve education and outreach programs as they pertain to fishing/diving/boating regulations.
   - Example: Expand Biscayne National Park's Fisheries Awareness Program to the rest of the Florida Reef Tract and Ecosystem.

4. Through interagency coordination efforts, establish regional consistency standards and communication efforts for fisheries, diving and boating regulations (e.g., central Web site, standard format for brochures, etc.).

5. Develop a Florida Reef Tract and Ecosystem law enforcement training program specific to reef-related regulations and resources for all agencies.

**GOAL D4: Reduce physical marine benthic impacts from recreational and commercial diving and boating.**

Objectives

1. Reduce benthic habitat impacts by implementing, among other actions, the potential use of no-take zones, no-anchor zones, no-motor zones, mooring buoy systems, education, etc.

2. Develop new educational programs to inform the public and change boating and diving practices that impact reefs.

3. Implement a statewide licensing/permit system for boating and/or using coral-reef resources.

4. Expand the Florida Keys' "Blue Star" recognition program for dive shops and operators to the rest of the Florida Reef Tract and Ecosystem. (Note: Include education component regarding exotic species and proper reporting methods.)

**GOAL D5: Review existing and establish new guidelines to minimize aquaculture impacts on coral reefs.**

Objectives

1. Develop appropriate siting criteria that include appropriate buffers between natural areas.

2. Implement required monitoring procedures and reporting for water quality and potential benthic impacts in and around aquaculture facilities.

3. Implement existing and, as necessary, develop new emergency procedures for escapees and natural disasters (e.g., hurricanes, disease outbreaks, exotic species recapture, etc.).

4. Implement requirements for sustainable feed operations and waste removal, and limit potential for genetic impacts.

5. Consider the effectiveness of propagation programs to restore the resource.

# SECTION THREE:
# LINKAGES TO
# NOAA'S NATIONAL
# GOALS AND OBJECTIVES

Table 1 shows how Florida's Priority Goals and Objectives correlate to the NOAA CRCP National Goals and Objectives for coral reef conservation. Table 1 was developed after the Florida Coral Reef Management Priority Setting Process was complete to explicitly identify potential partnerships between the managers in Florida and NOAA CRCP. Addressing both local jurisdictional priorities and national goals and objectives will increase efficiency and leveraging of the resources available for coral reef conservation. NOAA CRCP will use this table to inform future investments in coral reef conservation in Florida.

**Table 1. Correlations of Florida's Priority Goals and Objectives to NOAA's National Goals and Objectives**

| **Florida's Priority Goals and Objectives** | **NOAA's National Goals and Objectives for Coral Reef Conservation** | **Explanation of Correlation (as needed)** |
|---|---|---|
| **GOAL A1: MANAGE THE FLORIDA REEF TRACT AND ECOSYSTEM USING AN ECOSYSTEM-BASED APPROACH, INCLUDING ZONING/MARINE SPATIAL PLANNING AND OTHER APPROPRIATE TOOLS.** | | |
| Objective A1.1. Create a Florida Reef Management Council within three years to oversee a coordinated ecosystem-based management approach for the entire Florida Reef Tract and Ecosystem (spanning the full range of reef habitats and associated reef resources from the Dry Tortugas to Stuart, including the backcountry Gulf-side of the Keys). | None | None |
| Objective A1.2. Develop and implement a comprehensive zoning plan for entire Florida Reef Tract and Ecosystem and implement through placed-based entities and management plans within three to five years. | Fishing Impacts Goal 2<br>Support effective implementation and management of marine protected areas [1](MPAs) and ecological networks[2] of MPAs that protect key coral reef ecosystem components and functions.<br><br>Fishing Impacts Objective 2.1: Identify, characterize and rank priority areas for protection within each jurisdiction, including (but not limited to):<br>• spawning sites, nursery habitats or other areas critical to | Florida's reef managers have prioritized the development of a comprehensive marine zoning plan for Florida's reef tract. While the National Fishing Impacts Goal 2 relates to MPAs, this is only one potential result of a marine zoning system. However, to support the National Fishing Impacts Goal 2 in Florida, the CRCP will inherently need to support and work through the marine zoning processes within the state. |

[1] Marine Protected Area (MPA): An area of the marine environment that has been designated by law or regulation to provide lasting protection for part or all of the resources therein

[2] Ecological Network: A set of MPAs that are connected through ecological processes and that share complementary purposes and synergistic protections.

