

*Coral Reef Conservation Program
2020-2025 Strategic Plan*

Office of Resilience and Coastal Protection
Florida Department of Environmental Protection

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Table of Contents

1. Introduction	3
2. Strategic Planning and Implementation Process	6
3. Vision and Mission	7
4. Goals, Objectives and Strategies	8
Goals	8
2020-2025 Objectives and Strategies	9
5. Appendices	18
Appendix I: Coral Reef Management and Conservation Documents.....	18
Appendix II: Glossary of Terms	19
Appendix III: List of Acronyms	22
6. Literature Cited	24

1. Introduction

Florida's Coral Reefs

Spanning over 350 miles (563 km) from the Dry Tortugas to Stuart, Florida's Coral Reef is the only tropical coral reef system, and one of the greatest natural resources, in Florida and the continental United States. These beautiful coral reefs, lying just off the beaches of the most urbanized coastal region in the state, are an extraordinary biological, geological and economic resource. Supporting a rich and diverse assemblage of more than 6,000 species, and protecting its shorelines from tropical storms and erosion, Florida's Coral Reef is vital to our way of life. Florida's Coral Reef provides a source for recreation, fisheries, education, scientific research, shoreline protection, and public inspiration. Roughly one third of Florida's 21.6 million residents live within the coastal region adjacent to Florida's Coral Reef (U.S. Census Bureau, 2019), and this region attracts over 30 million visitors a year (Profile Marketing Research, 2008; Pryor and Lewis, 2009; Synovate Travel and Leisure, 2009; Leeworthy et al., 2010). A study of natural and artificial reefs along Southeast Florida and the Florida Keys showed that fishing, diving, and boating-related expenditures generate \$6.3 billion in sales and income, and sustain more than 71,000 jobs annually (Johns et al., 2001; 2004).

Off the mainland coast of Southeast Florida, the northern extension of Florida's Coral Reef extends beyond the Florida Keys approximately 105 miles (170 km) from the northern boundary of Biscayne National Park in Miami-Dade County to the St. Lucie Inlet in Martin County (Fig. 1). From Cape Florida (Miami-Dade County), north to central Palm Beach County, the reef system is described as a series of linear, Holocene *Acropora palmata* reef complexes (referred to as reefs, reef tracts or reef terraces) running parallel to shore and exhibiting abundant octocoral, macroalgae, stony coral and sponge assemblages (Lighty, 1977; Moyer et al., 2003; Banks et al., 2007; Walker et al., 2008). The outer reef is the most continuous reef complex, extending from Cape Florida to northern Palm Beach County. Inshore of these reef complexes, there are extensive nearshore ridges and colonized pavement areas. From Palm Beach County to Martin County, the reef system is comprised of limestone ridges and terraces, and worm reef (*Phragmatapoma* spp.), colonized by reef biota (Cooke and Mossom, 1992; Monty, 2008). Despite their high ecological and economic value, their unique position as the highest latitude reefs along the western Atlantic seaboard, and their close proximity to the most heavily developed and densely populated region in the state, these reefs have received limited scientific and resource management attention, until

recently (Collier et al., 2008). In 2018, the Florida legislature designated this region the Southeast Florida Coral Reef Ecosystem Conservation Area (Coral ECA).

