

# Coral Reef Conservation and Management Program:

Final Integrated Document: Literature review and  
legal framework, Case Study and Recommendations

Submitted to:



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# ACRONYMS

BBRS	Belize Barrier Reef Reserve System
CAMA	Office of Coastal and Aquatic Managed Areas (Florida)
CMZAI	Coastal Zone Management Authority and Institute
COMPACT	Community Management of Protected Areas for Conservation
CPC	Coral Program Coordinator
CRCA	Coral Reef Conservation Act
CRCP	Coral Reef Conservation Program
CRWG	Coral Reef Working Group (Hawaii)
CWCS	Comprehensive Wildlife Conservation Strategy (Hawaii)
DAR	Department of Aquatic Resources
DH	Departamento de Hacienda [Department of Finances]
DLNR	Department of Land and Natural Resources (Hawaii)
DRNA	Departamento de Recursos Naturales y Ambientales [Department of Natural and Environmental Resources] (Puerto Rico)
ECM	Environmental Management Charge
FCO	Florida Coastal Office
FDEP	Florida Department of Environmental Protection
FWC	Florida Fish and Wildlife Conservation Commission
GBR	Great Barrier Reef
GBRMPA	Great Barrier Reef Marine Park Authority
HCRP	Hawaii Coral Reef Program
HCRS	Hawaii Coral Reef Strategy
LAS	Local Action Strategies
LMAC	Local Reef Advisory Committees
MOU	Memorandum of Understanding
MPA	Marine Protected Area
NCRR	Negociado de Costas, Reservas y Refugios [Coasts, Reserves, and Sanctuaries Unit]
NFWF	National Fish and Wildlife Foundation
NOAA	National Oceanic and Atmospheric Administration
NPVS	Negociado de Pesca y Vida Silvestre [Fishing and Wild Life Unit]

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OGP	Oficina de Gerencia y Presupuesto [Management and Budget Bureau]
POC	Point of Contact
RIPR	Reef Injury Prevention and Response Program (Florida)
SEAFAN	Southeast Florida Action Network
SEFAST	Southeast Florida Action Strategy Team
SEFCRI	Southeast Florida Coral Reef Initiative
USDA	United States Department of Agriculture
UNDP	United Nation Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization
USCRTF	United States Coral Reef Task Force

# INTRODUCTION

The Nature Conservancy organization recruited Estudios Técnicos, Inc. entity for drafting of a paper containing guidelines for the development of a Coral Reefs program in the Departamento de Recursos Naturales y Ambientales de Puerto Rico [Department of Natural and Environmental Resources of Puerto Rico] (DRNA).

The survey was developed in three phases, where this report was arranged. These are presented in the following illustration.

**Illustration 1. Phases of the Project**



# I. LITERATURE REVIEW AND LEGAL FRAMEWORK

This section presents the context of public and legal policy that influences on the development of a coral reef unit at the DRNA. Additionally, other planning instruments performed by the DRNA are outlined, which are relevant to this matter.

Several initiatives, laws, and programs exist at both federal and local levels related to coral reefs, which support the formalization of the Conservation and Management Program of Coral Reefs in Puerto Rico. All these initiatives highlight the relevance of effective interagency communication and promote locally driven efforts, with a comprehensive planning and coordination scope at the national level. The following is a summary of the relevant federal and local initiatives that illustrate essential elements of public policy goals and that, in addition, provide the context in which it will be necessary to develop the structure of the unit subject matter of this report.

## 1.1 The federal level

### 1.1.1 Executive Order 13809

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According to Executive Order 13809, the Special Work Group of the United States (US Coral Reef Task Force (USCRTF) on coral reefs, jointly chaired by the Secretary of the Department of State for the Interior and the Secretary of the Department of Commerce of the U.S., through the National Oceanic and Atmospheric Administration (NOAA). The USCRTF is responsible for the development and implementation of a comprehensive program of research and mapping to document, monitor, and identify the outstanding causes--in addition to the consequences--of the degradation of coral reef ecosystems. This group has the power to look after the implementation of public policy and the responsibilities of the federal agencies contained in the order.

In the Charter of the Executive Order, the USCRTF is described as an interagency agency that develops and implements comprehensive, multidisciplinary efforts, and coordinated approaches to preserve and protect coral reef ecosystems in the U.S., and to promote the best practices in the conservation of coral reefs at a global level. The USCRTF uses existing public agencies programs, authorities established by the law, competences, and capacities to promote the conservation of coral reefs, consistent with the laws of the US and obligations that arise from treaties. It operates as a kind of "clearinghouse" and coordination mechanism among federal, state, and territory

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agencies involved in efforts for the protection and management of coral reef ecosystems. The USCRTF also provides technical assistance and promotes cooperation among various institutions, agencies, or groups with similar goals. On the other hand, addresses barriers that prevent the effective implementation of the public policy.