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| | particular life-history stages.<br>• biodiversity hotspots.<br>• areas with greatest resilience or potential for restoring resilience.<br>• areas facing the greatest threats.<br><br>Fishing Impacts Objective 2.2: Synthesize research on the performance of MPAs that protect key coral reef ecosystem components and functions.<br><br>Fishing Impacts Objective 2.3: Using outputs of Objective 2.1 and 2.2, appropriate models and socioeconomic considerations, identify MPAs that require increased protections or improved management, and areas to be considered for siting of new MPAs that protect key coral reef ecosystem components and functions.<br><br>Fishing Impacts Objective 2.4: Work with relevant agencies, offices and communities to create, implement and improve the management of MPAs that protect key coral reef ecosystem components and functions.<br><br>Fishing Impacts Objective 2.5: Conduct biological and socioeconomic research and monitoring to assess the performance of MPAs with respect to protection and restoration of key coral reef ecosystem components and functions.<br><br>Climate Change Objective 2.4: Promote conservation of coral reef ecosystems through identification of areas that are potentially resilient to climate change and vulnerable areas where actions are likely to increase resilience. Encourage and promote management actions necessary to avoid or minimize impacts and spread the risk due to climate change and ocean acidification. | One type of information that will be considered in the development of the comprehensive zoning plan is the data being produced by the Florida Reef Resilience Program surveys, which identify resilient reef areas along the entire Florida Reef Tract and Ecosystem. |

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| **GOAL A2: BUILD POLITICAL WILL AND PUBLIC SUPPORT TO ESTABLISH THE GOVERNING POLICIES AND ADMINISTRATIVE STRUCTURE NEEDED TO MAKE REEF CONSERVATION A PRIORITY FOR FLORIDA.** | | |
| Objective A2.1. Implement a broad marketing campaign to brand the Florida Reef Tract and Ecosystem within three to five years. | Fishing Impact Objective 4.3: Develop targeted, locally relevant outreach and communication strategies to increase community understanding and support for regulations to protect key coral reef ecosystem species/functional groups and expanded use of marine protected areas.<br><br>LBSP Impacts Objective 3.5: Increase public and political awareness and understanding of the ecological and socioeconomic impacts of land-based pollution on coral reef resources to promote better stewardship and informed decisions regarding activities in watersheds that may adversely impact coral reef ecosystems. | The objective A2.1 is more specific than the National Objectives; however, there is a correlation between Florida's objective and the two National Objectives shown as each of them addresses the need for increased public and political awareness to change behavior in support of coral reef conservation. |
| **GOAL C1. REDUCE POLLUTANT LOADING TO SOUTH FLORIDA COASTAL WATERS.** | | |
| Objective C1.1. Minimize the impacts of reduced water quality associated with controlled freshwater deliveries and coastal construction activities on coastal, estuarine and lagoonal habitats (i.e., seagrass, oyster, mangrove, hardbottom and coral reef communities). Irregularly timed, high volume releases of fresh water into the marine and estuarine coastal systems can carry excessive nutrient and pollutant loads and are detrimental to coastal habitats and biota. | LBSP Impacts Objective 1.3: Implement watershed management plans and relevant Local Action Strategies (LAS) within priority coral reef ecosystems and associated watersheds to improve water quality and enhance coral reef ecosystem resilience. Where needed, develop (or update) watershed management plans that incorporate coral reef protection measures. | In Southern Florida, the intracoastal waterways and associated canals handle large portions of stormwater. This water management, as opposed to sediment and nutrient runoff from a watershed, is a source of great influence on coastal and coral reef water quality. While not worded as a watershed, the principle behind FL objective C1.1 is to reduce pollutant loading to key coral reef systems from the land area of influence. In this case, fresh water is considered to be a pollutant. Also, the entire four-county area from Martin to Miami-Dade is considered one large watershed. |
| Objective C1.2. Assess the impacts of the pollutants known to affect corals and coral reef systems (concentration, interactive/synergistic effects of pollutants and physicochemical characters), including freshwater, nutrients, sedimentation, turbidity, heavy metals, pesticides and | LBSP Impacts Objective 1.4: Promote an integrated effort to fill strategic science gaps that directly inform management decisions related to planning and implementation activities in priority coral reef ecosystems and associated watersheds. | The National Objective states the need to fill strategic science gaps, which suggests that prioritization among science needs should take place. A strategic science gap in Florida is the identification of the levels of impact of various known pollutants on the Florida Reef Tract and Ecosystem. This information will enable the |