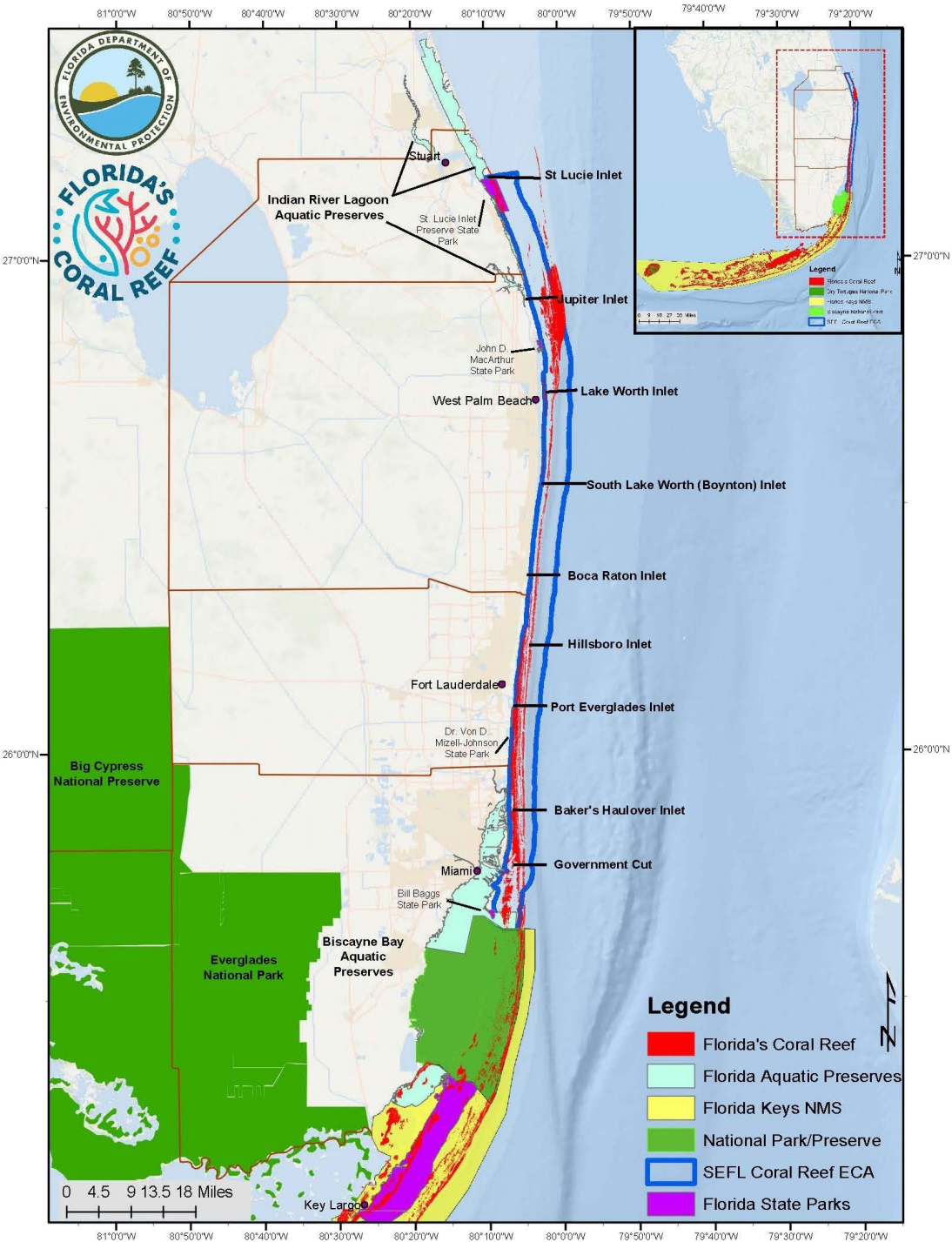


Figure 1. Comprising the northern third of Florida's Coral Reef, the reef system in the Southeast Florida Coral Reef Ecosystem Conservation Area runs parallel to the mainland coast from the northern border of Biscayne National Park in Miami-Dade County, to the St. Lucie Inlet in Martin County.

Coral Reef Resource Management

The State of Florida manages its coral reef resources cooperatively with local, state and federal agencies including the National Oceanic and Atmospheric Administration (NOAA), the National Park Service, the Florida Fish and Wildlife Conservation Commission, and the counties of Monroe, Miami-Dade, Broward, Palm Beach, and Martin. Regulatory coordination with additional agencies including the U.S. Environmental Protection Agency, the U.S. Coast Guard, the U.S. Army Corps of Engineers and others supports the environmental conservation goals of the state.

The Florida Department of Environmental Protection (DEP) is the lead government agency in the State of Florida for environmental management and stewardship. Comprised of three program areas – Regulatory Programs, Land and Recreation, Ecosystem Restoration – the DEP serves to protect the state’s air, water and land resources. Florida’s environmental priorities include restoring America’s Everglades, improving air quality, restoring and protecting water quality, conserving environmentally sensitive lands, and providing recreation opportunities for citizens and visitors, today and in the future.

Within Ecosystem Restoration, the DEP’s Office of Resilience and Coastal Protection (RCP) directs the management of Florida’s 42 aquatic preserves, three National Estuarine Research Reserves, the Florida Keys National Marine Sanctuary, and the Coral Reef Conservation Program (CRCP), in addition to Beaches Inlets and Ports, Clean Marina and Vessel Programs, and Resilient Coastlines Program.

Since its establishment in 2004, the CRCP has coordinated research, monitoring and mapping, developed and implemented **local action strategies (LAS)**¹, and promoted partnerships and stakeholder/community outreach and education activities to raise public awareness of, and protect the coral reefs, hardbottom communities, and associated reef resources off mainland Southeast Florida.