In 2000, the USCRTF adopted the *National Action Plan to Conserve Coral Reefs* (National Plan of Action). This was the first plan in the US that provides a comprehensive response to the main threats to coral reefs. The National Plan of Action was designed to guide the Nation for the better understanding of coral reef ecosystems and reduce adverse impacts of human activity. It was designed as a long-term plan, to provide a framework for the priorities, strategies, and implementation plans of the USCRTF and its members. In 2002, USCRTF partnered to produce a complementary paper, *A National Coral Reef Action Strategy* (National Action Strategy), commanded by the Ley de Conservación de Arrecifes de Coral [Coral Reefs Conservation Act](CRCA), and designed to respond to the priorities and strategies in the short term. The CRCA requires for the NOAA submit a report to the US Congress every two years on the implementation of the National Action Strategy.

In this way, the Executive Order and their action plans promote the strengthening of local agencies and initiatives by which, locally, it is necessary to arrange the program for the Conservation and Management of Coral Reefs to optimize the working relationship with this agency. In this sense it is essential to address certain structural issues of the local program - created by Act No. 147- which is discussed in greater detail in this report, which have been identified in other planning exercises at the DRNA in order to improve the integration of Puerto Rico to these cooperation and coordination mechanisms, both at national and international level. This would ease the interagency exchange of information and the coordination of conservation, management, and monitoring programs.

Also applicable legal federal provisions also apply, among these the most outstanding include:

- | Coral Reef Conservation Act of 2000
- | Laws, executive orders, and regulations under the jurisdiction of the Department of Commerce of the United States: Magnuson-Stevens Fishery Conservation and Management Act, Public Law 94-265 and regulations of the U.S. Department of Commerce.

### 1.1.2 Local Action Strategies (LAS) of the USCRTF

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The Local Action Strategies (LAS) are an initiative led by the USCRTF through which required priority actions are identified and implemented to reduce the major threats to the coral reefs resources in each of the coral reefs jurisdictions of the US. In 2002, the USCRTF adopted the *Puerto Rico Resolution*, which urges the development of the LAS every three years, per each of the seven jurisdictions in the US that contain coral reefs, which include Puerto Rico. The LAS are working plans locally driven for the provision of partnering and cooperation between federal, state, territorial, and non-governmental partners. The goals and objectives of the LAS are linked to those contained in the *National Action Plan to Conserve Coral Reefs*<sup>1</sup>.

It should be noted that one of the benefits of strengthening the local Program is to improve the position of our local agencies to compete and receive funds and technical assistance provided by the USCRTF and other opportunities for funding to carry out activities in connection with the conservation and management of coral reefs.

## 1.2 The local level

### 1.2.1 Ley para la Protección, Conservación y Manejo de los Arrecifes de Coral en Puerto Rico [Act for the Protection, Conservation and Management of Coral Reefs in Puerto Rico] (Act No. 147 dated July 15, 1999)

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The most relevant law for the aim of this revision is the Ley para la Protección, Conservación y Manejo de los Arrecifes de Coral en Puerto Rico (Act No. 147 dated July 15, 1999), which sets out the public policy of the State and it imposes on the DRNA the responsibility to implement it and, therefore, defines its powers and duties.

It could be said that this Act has six major components which include:

- | The statement of public policy that should guide the conduct of management and protection of coral reefs within the jurisdiction of the Commonwealth of Puerto Rico;
- | The duties and powers of the Secretary of the DRNA to comply with public policy outlined in the Act;

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<sup>1</sup> Of the 13 goals identified in the National Plan of Action, the USCRTF prioritized six of these for immediate action: overfishing, land-based sources of pollution, overuse and poor recreational usage, the need for public awareness raising, climate change, and coral bleaching, and diseases of corals.

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- | The creation of the Program for the protection, conservation, and management of coral reefs;
- | The development and adoption of a Management Plan by the Secretary on coral reefs and coral communities;
- | The establishment of a special account for the protection and management of this resource and
- | The power to impose administrative fines.

In the following sections some of these components are described, in order to have a clearer picture of the responsibilities of the DRNA related to the topic, which in turn would be executed totally or in part by the proposed "unit" of coral reefs.