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| herbicides on the Florida Reef Tract and Ecosystem to inform management actions, policy decisions and outreach. | | development and implementation of management actions that address the main sources of pollution most severely impacting Florida's coral reefs. |
| Objective C1.3. Design and implement a long-term, spatially robust water-quality-monitoring program for the southeast Florida coastal waters in order to determine sources of pollution and prioritize reduction efforts, as well as indicate successes of current pollutant reduction efforts. | LBSP Impacts Objective 3.1: Ensure that coral reef jurisdictions have adequate resources and capacity to develop and implement management plans, assess water quality and coral reef ecosystem condition, enforce regulations and evaluate performance.<br><br>LBSP Impacts Objective 1.5: Determine the efficacy of management activities through coordinated baseline and performance monitoring to assess progress and adapt management actions as needed. | No explanation needed for correlation with LBSP Impacts Objective 3.1<br><br>The Florida Priority Objective discusses the need to monitor for efficacy of management actions, which correlates to LBSP Impacts Objective 1.5. |
| **GOAL C2. RESTORE AND PRESERVE COASTAL ESTUARINE HABITATS THAT AID IN NATURALLY IMPROVING WATER QUALITY AND SUPPORT THE LIFE HISTORIES OF CORAL REEF BIOTA.** | | |
| Objective C2.1. Focus existing land acquisition programs such as Florida Forever on acquiring properties aimed at preserving and restoring coastal and wetland habitats to benefit coral reefs. | LBSP Impacts Objective 1.2: Identify and prioritize coastal and upland areas for preservation, protection and restoration based on the coral reef ecosystems and associated watershed areas identified in Objective 1.1. | No explanation needed. |
| Objective C2.2. Provide incentives through the regulatory process for restoring and preserving wetlands associated with the coastal watershed. | LBSP Impacts Objective 3.4: Ensure that the necessary and consistent regulatory and programmatic framework exists and is enforced to implement watershed management strategies necessary to protect coral ecosystems. | The National Objective identifies the need for a regulatory framework that supports watershed management and FL's objective identifies how their regulatory framework should be changed to support watershed protection for the benefit of reefs. |
| **GOAL C3. EDUCATE THE PUBLIC AND ELECTED OFFICIALS ON THE NEED TO MAINTAIN CORAL REEF HABITATS AND COASTAL WATER QUALITY. THIS INCLUDES OPPORTUNITIES FOR ECONOMIC DEVELOPMENT IN TOURISM AND RECREATION.** | | |
| Objective C3.1. Develop an education program for elected officials to impress the need for the activities defined in this document as well as the environmental and socioeconomic value of southeast Florida's coral reefs and associated habitats. Emphasis shall be placed on the watershed | LBSP Impacts Objective 3.5: Increase public and political awareness and understanding of the ecological and socioeconomic impacts of land-based pollution on coral reef resources to promote better stewardship and informed decisions regarding activities in watersheds that may adversely impact coral reef ecosystems. | No explanation needed. |