Through its role in supporting Florida’s membership on the U.S. Coral Reef Task Force, the CRCP was initially charged with leading the implementation of the Southeast Florida Coral Reef Initiative (SEFCRI) and contributing to the National Action Plan to conserve coral reefs. Through SEFCRI, **local action strategies** were implemented to address four key threats to the reefs of Southeast Florida – lack of awareness and appreciation, land-based sources of pollution, maritime industry and coastal construction impacts, and fishing, diving, and other uses. However, mounting

¹ See Appendix I

local and global pressures on Florida's coral reef resources and demands from citizens and stakeholders for increased protection of Florida's reef resources led to a rapid expansion of the CRCP's role. For example, in addition to its long-term charge, through SEFCRI, to develop management options and implement a management plan for **Southeast Florida's reefs**; in 2006, the CRCP was charged with coordinating, and ultimately leading, response to vessel groundings, anchor damage, and any other reef resource impact events in Southeast Florida, including developing strategies to prevent coral reef injuries, and the development of the Reef Injury Prevention and Response (RIPR) Coordinator position in 2008 and technician in 2012. As the CRCP approaches completion of the 2004 SEFCRI LAS, it must balance the development and implementation of new initiatives and projects with its mandate to sustain core regional coral reef management and conservation services. SEFCRI LAS are organized in the following focus/threat areas: Awareness and Appreciation (AA), Fishing Diving and Other Uses (FDOU), Land-Based Sources of Pollution (LBSP), and Maritime Industry and Coastal Construction Impacts (MICCI). In 2016, SEFCRI Our Florida Reefs (OFR) Recommended Management Actions (RMA) were developed by Community Working Groups. In 2017, new LAS projects were developed by the SEFCRI Team, who added **Reef Resilience (RR)** as a focus area.

2. Strategic Planning and Implementation Process

The purpose of this strategic plan is to set the vision, mission and goals of the CRCP, that will provide program direction, guide the development of annual work plans and facilitate ecosystem-based, adaptive management of **Southeast Florida's reefs** through the year 2025. The process for development of the first strategic plan (2011-2016) began in 2009 with a review of current local, regional, state, and national coral reef conservation strategies, priorities and recommendations² to identify the most relevant coral reef conservation targets for inclusion, followed by the development of goals, objectives and strategies, and an online public review of the draft document.

Goals, objectives and strategies identified in the first plan carried on past the original timeline of that plan. In 2020, a review and update of the plan was undertaken by CRCP staff. Goals, objectives, and strategies that were no longer relevant were removed, and priority areas developed since 2016 were added to the plan. As this amounted to a small number of changes, review of the draft document was carried out with close partners and the SEFCRI Team.

² See Appendix I

The identification of specific projects and initiatives that meet the goals, objectives, and strategies of this plan, and will be continued or newly implemented, will be reviewed and determined annually by the CRCP, and with the SEFCRI Team for SEFCRI Projects, with consideration for 1) the current and projected status and trends of coral reef and associated resource health, derived from sound scientific research, monitoring and mapping data; 2) state, local and national natural resource management agency priorities; 3) stakeholder and community needs and input; and 4) projects and initiatives which support CRCP's vision, mission, and goals. Implementation of individual projects will also be contingent on the identification and acquisition of adequate resources (e.g., staff capacity, equipment, funding, technical support, statutory authority) necessary to accomplish individual project objectives. Funding and other support for projects and initiatives to be continued or implemented under this plan will be through partnerships with government agencies (state, local, federal), stakeholders and community members, academia, non-governmental organizations, and private industry.

3. Vision and Mission

Vision

The CRCP's vision is that the ecosystem function and services and management of Florida's Coral Reef and the Coral ECA and associated reef resources are improving, and local, regional and global coral reef conservation goals are being met effectively to ensure **sustainable** marine resources and a high quality of life for the State of Florida, its citizens and visitors, today and in the future.

Mission

The mission of the CRCP is to protect the Coral ECA ecosystems by:

- promoting, coordinating and conducting active place-based management, including research, monitoring, mapping; education and outreach; injury prevention and response; and,
- facilitating partnerships and stakeholder engagement in the development of management strategies and options that balance use and protection; and
- enhancing consistency and effectiveness of reef management actions across Florida's Coral Reef and U.S. coral reef jurisdictions.

4. Goals, Objectives and Strategies

CRCP identified long-term goals, defined as actions that will require greater than five years, to accomplish CRCP's mission. Shorter-term (up to five years) objectives, and strategies to meet those objectives and fulfill CRCP's goals, were identified for the five-year state fiscal year period, 2020-2025. Goals, objectives and strategies are organized within three key program areas: CRCP Capacity, Education and Outreach, and Coral Reef Ecosystem Conservation. Terms highlighted in green are defined in Appendix II.

Goals

1 CRCP Capacity

- 1.A Sustain and enhance appropriate staffing levels, funding sources, technical resources, and operational and programmatic capacity within CRCP, including expanding facilities and staff to support resource management activities in Miami-Dade, Broward, Palm Beach, and Martin counties, as opportunities become available.
- 1.B Contribute to the management of Florida's Coral Reef as a **holistic system**.
- 1.C Identify and implement management actions for **Southeast Florida's reefs** in the Coral ECA that include appropriate statutory authority to accomplish CRCP's mission. (Linked to Coral Reef Ecosystem Conservation Goal A.).
- 1.D Promote, coordinate, and conduct research, monitoring, and mapping to support coral reef conservation and management through enhanced understanding of ecosystem extent, characterizations, and ecological processes.