### **Duties and powers of the Secretary of the DRNA**

- | Take all necessary measures for the protection, conservation, and management of coral reefs and coral communities in the territorial waters of the Commonwealth of Puerto Rico;
- | Identify with buoys or any other floating marker the places designated as reserves, reef recovery areas, and environmentally sensitive areas;
- | Prepare maps on coral reefs and identify coral communities that may be impacted by groundings or boat anchors;
- | Identify with buoys or any other floating markers the sea grasses meadows in order to protect these systems and to avoid damage by anchors or propellers of boats;
- | Establish a protocol of groundings in coral reefs and coral communities;
- | Adopt regulations that are required for the adherence with this Act;
- | Enter into agreements, covenants, or contracts with other state and federal agencies, municipalities, educational or scientific institutions or any NGOs;
- | Receive economic, technical, or any other type of aid from the federal government or any public or private agency;
- | Participate in programs related to the purposes of this Act, with the federal government, with other states, private and public agencies or any other national or international organization;

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- | Develop an education program addressed to the general public on the benefits and threats to coral reefs and coral communities; and
- | Carry out all the appropriate actions against the owners or captains of ships that ground on coral reefs so they restore such system back.

### **Program for the protection, conservation, and management of coral reefs**

The Program will provide the best usage of existing resources and implement the appropriate mechanisms that allow the management, conservation, and protection of coral reefs. Among the roles of this program the following are included:

- | *Interagency and intersectoral coordination:* Establish effective communication with the state and federal agencies and instrumentalities, educational or scientific entities that may have an impact or jurisdiction on any aspect of this Act.

One partnership that is fundamental would be with the Junta de Calidad Ambiental [Environmental Quality Board] (JCA). The law provides that such agency must provide to the DRNA any required help and information related to environmental factors and pollutants that directly or indirectly affect the coral reef and coral communities and in particular, the issues related to sedimentation, discharge of any waste or polluting substance and any environmental emergencies.

- | *Scientific Advice:* Under this program, an Advisory Committee is created to be chaired by the Director of the Negociado de Pesca y Vida Silvestre [Fishing and Wildlife Unit] (NPVS), and will be formed out by seven permanent members or a representative these appoint and other representatives the Secretary selects.

*Purpose:* Provide the required technical and professional advice to the Secretary for the implementation of this Act.

*Make-up:* This will be chaired the Director of the Negociado de Pesca y Vida Silvestre (NPVS) of the DRNA and formed out by permanent members or a representative these appoint from the following agencies or sectors:

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#### | *Research, inventory, and recommend*

- Provide the scientific criteria to identify reef recovery areas<sup>2</sup> and environmentally sensitive areas, and the activities that must be restricted or banned in such areas.
- Create a methodology for assessing the socioeconomic impacts of any banning or restriction of human activities in such areas.
- Identify any environmental pollution source that causes damage to the coral reef and the coral communities and recommend control measures that are required to prevent such contamination and any negative impacts to these resources.
- To examine and recommend the placing of artificial reefs in territorial waters of Puerto Rico, to allow the increase in the number and availability of habitats and resources for the reef organisms species.

## Management Plan

The Act instructs the Secretary to adopt a special management plan on the coral reefs and coral communities. Related to this article, the Act also states that:

- | An Environmental Impact Statement (DIA) will be required for any project that could cause negative impacts to coral reefs, coral communities and associated marine system.
- | A zoning regulation must be drafted by the JP and the DRNA to lead the housing, recreational, and tourism development toward areas where no adverse and detriment impacts occur on coral reefs, coral communities, and related marine life.

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<sup>2</sup> The Law set out the objectives of the reef recovery areas, which include keeping a high level of biodiversity and variable genetic pool and breeding populations fairly large to allow its increase. These areas will serve as shelter against the failure of management plans for the areas where fishing and recreational and tourist activities are allowed.

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- | JP, OGPe and other governmental agencies of Puerto Rico are required to consult the DRNA about any proposed building or development that may have a predictable effect on coral reefs, coral communities and ecosystems related with it.

## Special Fund

The Act provides for the establishment of a special account that will be fed with the following items:

- | Grants, transfers or assignments of people or private or governmental entities (federal, state, or municipal);
- | Administrative fines exercised by the Secretary pursuant to the provisions of this Act (described as follows);
- | The payment of fees for permits to perform scientific surveys, educational activities on coral reefs, as well as the permission for diving in coral reefs in the territorial waters of Puerto Rico; and
- | It also provides that the funds required for the implementation of this Act should come from the operating budget of the DRNA.