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| concept and need for environmentally suitable flood-control measures. | | |
| Objective C3.2. Use monitoring data to assess effectiveness of abatement measures that can be easily and effectively communicated through outreach and education. | LBSP Impacts Objective 1.5: Determine the efficacy of management activities through coordinated baseline and performance monitoring to assess progress and adapt management actions as needed. | No explanation needed. |
| Objective C3.3. Develop an education and outreach strategy that identifies the target audience, based on abatement measures and mechanisms for delivering to them the information required for wide-scale adoption. | LBSP Impacts Objective 3.5: Increase public and political awareness and understanding of the ecological and socioeconomic impacts of land-based pollution on coral reef resources to promote better stewardship and informed decisions regarding activities in watersheds that may adversely impact coral reef ecosystems. | No explanation needed. |
| **GOAL D1: DEVELOP AND IMPLEMENT CONSERVATION PROGRAMS TO INCREASE THE SIZE, ABUNDANCE AND PROTECTION, AS APPROPRIATE, OF CORAL REEF SPECIES (BOTH FISH AND INVERTEBRATES), INCLUDING TARGETED SPECIES CRITICAL TO REEF HEALTH AND ECOLOGICAL FUNCTION, SUCH AS, BUT NOT LIMITED TO, GAME SPECIES AND ORGANISMS COLLECTED FOR AQUARIA** | | |
| Objective D1.1. Fill monitoring and assessment gaps, including fisheries-dependent and independent monitoring, to further understand the effects on other trophic levels. This would include assessing the sustainable limits and impacts of all fishers, including the "curio" trade and recreational and commercial aquarium collectors. Obtain enough information to run population connectivity models for coral reef dependent species. | Fishing Impacts Objective 1.4: Obtain necessary information on fishing effort in U.S. coral reef ecosystems by measuring fishing intensity, fishing mortality, frequency, area coverage, community dependence, etc., to inform management activities.<br><br>Fishing Impacts Objective 1.6: Conduct applied biological, social and economic research and monitoring to evaluate effectiveness of coral reef ecosystem management actions on key species or groups. | No explanation needed. Again, FL is somewhat more specific, but they are talking about the same kinds of data. |
| Objective D1.2. Identify larval sources, spawning areas and aggregations. Understand sources of coral and reef fish larvae so that these can be conserved for necessary regeneration and restoration. | Fishing Impacts Objective 2.1: Identify, characterize and rank priority areas for protection within each jurisdiction, including (but not limited to):<br>• spawning sites, nursery habitats or other areas critical to particular life-history stages.<br>• biodiversity hotspots.<br>• areas with greatest resilience or potential for restoring resilience.<br>• areas facing greatest threats. | The FL objective identifies the need to understand where larval sources and spawning aggregations are located. This is one component of what the National Objective identifies as important information in the design of MPAs or MPA networks. |

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| Objective D1.3. Support and enhance current efforts to update existing stock assessments, eventually developing appropriate criteria to guide harvest regulations (i.e., Maximum Sustainable Yield, Optimal Sustainable Yield). This would include zoning strategies and the potential use of no-take marine areas, as well as appropriate legislation to affect those zoning strategies and regulations. | Fishing Impacts Objective 1.3: Obtain essential life history and ecological information on key species or functional groups to support management actions. | No explanation needed. Again, FL is somewhat more specific, but they are talking about the same kinds of data. |
| **GOAL D2: REDUCE PHYSICAL MARINE BENTHIC IMPACTS FROM RECREATIONAL AND COMMERCIAL ACTIVITIES AND MARINE DEBRIS.** | | |
| Objective D2.1. Reduce benthic habitat impacts by implementing, among other actions, appropriate marine zoning (i.e., the potential use of no-take zones, no-anchor zones, no-motor zones, mooring buoy systems) and by providing education and enforcement in sensitive, unique or highly productive habitat areas. | None | The correlation above of FL Objective A1.2 to the National Fishing Impacts Goal 2 previously addresses how NOAA may support Florida's efforts in marine zoning. To the extent that those efforts also reduce benthic habitat impacts, it is considered a welcomed benefit. |
| Objective D2.2. Reduce misuse of recreational and commercial fishing gear. | None | |
| **GOAL D3: IMPROVE THE EFFICACY OF LAW ENFORCEMENT ACTIVITIES.** | | |
| Objective D3.1. Obtain additional resources (e.g., staff, equipment, statutory authority). | Fishing Impacts Objective 3.2: Strengthen local agency and community capacity for effective and consistent enforcement of regulations or behaviors that reduce impacts of fishing on coral reef ecosystems. | No explanation needed. |
| Objective D3.2. Implement regular interagency law enforcement coordination activities (e.g., cross-deputization, review/updating of law enforcement authorities/capacity, etc.) | Fishing Impacts Objective 3.2: Strengthen local agency and community capacity for effective and consistent enforcement of regulations or behaviors that reduce impacts of fishing on coral reef ecosystems. | No explanation needed. |

# SECTION FOUR:
# STRATEGIC PRIORITIES NOT CAPTURED IN THE FRAMEWORK

Other priorities identified through this initiative and individual manager's priorities for his/her area of authority may not rise to the level of being a priority for all managers or be encompassed in the needs of the entire jurisdiction. As such, the following section incorporates other high priorities mentioned by individual participating managers that did not get captured in the Priority Goals and Objectives.