2 Education and Outreach

- 2.A Encourage improved coral reef conservation through increased public awareness, appreciation, and community support.
- 2.B Support strengthened **governance** to support effective coral reef management goals by informing elected officials and decision makers about the importance of, and threats to, coral reefs.
- 2.C Increase understanding of the connection between coral reefs, watersheds, human activities, and human welfare.
- 2.D Improve environmental stewardship and encourage **sustainable** development and **non-consumptive** resource use in Southeast Florida.

2.E Support initiatives that improve understanding, and reduce the potential impacts, of **climate change**, with emphasis on efforts in Florida.

2.F Maintain established partnerships and cultivate new cooperative associations that complement or further the CRCP vision, mission, and goals.

3 Coral Reef Ecosystem Conservation

3.A Develop and implement an **adaptive management plan** for the Coral ECA ecosystem to protect, and where possible, restore natural marine habitats, populations, and ecological processes. (Linked to CRCP Capacity Goal C.)

3.B Reduce **chronic and acute stressors** to reef health from land-based sources of pollution and impacts from boating, fishing, diving, and other uses.

3.C Minimize and, where possible, eliminate localized human-induced habitat impacts from maritime industry and coastal construction activities.

3.D Support the development and implementation of a comprehensive network of management actions, potentially including restoration areas to enable reef recovery within protected areas and support system-wide reef recovery and **resilience** to local and global stressors.

3.E Reduce **cumulative stressors** to coral reefs that weaken reef **resistance** and **resilience** to **climate change** and coral disease.

3.F Recommend and support new or strengthened local, state, and federal regulations and enforcement capacity to protect coral reefs.

3.G Work with local, state, and federal regulatory agencies to improve agency coordination and compliance with, and enforcement of, existing laws (e.g., Clean Water Act, fisheries regulations, Endangered Species Act listings and associated rules, Coral Reef Protection Act, etc.).

2020-2025 Objectives and Strategies

1 CRCP Capacity

Objective 1.1: Sustain and improve CRCP core services (general operations, programs and projects).

Strategies:

1.1.1 Maintain CRCP general operations (as they exist at the start of state fiscal year 2020/2021) to ensure program stability.

- Existing Staff: 1 regional program administrator, 1 manager, 1 assistant manager/project coordinator, 1 office manager, 4 project coordinators, 1 Reef Injury Prevention and Response Program (RIPR) coordinator, 1 RIPR

Technician, 1 associate project coordinator, 2 administrative assistants, 1 facilities maintenance specialist, 1 national coral management fellow, 1 NOAA fisheries liaison.

- Existing Facilities: DEP Biscayne Bay Environmental Center in Miami, including office space, dock facilities, maintenance facilities and equipment, furnishings, office equipment, supplies and information technology network for 14 staff plus interns. Satellite office located at the South Florida Water Management District in West Palm Beach, including office space, furnishings, office equipment, supplies and information technology network for 4 staff.
- Existing Equipment: 3 vehicles (2 mid-size hybrid SUV, 1 pickup truck), 1 26' vessel, scuba diving and safety equipment for dive unit staff, restoration and monitoring field supplies.
- Existing Administration: CRCP cooperative agreement proposal development and award administration, contract development and administration, budget planning and management, procurement, human resource administration.

1.1.2 Maintain existing CRCP services, programs, and partnerships.

- Development of coral reef reports
- Coral Reef Resource Awareness Training Program
- Education and Outreach Program
- Florida Reef Resilience Program (FRRP)
- LAS development, implementation and project management (including sustaining long-term implementation of successful strategies implemented under the 2004 and 2017 SEFCRI LAS)
- Management authority and management plan development and implementation
- Marine Debris Reporting and Removal Program
- Marine Regulation Awareness Program
- Reef Injury Prevention and Response (RIPR) Program
- Southeast Florida Action Network (SEAFAN) Program
- SEFCRI Team, Vice-Chair, and Technical Advisory Committee (TAC) Coordination
- Southeast Florida Coral Reef Evaluation and Monitoring Project (SECREMP)

- Southeast Florida Coral Reef Water Quality Monitoring Project (SECRWQMP)
- Southeast Florida regulatory program support
- Threatened and endangered reef species recovery planning and implementation
- South Florida and Treasure Coast Regional Planning Councils
- Friends of Our Florida Reefs (FOFR)
- Coral Reef Ambassador Initiative
- Florida’s Coral Reef Managers
- U.S. All Islands Coral Reef Committee (USAIC)
- U.S. Coral Reef Task Force (USCRTF)

Objective 1.2: Identify gaps in CRCP capacity and resources needed to fulfill the CRCP Strategic Plan, and where possible, fill identified gaps.