## Administrative fines

Regarding administrative fines, Article 9 describes the actions that they will be regulated, which include activities or actions that could damage reefs, such as remove or mutilate the corals, trafficking and supply live or dead corals for sale, to anchor outside the areas designated by the buoys, damage the marker buoys, fishing or diving in non-designated areas without permission, to pollute the areas by the disposal of solid or liquid waste, or violate any of the provisions of the Act, among others. Fines will not exceed ten thousand dollars, nor will be less than five hundred dollars.<sup>3</sup>

## Summary

<sup>3</sup> The exceptions to the defined fines include conducting scientific surveys that require sampling of live or dead corals, remove species of marine life due to disease or contamination in order to prevent the spread of diseases, perform certain types of educational or tourist nature exhibitions or tours, and use dead coral by those legally registered artisans, among other exceptions.

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Act No. 147, empowers the DRNA to regulate, supervise, and investigate, in addition to provide a supervision tool through a special fund for the management of the resource.

This Act, therefore, is the essential legal basis to take into consideration when evaluating the goals, responsibilities, and powers of the unit that intends to entirely manage the Program for the Conservation and Management of Coral Reefs.

### 1.2.2 Other legal associated bylaws

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Other legal provisions applicable to coral reefs<sup>4</sup> include the following:

- | Constitution of the Commonwealth of Puerto Rico
- | Act No. 23 dated June 20, 1972, as amended, Ley Orgánica del Departamento de Recursos Naturales [Operational Act of the Natural Resources Department].
- | Act No. 314 dated December 24, 1998, as amended, Ley para declarar la Política Pública sobre los humedales [Act to declare the public policy on wetlands].
- | Act No. 115 dated December 6, 1998, as amended, Ley para la Promoción y el Desarrollo de la Pesca Deportiva y Recreacional de Puerto Rico [Act for the Promotion and the development of sport and recreational fishing of Puerto Rico].
- | Act No. 278 dated November 29, 1998, as amended, Ley de Pesquerías de Puerto Rico [Fisheries Act of Puerto Rico].
- | Act No. 112 dated August 4, 1988, as amended, Ley de Patrimonio Arqueológico Subacuático [Act on Underwater Archaeological Heritage].
- | Act No. 1 dated June 27, 1977, as amended, or Ley de Vigilantes de Recursos Naturales del Departamento de Recursos Naturales [Act for the Guards of Natural Resources of the Natural Resources Department].
- | Act No. 132 dated June 25, 1968, as amended, Ley de Arena, Grava y Piedra [Act for sand, gravel, and stone], as amended.

### 1.2.3 Local strategies of management (LAS) of Puerto Rico

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In 2010 a group of experts, arranged by NOAA, identified four priority areas with regard to the conservation and management of coral reefs in Puerto Rico, which include:

- | Quality of water,

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<sup>4</sup> Acts and regulations related to coral reefs: Acts and regulations managed by the DRNA with specific provisions for coral reefs, coral communities, and other related systems.

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- | Protection of the fisheries resources of the reefs,
- | Reduction of human impacts, and
- | Management for the climate change.

Four priority areas were established to respond to the priority issues: Culebra, The Natural Reserve of the Northeast Ecological Corridor, Cabo Rojo, and Guánica.

A paper was drafted proposing a LAS for 2011- 2015 to lead the efforts of the conservation and management in these sectors. The development of the LAS was a partnering process among scientists, experts in the field, community leaders, and other groups of interest that were consulted in this process.

This paper incorporates guidelines to facilitate the protection and conservation of coral reefs in the priority areas. The paper contains the following relevant findings that are in some way linked to the need for the proposed unit:

- | The shortage of staff in the agency to effectively address the priorities of the Plan, due to governmental restructuring action at the DRNA;
- | To resolve this limitation, the paper emphasizes the importance and urgency of recruiting volunteers from the community and non-governmental organizations for the implementation of the LAS;
- | It also emphasizes the challenge faced by the DRNA with respect to the organizational structure; and confirms the need to strengthen the Program for the Conservation and Management of Coral Reefs in Puerto Rico.

#### 1.2.4 Revision of the Plan Estratégico para el Manejo de los Recursos de Pesca y Vida Silvestre en Puerto Rico [Strategic Plan for the Management of Fisheries Resources and Wildlife in Puerto Rico]

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In 2013 the Strategic Plan for the management of fisheries resources and wildlife in Puerto Rico was completed, which discussed the institutional capacity of the agency. The survey recommends the strengthening of existing measures for the protection, conservation, and management of coral reefs through improvements to the organizational structure of the DRNA.