From the pre-workshop interviews and literature analysis, the following topics were raised but were not captured in the goals and objectives developed in the workshop. These are not agency-specific goals, but topical areas and issues.

**Storm Damage:** Because of its location, the Dry Tortugas has sustained significantly greater damages to the coral reefs and park facilities due to hurricanes and tropical storms. While other state and national parks indicate expansion of park facilities, in a similar time frame, Dry Tortugas National Park indicates the need to rebuild.

**Cuban Immigration Response:** Dry Tortugas National Park is the only park to indicate the necessity of response to immigrant landings. These include medical response needs and human services as well as possible response to small-vessel impacts to coral reefs.

**Deep-Sea Coral:** Better understanding of deep-sea and mesophotic corals is an emerging topic not addressed in management documents, but touched upon in many interviews. This requires identifying deep-water coral areas as well as monitoring and researching to understand the human impacts on these ecosystems. This applies to the Coral-Habitat Area of Particular Concern (East Florida lithoherms, Miami-Terrace and Escarpment, Portuales Terrace).

**Backcountry Management:** The backcountry region along the Gulfside of the Florida Keys harbors important shallow-water (0–20 foot contour) coral reef resources, including hard-bottom habitats with sponges and soft corals, patch reefs and discrete coral heads. This region has received less attention relative to the main coral reef tract on the Atlantic, but needs to be considered in the context of the entire coral reef ecosystem for inventory, monitoring, research and conservation strategies.

**Placed-Based Management Plans:** In addition to this statewide priority setting document, there are place-based management and strategic plans—either being implemented or developed—of the various management entities that collectively direct management of the Florida Reef Tract and Ecosystem. These ongoing and developing plans of the individual management bodies within Florida are of equal importance on the local scale and their priorities may not be represented in this document. These plans include:

- SE Florida/ FDEP-CRCP, "Southeast Florida Coral Reef Initiative: A Local Action Strategy" (2004).
- SE Florida/ FDEP-CRCP, "Florida Department of Environmental Protection Coral Reef Conservation Program 2010–2015 Strategic Plan" (in preparation).

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- Florida Keys National Marine Sanctuary, “Final Revised Management Plan” (December 2007).
- Biscayne National Park, “Biscayne National Park General Management Plan” (1983).
- Biscayne National Park, “Biscayne National Park General Management Plan” (in progress).
- Biscayne National Park, “Mooring Buoy and Marker Plan” (in progress); “Fishery Management Plan” (in progress); “Coral Reef Restoration Programmatic Plan” (in progress).
- Biscayne National Park, Dry Tortugas National Park, Virgin Islands National Park, Buck Island National Park, “South Florida and Caribbean Exotic Vegetation Management Plan” (in progress).
- Dry Tortugas/Everglades National Park, “Everglades National Park and Dry Tortugas National Park Superintendant’s Annual Report” DRAFT (2006).
- Dry Tortugas/Everglades National Park, Newsletters to the Public including draft alternative plans for new Management Plan for implementation 2011.
- Lower Florida Keys/USFWS, “Comprehensive Conservation Plan and Environmental Assessment” (2009).
- Lower Florida Keys/USFWS & State of Florida, “USFWS & State of Florida Management Agreement for Submerged Lands within the Boundaries of the Key West and Great White Heron National Wildlife Refuges” (1992).
- “Lignumvitae Key Submerged Lands Restoration Plan” (2003).

# APPENDIX 1: PRIORITY SETTING PROCESS PARTICIPANTS

**Core Group: place-based managers of specific area of coral reef.**
Each member of this group was invited to attend the workshop, to partake in an interview prior to the workshop and to participate in document revisions.