Strategies:

- 1.2.1 Seek **sustainable**, recurring state and grant funding to support CRCP core services and strategic plan goals.
- 1.2.2 Continue to engage in resource management activities which support conservation and management of Florida’s Coral Reef as a **holistic system**.
- 1.2.3 Foster development of new or expanded local, state and federal authorities to protect coral reefs.
- 1.2.4 Sustain **fisheries-independent monitoring** in Southeast Florida.
- 1.2.5 Sustain and expand long-term water quality monitoring (SECRWQMP) in Southeast Florida and review survey design for potential modification of sampling sites or parameters to answer local management questions.
- 1.2.6 Sustain the number of SECREMP sites and review survey design for potential modification of sampling sites or parameters to answer local management questions.
- 1.2.7 Track locations and information for threatened, endangered, and unique coral colonies and masses off Southeast Florida.
- 1.2.8 Expand recovery rate information for **functional groups** on Southeast Florida reefs to better inform restoration and mitigation plans.

2 Education and Outreach

Objective 2.1: Build upon the existing CRCP Education and Outreach Program to expand coral reef awareness and protection with emphasis on, but not limited to:

- Increasing awareness of Florida’s Coral Reef as a **holistic system**, and the Coral ECA as its northern component.
- Expanding upon existing land-based sources of pollution education and outreach efforts.
- Incorporating the latest science about **climate change** and **ocean acidification** into education and outreach activities.
- Increasing awareness of applicable local, state, and federal regulations.
- Integrating monitoring data results into education and outreach strategies to inform stakeholders about impacts on resources and recommended abatement measures.
- Increasing reef **resilience**.
- Managing the response to Stony Coral Tissue Loss Disease (SCTLD).

Strategies:

- 2.1.1 Maintain and update CRCP and SEFCRI websites including the Marine Planner.
- 2.1.2 Maintain a presence at community events with supporting education and outreach materials.
- 2.1.3 Sustain the ongoing multimedia public service announcement campaigns.
- 2.1.4 Develop and implement an outreach campaign to minimize, and where possible eliminate, the impacts of recreational and marine event anchoring on Florida’s Coral Reef.
- 2.1.5 Continue to circulate coral reef teacher trunks and updated curriculum.
- 2.1.6 Continue to produce and distribute the *Southeast Florida Reef Review*.
- 2.1.7 Expand education programs that inform stakeholders about regulations and best practices when boating, fishing, and diving (e.g., Marine Regulation Awareness Program).
- 2.1.8 Disseminate coral reef awareness and protection materials to boaters, anglers, and divers through targeted organizations and publications (e.g., National Association of State Boating Law Administrators, Fishing Lines, local dive instructors).

2.1.9 Compile and disseminate coral reef awareness and protection information, specifically targeting multi-lingual southeast Florida residents.

Objective 2.2: Support external efforts and partnerships that foster coral reef conservation.

Strategies:

2.2.1 Engage in partnerships and working groups that support Florida’s coral reef-related conservation goals and priorities (e.g., FRRP) (CRCP Capacity, Strategy 1.2).

2.2.2 Work with regional partners to develop consistent messaging (e.g., terminology, signage, maps) to the public about the importance of Florida’s Coral Reef and management actions needed to sustain this ecologically and economically important ecosystem.

2.2.3 Work with tourism and business partners to further mutual goals.

Objective 2.3: Engage residents and visitors in opportunities to provide information useful to coral reef managers to improve knowledge and management of the Coral ECA (e.g., citizen science programs).

Strategies:

2.3.1 Sustain and expand the Marine Debris Reporting and Removal Program and continue to support regional reef and coastal cleanup events that complement the Marine Debris Program. Target future outreach efforts to sources contributing the most debris.

2.3.2 Sustain and expand the Southeast Florida Action Network (SEAFAN) Program, and integrate use of its data into management decisions.

2.3.3 Sustain and expand the BleachWatch Program, and integrate use of its data into management decisions.

3 Coral Reef Ecosystem Conservation

Objective 3.1: Define and recommend management authority for the Coral ECA based on management goals, best available science, monitoring results and stakeholder input.

Strategies:

- 3.1.1 Complete implementation of initial SEFCRI Fishing, Diving, and Other Uses Focus Area LAS projects required for this objective.
- 3.1.2 Link SECRWQMP results to **benthic** habitat and **fisheries-independent monitoring** data, to aid in determining linkages between environmental factors and changes in the coral reef community (e.g., coral disease).
- 3.1.3 Work with practitioners to incorporate ongoing work into a Coral ECA Restoration Plan; identify and implement priority activities; identify, recommend and where feasible, work to establish areas (e.g., restoration area) in sensitive resource areas, and areas potentially resilient to **climate change** (which may or may not contain high coral coverage or abundance), to be integrated into the comprehensive network of management.
- 3.1.4 Engage in local, state and nationwide coral reef management planning activities to inform local planning processes.
- 3.1.5 Support updating and expanding socio-economic studies of **Southeast Florida's reefs** at appropriate intervals (e.g., studies done by Johns et al., 2001; 2004).
- 3.1.6 Explore innovative technology to update Southeast Florida's **benthic** habitat maps at appropriate temporal intervals and spatial scales, expanding previous mapping efforts to answer specific management questions (e.g., high density coral coverage areas, healthy biological areas).

*Objective 3.2: Work collaboratively with partners to develop, implement and support action plans including monitoring, research, restoration, stakeholder communication and response strategies to support management of Florida's Coral Reef as a **holistic system**.*

Strategies:

- 3.2.1 Continue to actively participate in the FRRP and DRM, and work with partners to implement the *Resilience Action Plan for the Florida Reef System 2020-2023*.
- 3.2.2 Continue to support the multi-faceted SCTLTD response effort and implement priority actions to mitigate impacts.
- 3.2.3 Continue to coordinate internally within DEP programs to establish consistency for regulatory decisions.

3.2.4 Continue to coordinate SECREMP with CREMP for consistency across Florida's Coral Reef.

Objective 3.3: Reduce the impacts of land-based sources of pollution with priority in the watersheds of Boynton Beach and Government Cut Inlet Contributing Areas (ICA).

Strategies:

3.3.1 Work with county and municipality partners to implement LBSP reduction projects, including those identified in the Low Impact Development/Green Infrastructure (LID/GI) Manual, and watershed management plan(s).

3.3.2 Identify cause and effect relationships between land-based sources of pollution and adverse effects on reef resources (e.g., establishing biocriteria).

3.3.3 Support implementation and refinement of numeric nutrient, turbidity, and other regulatory criteria for the Florida's Coral Reef.

3.3.4 Continue to characterize and quantify amount and **flux** of pollution sources to the Coral ECA.

3.3.5 Engage in Lake Okeechobee System Operating Manual (LOSOM), Comprehensive Everglades Restoration Plan (CERP), Central Everglades Protection Project (CEPP) and related watershed activities and meetings.

Objective 3.4: Reduce impacts from **extractive** and **non-extractive** recreational and commercial uses in the Coral ECA.

Strategies:

3.4.1 Support fishery management agency actions to increase size and abundance of reef fish species.

3.4.2 Support mooring buoy programs, if appropriate, in high-use areas.

Objective 3.5: Support efforts to reduce coastal development impacts on coral reefs and associated reef resources (e.g., vegetated sand dunes, wetlands, mangroves, etc.) and improve **mitigation** efficacy in the Coral ECA.

Strategies:

3.5.1 Support the evaluation of existing innovative and emerging technologies and best management practices for coastal construction adjacent to coral reef resources.

3.5.2 Support ways to continually improve shoreline maintenance and restoration practices.

3.5.3 Expand delivery of the Coral Reef Resource Awareness Training Program to local, state, and federal regulatory program and coastal construction industry staff to support improved protection of coral reef resources in coastal construction project design and permit conditions.

3.5.4 Work with regulatory program staff to implement the SEFCRI **cumulative impacts** analysis tool, historical permit-tracking database, and associated guidance documents.

Objective 3.6: Increase capacity to prevent and respond to coral reef injuries associated with vessel impacts and non-regulated activities.

Strategies:

3.6.1 Identify and implement new management actions to prevent and respond to reef injuries.

3.6.2 Conduct research and training to improve understanding and capacity to assess, restore and resolve reef injuries.

3.6.3 Coordinate with resource trustee partners.

Objective 3.7: Support and, where possible, strengthen agency capacity and authorities to conserve coral reefs.

Strategies:

3.7.1 Support development or strengthening of specific rules, regulations, and enforcement provisions to protect coral reef resources (e.g., Coral Reef Protection Act).

3.7.2 Provide local field support for agency regulatory, compliance and enforcement activities.

3.7.3 Establish the appropriate statutory authority necessary to effectively manage the Coral ECA.

Objective 3.8: Promote the development and implementation of new and existing SEFCRI LAS projects by SEFCRI Team members, which include tangible outcomes and performance measures.

Strategies:

3.8.1 New LAS will directly support, or be compatible with, one or more of the following coral reef management and strategic plans³:

- DEP CRCP’s 2020-2025 Strategic Plan
- Florida’s Coral Reef Management Priorities 2010-2015
- Resilience Action Plan for the Florida Reef System 2020-2023
- NOAA Coral Reef Conservation Program Strategic Plan
- U.S. Coral Reef Task Force National Action Plan
- NOAA National Marine Fisheries Service *Acropora* Recovery Plan
- U.S. All Islands Committee Strategic Plan
- Our Florida Reef Recommended Management Actions
- Southeast Florida Coastal Ocean Task Force Final Recommendations Report

3.8.2 New LAS will address existing or emerging local threats to coral reef conservation in Southeast Florida (e.g., Stony Coral Tissue Loss Disease (SCTLD)), or the top four pillars to coral reef conservation (climate, fisheries, pollution, restoration) identified through the 2018 NOAA Coral Reef Conservation Program Strategic Plan⁴.