Elsa Alvear, NPS–Biscayne National Park
Ken Banks, Broward County
Jeff Beal, FWC–Martin County
Steve Blair, Miami Dade County
Chantal Collier, FDEP–CRCP
Kent Edwards, FDEP–FKNMS
John Griner, FDEP–St. Lucie Inlet Preserve State Park
Dave Hallac, NPS–Dry Tortugas and Everglades National Parks
Brian Keller, NOAA–FKNMS
Sid Leve, FDEP–John U. Lloyd State Park
Mark Lewis, NPS–Biscayne National Park
Erin McDevitt, FWC–Palm Beach County
Jamie Monty, FDEP–CRCP
Anne Morkill, USFWS–Florida Keys National Wildlife Refuges Complex
Sean Morton, NOAA–FKNMS
Janet Phipps, Palm Beach County
Pat Quinn, Broward County
Dan Szopinski, FDEP–John U. Lloyd State Park
Sarah Thanner, Miami Dade County
Joanna Walczak, FDEP–CRCP
Pat Wells, FDEP- John Pennekamp Coral Reef State Park

**Advisors**: **managers of jurisdictions and populations impacting Florida coral reefs.**
Each member of this group was invited to an interview prior to the workshop and to participate in document revisions.

Myra Brouwer, South Atlantic FMC
Jeff Rester, South Atlantic FMC
Billy Causey, NOAA–Office of National Marine Sanctuaries
Miles Croom, NOAA NMFS–Habitat Conservation SERO
Kathy Fitzpatrick, Martin County
Brian Hostetter, NOAA NMFS–Restoration Center
Rich Jones, Monroe County
Jocelyn Karazsia, NOAA NMFS–Habitat Conservation
Joe Kimmell, NOAA NMFS–Sustainable Fisheries
Audra Livergood, NOAA NMFS–Protected Resources
Jennifer Moore, NOAA NMFS–Protected Resources
Mark Robson, Florida FWC
Carrie Simmons, Gulf of Mexico FMC

**Science Advisors: members of the scientific community with expertise in various aspects of coral reef ecosystems.**
Each member of this group was invited to review documents and offer revisions.

Jerry Ault, University of Miami RSMAS
Chris Bergh, The Nature Conservancy
Jim Bohnsack, NOAA NMFS–SE Fisheries Science Center
Joe Boyer, Florida International University
Dick Dodge, NCRI
Jim Forquean, Florida International University
Dave Gilliam, NCRI
Brian Keller, Office of Nation Marine Sanctuaries
Margaret Miller, NOAA NMFS–SE Fisheries Science Center
Matt Patterson, National Parks Service
John Lamkin, NOAA NMFS–SE Fisheries Science Center
Claire Paris, University of Miami, RSMAS
Joe Serafy, NOAA NMFS–SE Fisheries Science Center
Rob van Woesik, Florida Institute of Technology
Brian Walker, NCRI
Jenny Wheaton, Florida Fish and Wildlife Commission

**Legal, Regulatory and Enforcement Advisors: representatives of state and federal government agencies with expertise in legal and enforcement issues.**
Each member of this group was invited to review documents and offer revisions.

Kelly Samek, FDEP–Office of General Council
Vladimir Kosmynin, FDEP–Beaches and Coastal systems
Jennifer Smith, FDEP–Environmental Resource Permitting
Captain Denise Warrick, FWC–Law Enforcement
Lt. Dave Bingham, FWC–Law Enforcement
Lisa Gregg, FWC
Lt. Paul Steiner, USCG–Sector Miami, Waterways Management

# APPENDIX 2: CONTEXT

The Situation Analysis is a preparatory document that summarizes coral reef threats, condition and trends; key management issues; and key agencies' management goals. As an initial step in the priority setting process, the Situation Analysis was used ahead of meetings and interviews to provide a reference point and boundary for priority setting discussions with place-based coral reef managers in Florida.