Objective 3.9: Support continued development and implementation of the USCRTF National Action Plan, resolutions, working group recommendations and other initiatives, as appropriate for Florida.

Strategies:

3.9.1 Continue to support Coral Protection and Restoration Program Administrator as Florida’s point of contact to the USCRTF and USAIC.

3.9.2 Continue to support attendance and participation in the AIC, USCRTF, and its Steering Committee meetings, as required through Florida’s membership in the USCRTF.

3.9.3 Provide or recommend Florida representatives to participate in USCRTF working groups, development and implementation of resolutions and other USCRTF actions, as appropriate.

3.9.4 Continue to support National Coral Reef Management fellowship.

³ See Appendix I

⁴ See Appendix I

3.9.5 Enhance reef connectivity by establishing and maintaining regional partnerships within the Caribbean.

5. Appendices

Appendix I: Coral Reef Management and Conservation Documents

A. Florida's Coral Reef Management Priorities 2010-2015

https://www.coris.noaa.gov/activities/management_priorities/florida_mngmnt_clr.pdf

B. Resilience Action Plan for the Florida Reef System 2020-2023

<http://frrp.org/SLR%20documents/FL%20Reef%20Action%20Plan-WEB.pdf>

C. NOAA Coral Reef Conservation Program Strategic Plan

https://www.coris.noaa.gov/activities/strategic_plan2018/

D. U.S. Coral Reef Task Force National Action Plan

<http://www.coralreef.gov/about/CRTFAxnPlan9.pdf>

E. NOAA National Marine Fisheries Service *Acropora* Recovery Plan

<http://sero.nmfs.noaa.gov/pr/esa/acropora.htm>

F. U.S. All Islands Committee Strategic Plan

<http://www.allislandscorals.org>

G. Our Florida Reef Recommended Management Actions

<https://ourfloridareefs.org/rmacomment/>

H. Southeast Florida Coastal Ocean Task Force Final Recommendations Report

<https://www.broward.org/NaturalResources/Documents/CoastalOceanTaskForceFinalRecommendationsReport.pdf>

Appendix II: Glossary of Terms

Adaptive management plan: A flexible plan which incorporates the use of science and monitoring to guide and improve natural resource management. Adaptive management allows decision makers to adjust the direction of a project in response to new knowledge or monitoring results.

Benthic: Pertaining to or occurring on the bottom of an ocean, lake or other body of water; bottom dwelling organisms, living on, or in, the floor of a sea or lake.

Chronic and acute stressors: Stressors are physical, biological and chemical factors or processes that harm ecosystems or their components, causing lethal or sub-lethal effects. Chronic stressors are those that limit long-term survivorship, growth and reproduction of coral reef organisms over a long-term period. Acute stressors are those that directly lead to the death of coral reef organisms over a short-term period.

Climate change: Any change in the ocean-atmospheric climate system over time, whether due to natural variability or human activity.

Cumulative stressors/impacts: Stressors are physical, biological, and chemical factors or processes that harm ecosystems or their components, causing lethal or sub-lethal effects. Cumulative stressors/impacts are those which increase through successive additions, leading to impaired coral reef ecosystem function.

Extractive uses: Human activities that are intended to or require removing natural resources from the environment. All extractive uses are inherently consumptive and can have direct and/or indirect impacts on ecosystems. Extractive activities include the various forms of fishing, catching lobsters or tropical fish, shell collecting, sand mining, some types of monitoring, manipulative science research, etc. Fishing, for example, directly impacts ecosystems by removing targeted species, and perhaps, by altering habitat. Fishing can indirectly impact fish stocks by causing bycatch and release mortality. Catch-and-release fishing is classified as extractive because it requires removing organisms from the habitat, disrupts natural behavior, causes injury, and often results in mortality. Sand mining, for use in beach nourishment, is extractive and can indirectly impact ecosystems by altering habitat and destroying sand dwelling organisms. (See also, **non-extractive uses**.)

Fisheries-independent monitoring: A fish monitoring program using standardized sampling methods to examine the population of fishes as a whole; in contrast, a fishery-dependent monitoring program uses data from and provides information on, only the exploited segment of a population.

Flux: The rate and quantity of transfer of fluids, particles or energy across a given area (amount of flow per unit of time); a flow or discharge; the quantity of a fluid that crosses a unit area of a given area in a unit of time.

Functional group: A collection of organisms of specific morphological, physiological, behavioral, biochemical properties; examples: stony corals, octocorals, macroalgae, zoanthids and substrate (e.g., rock, rubble, and sediments).

Governance: The legal authorities, administrative policies, structure and decisions which direct or affect natural resource management capacity.

Holistic system: A whole ecosystem in which the species and habitats within the community are dependent upon each other to maintain the function and stability of the system; an integrated or whole system rather than the individual parts, places, habitats or species within a whole system.