The documents that make up the basis of this analysis were identified during interviews with this core group of coral reef managers and other managers and advisors in Florida and via a desk review of existing management plans from those agencies that are responsible for, or affect, Florida's coral resource management. The coral reef managers interviewed for this study were identified by the NOAA CRCP team with input from the U.S. Coral Reef Task Force (USCRTF) point of contact in Florida and included NOAA National Marine Fisheries Service (NMFS), Florida Department of Environmental Protection Coral Reef Conservation Program (FDEP–CRCP), National Park Service (NPS), U.S. Fish and Wildlife Service (USFWS), Florida Park Service (FPS), Florida Keys National Marine Sanctuary (FKNMS), Regional Fishery Management Councils and Florida Fish and Wildlife Conservation Commission (FWC)—from the Dry Tortugas to Martin County. It highlights areas with common goals across various geographic jurisdictions and management bodies.

The Situation Analysis identified the following issue areas—which reflect both specific threats as well as tools to mitigate threats—as those that were most commonly referred to in the documents reviewed. These results are listed in no particular order.

**Water Quality**, as discussed in Florida's existing coral reef management and strategic work plans, refers to nutrient loads and turbidity caused by stormwater runoff, sewage impacts due to inadequate stormwater and wastewater treatment infrastructure and poorly mitigated and increased coastal development. In addition, emerging data suggests toxins, pharmaceuticals, endocrine disrupters and pH may impact water quality and coral condition. Due to massive changes as a result of the Comprehensive Everglades Restoration Plan (CERP), there is potential for ecosystem-scale changes in freshwater movement and delivery to the coastal system. This issue area overlaps with land-based sources of pollution as described below.

**Education and Outreach** is a universal and vital management priority with the intent to educate residents and resource users about the importance of, threats to, and impacts of humans on the coral reef ecosystem.

**Restoring and Maintaining the Functional Integrity of Natural Habitats** is a universal theme. Some plans mention this goal in the context of maintaining tourism, while others refer to this goal in the context of maintaining the ecological integrity of the ecosystem as a priority. Conflict may arise as one management body works to increase access while another works to manage current access in an ecologically sustainable manner. Research and monitoring priorities are often included in this area, as

management bodies need to understand the status and trends of the reef, the impacts of actions on ecosystems and the success of mitigation and restoration.

**Mooring, Marking and Mitigating Vessel Impacts** describes a universal concern for anchoring and grounding impacts on ecosystems. Most plans reference a need for better marking and increased mooring buoys in order to decrease anchor damage and vessel groundings.

**Enforcement** of waste disposal, coastal development and boating and fishing regulations is a key component to all plans as well, with nearly all documents referencing a need to coordinate on-the-ground and in-the-water enforcement bodies and more careful and complete permit and adjacent land-development plan reviews.

The following issue areas were mentioned in Florida's plans less frequently but still played a pronounced role in documents reviewed. These results are listed in no particular order.

**Zoning** is mentioned in many existing plans and refers to the need to designate specific areas for specific activities and contains recommendations for general calls for area-wide zoning schemes. This includes a mix of marine protected areas, anchoring/no-anchoring areas, multi-use areas, no-take marine reserves, etc.

**Land-Based Sources of Pollution** pertains to pollutants or sediment from terrestrial sources that degrade water quality or have a direct impact on reef health. This broad topic is either directly or indirectly addressed in the documents' goals and recommendations; Water Quality, defined above, is a subset of this category.

**Fishing** is another broad category that captures the priorities and goals related to the impacts of fishing—both recreationally and commercially—on reef systems, including overexploitation, bycatch and physical impacts to coral reef habitat from gear. This integrates with Restoring and Maintaining the Functional Integrity of Natural Habitats listed above.

**Climate Change** is touched upon lightly by several of the more current documents. Although detailed management actions are rarely listed, it is noted as an important topic in marine resource conservation and management. Effects of climate change that impact coral reefs include ocean acidification, sea level rise, increased ocean temperatures and hurricanes (e.g., wave damage, storm surge, marine debris).

**Direct Physical Impacts of Human Usage** include coastal construction such as dredging, beach renourishment and land-side activities that modify coastal systems' physical, hydrologic and biological processes, which affect coral reefs. This also includes recreational and user activities on or around reef areas, such as diving and associated impacts, and overlaps with many of the management priorities listed above.

# APPENDIX 3: PRELIMINARY IDENTIFICATION OF CAPACITY GAPS

During the interviews with the core coral reef managers in Florida, facilitators worked to understand the working relationship between managers and management documents. Facilitators noted and identified challenges to and current deficiencies in achieving stated goals and objectives, noting specific capacity gaps that likely will need attention.

The Coastal Resources Center at the University of Rhode Island developed and applied common tools for comparative assessments of coastal ecosystem governance. This approach involves three categories, phrased as key statements, for enabling conditions that allow an initiative to successfully execute a sustained plan of action designed to influence the course of events in an ecosystem.

The three categories are: constituencies, commitment and capacity. Each manager was asked to rate a series of statements on a scale of one (strongly disagree) to five (strongly agree) under each of these categories. The statements are meant to test a premise for each of the enabling conditions as defined below.

This baseline will also identify the immediate capacity gaps that are directly related to implementing this strategic approach. These gaps will be explored further, and a capacity assessment will be developed in phase II of this effort, beginning in fiscal year 2010.

**Constituencies**
Premise: *To achieve success, a core of well-informed and supportive* ***constituencies*** *comprised of stakeholders in both the private sector and government agencies must actively support the program.*

Measures:

1. The user groups who are affected by your program understand and support the goals, strategies and targets.
2. There is public support for your program.
3. The institutions that assist in implementing your program, or the institutions that are affected by the plan, understand and support it.

Results:

The results indicate the respondents believe there is a core of informed and supportive constituencies, both individual stakeholders and institutions, for their particular program. Comments taken during this portion of the survey indicate there is a wide range of constituencies affected by coral reef management and conservation. Ensuring that all are well informed and supportive is a daunting task. Programs have, therefore, focused on key user groups and institutions that are organized and have an easily accessible focal point. As an example, the Southeast Florida Coral Reef Initiative (SEFCRI) Local Action Strategy (LAS) document indicates there is an understanding of the threats to and needs of the southeast Florida reef system. Various constituencies, including state, local and

federal agencies as well as non-agency stakeholders, have contributed to creating local action strategies, goals and objectives.

**Commitment**

Premise: *To achieve success, it is necessary that the delegated authorities have expressed **commitment** to the policies of a program and to the allocation of financial resources required for long-term program implementation.*

Measures:

1. The appropriate level of government has formally approved the plan of action.
2. The government provided the program with the authorities it needs to successfully implement its plan of action.
3. Sufficient financial resources have been committed to fully implement the program over the long-term.

Results:

The results indicate that most respondents' plans have generally been approved by the appropriate levels of government—which is an important requisite for successful implementation—but lack or have marginal delegated authorities to implement their specific plan of action. Respondents did not believe that the necessary financial resources required for long-term program implementation have been committed to their particular programs. Several of the plans reviewed include objectives to obtain funding for projects.

**Capacity**

Premise: *To achieve success, it is necessary for sufficient **capacity** be present within the institutions responsible for the program to implement its policies and plan of action.*

Measures:

1. Your program possesses the human resources to implement its plan of action.
2. Your program possesses the institutional resources (equipment, materials, etc.) to implement its plan of action.
3. There are internal or external barriers to successfully implement plan of action. What are these?

Results:

The results indicate that of the three categories being measured, sufficient capacity within the institutions responsible for the program was the weakest of the enabling conditions. Capacity in this instance includes human as well as physical resources (equipment, materials, etc.), though the lack of human resources was the most significant factor. Nearly all management and strategic work plans indicate a need to hire more personnel.

This initial assessment suggests that while there is general enabling support for coral reef management and conservation programs in Florida, participants in the interview noted specific capacity gaps that will need to be addressed to fulfill the goals and objectives of

existing and future plans. Funding, materials and personnel top the existing list of capacity gaps, as does a thorough understanding amongst the public of the impacts of its actions on coral habitats, and the need for appropriate and adequate governance structure and administrative frameworks to enable meaningful coral reef conservation.

This initial assessment will be followed by a more detailed assessment and analysis that will focus on capacity gaps in relation to the specific management goals and objectives that are finalized by the priority setting process.

# APPENDIX 4: BIBLIOGRAPHY BY AGENCY

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