Local action strategy (LAS): A short-term (implementable in 1-3 years) action or project that addresses key issues identified at the state or territorial level and remedies specific problems regarding the health of coral reef ecosystems.

Mitigation: A comprehensive stepwise process of evaluating and implementing least damaging project options which include: 1) avoidance of impacts, 2) minimization of non-avoidable impacts, and 3) compensatory replacement of lost ecosystem services for non-avoidable impacts.

Non-extractive uses: Human activities that do not require removal of natural resources are non-extractive. Examples potentially include recreational diving, nature study, environmental education, photography, sightseeing, tourism, water skiing, pleasure boating, and non-extractive resource monitoring (e.g., visual census). Non-extractive activities can be classified as either consumptive or non-consumptive (see below). (See also, **extractive uses**.)

Consumptive uses: Human activities that result in damage or loss of natural resources. By definition, all extractive activities are consumptive. Examples include all forms of fishing and collecting. Examples of consumptive, non-extractive activities include anchoring; accidental diver contact and damage to corals, sponges, or other benthos; and disposing of trash, chemical waste, or sewage overboard. Even activities with low individual impacts such as diver contact with reefs may have significant cumulative, consumptive impacts over time by damaging habitat in high intensity use areas.

Non-consumptive uses: Human activities that do not directly or indirectly damage natural resources. Examples include no-touch recreational diving, drift diving (i.e., no anchoring), glass bottom boat tours, snorkeling, visual fish surveys, educational viewing and teaching, and use of mooring buoys.

In summary: Fishing is extractive and consumptive. Recreational diving is non-extractive but may be consumptive or non-consumptive depending on how it is practiced. Likewise, boating is non-extractive, but may be consumptive or non-consumptive depending on how it is practiced.

Ocean acidification: The decrease in the pH of the Earth's oceans, caused by their uptake of carbon dioxide from the atmosphere; the process whereby atmospheric carbon dioxide dissolves in seawater producing carbonic acid, which subsequently lowers pH of surrounding seawater.

Resilience: Following injury or partial mortality from natural or human-induced disturbances, the capacity of a coral reef community to maintain or restore ecological function equivalent to that present before the disturbance.

Resistance: The ability of a coral reef to tolerate (i.e., not be injured by) and survive disturbances, such as extreme temperatures, pollutants, diseases, or storm events.

Resource trustee: A member of an agency, or stakeholder advisor who is well-qualified in their field and provides scientific and technical analysis, recommendations, or assistance to the Department on complex natural resource management projects.

Southeast Florida's reefs: The northern extension of the Florida Reef Tract, spanning 170 km from the northern border of Biscayne National Park in Miami-Dade County to the St. Lucie Inlet in Martin County. Southeast Florida's reefs are comprised of a complex of colonized limestone ridges that support a rich and diverse assemblage of stony corals, octocorals, macroalgae, sponges, and fishes. Nearshore habitats include hardbottom, patch reefs and worm reefs; offshore coral reef communities occur on Holocene *Acropora palmata* mid-shelf and shelf-margin reefs. Colonized Anastasia Formation limestone ridges and terraces occur in Martin County and northern Palm Beach County.

Sustainable: The capacity to endure; an ecosystem condition in which biodiversity, renewability, and resource productivity are maintained over time.

Appendix III: List of Acronyms

AA	Awareness and Appreciation
CEPP	Central Everglades Planning Project
CERP	Central Everglades Restoration Plan
Coral ECA	Southeast Florida Coral Reef Ecosystem Conservation Area
CRCP	Coral Reef Conservation Program
DEP	Florida Department of Environmental Protection
FDOU	Fishing Diving and Other Uses
FOFR	Friends of Our Florida Reefs
FRRP	Florida Reef Resilience Program
ICA	Inlet Contributing Area
LAS	Local Action Strategy
LBSP	Land-Based Sources of Pollution
LID/GI	Low-Impact Development/Green Infrastructure
LOSOM	Lake Okeechobee System Operating Manual
MICCI	Maritime Industry and Coastal Construction Impacts
NOAA	National Oceanic and Atmospheric Administration
OFR	Our Florida Reefs Community Planning Process
RCP	Office of Resilience and Coastal Protection
RIPR	Reef Injury Prevention and Response
RMA	Recommended Management Action
RR	Reef Resilience
SCTLD	Stony Coral Tissue Loss Disease
SEAFAN	Southeast Florida Action Network
SECREMP	Southeast Florida Coral Reef Evaluation and Monitoring Project
SECRWQMP	Southeast Florida Coral Reef Water Quality Monitoring Project
SEFCRI	Southeast Florida Coral Reef Initiative

TAC	Technical Advisory Committee
USAIC	United States All Islands Coral Reef Committee
USCRTF	United States Coral Reef Task Force

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