The survey states that the DRNA faces great challenges for the administration and the proper management of fishery resources and wildlife, including the associated coral reefs and marine resources. The Plan lists the overall challenges the agency faces for the following reasons: reduction of staff with expertise, need to strengthen the internal

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coordination, budget reduction, need for equipment and materials, and the need to strengthen the external coordination.

To address these challenges, the survey recommends the following general actions, which promote the integration of all units of the DRNA to effectively respond to the needs of management of the fishery resources and wildlife.

These include, among others:

- | Develop a strategic plan for the DRNA;
- | Assign staff to the key administrative and operational areas of the DRNA that support the management of the Negociado de Pesca y Vida Silvestre (NPVS);
- | Establish an administrative guideline by which the different support units encourage the Negociados [Units] to prioritize the issues related to the active management of the fishery resources and wildlife; and
- | Restructure and strengthen the NPVS.

The integration of the DRNA units in this way will ease the implementation of laws such as Act No. 147. Although the paper contains additional recommendations in many areas, includes some observations and recommendations related to the organizational structure of the Negociados [Units], currently responsible for the implementation of the provisions of the Act. The Plan emphasizes that there are certain areas that overlap among these negociados [units], which are summarized as follows:

- | The Programa de Conservación y Manejo de Arrecifes de Coral [Program for the Conservation and Management of Coral Reefs] is located within the Unit of Coasts, Reserves, and Shelters. However, some of the responsibilities of the Marine Resources Division, which is located at the NPVS, also respond to the provisions set forth in the Act No. 147;
- | The Marine Resources Division is responsible for of saltwater or marine projects, which include: (1) assessment of the damage on the corals and sea grass meadows by the anchorage of recreational vessels, and installation and maintenance of mooring buoys; and (2) the assessment of damages to natural resources facing groundings and spills of fuels. The Program works in partnership with the NCRR to comply with the Act, which reflects the fact that there is a dispersion of responsibilities across multiple units.

The Strategic Plan proposes certain measures to strengthen the administrative and programmatic structure of the NPVS to effectively address the management of fisheries

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resources and wildlife. These measures include restructuring the NPVS, which could have implications for the effective location of the Program within the organizational structure of this Area. Specifically, the recommendation is to change the name of the Marine Resources Division to "Aquatic Resources Division" and to establish four programmatic areas, one being the Saltwater Program. The Plan recommends that under this program, among other tasks, to include "projects related to the assessment of damages to natural resources, under which the impact caused by the grounding of vessels in the marine benthic resources to be assessed and mitigation or restoration measures are recommended" (p.122).

As a summary, the revision of the Strategic Plan states that the DRNA faces needs and challenges regarding its organizational structure, which prevent the effective development of the Program for the Conservation and Management of Coral Reefs. This promotes organizational improvements for the DRNA in general and particularly for the Negociado de Pesca y Vida Silvestre, which could ease the implementation of the Program. Therefore, suggests that the inclusion of the Program for the Conservation and Management of Coral Reefs within this division could allow the centralization of resources and consolidation of tasks provided in the law, under only one Negociado [Unit], instead of the dispersion of responsibilities among multiple divisions.

## 1.3 Conclusion

The basic conclusion of this analysis is that the public, federal, and local policy, as well as the previous analyses conducted by the DRNA justifies the development of this unit, with the aim to strengthen the Program for the Conservation and Management of Coral Reefs of the DRNA. It was found that the initiative is consistent with the federal public policy, with the statements and demands of Act No. 147 and with other local initiatives aimed to the conservation and management of these resources.

Currently, although the Program exists, it is not completely fulfilling its duties as established by Act No. 147, matter which partly responds to an organizational issue. In the way it was identified in various official planning papers of the DRNA, challenges in the organizational structure of the DRNA exist that prevent the effective development of the Program. The responsibilities of the Program are dispersed among various units and divisions, which requires a reassessment to consolidate and coordinate efforts.

This limitation, among others already discussed, affects the effective communication of the DRNA with the state, federal, educational, and scientific agencies and instrumentalities that might have impact or jurisdiction over the aspects of this Act. These also prevent the performance of the powers of the Secretary of the DRNA to take

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all necessary measures for the protection, conservation, and management of coral reefs and coral communities in the territorial waters of the Commonwealth of Puerto Rico. As a result, the effectiveness of the Program is impacted, which puts it at risk.

In accordance with the Act No. 147 and Executive Order 13809, one of the roles of the Program would be to ease interagency communication, and with the federal instrumentalities such as NOAA and the USCRTF, in addition to streamlining the access to technical assistance and federal funds. It will also help with the implementation of the LAS in coordination with the national action strategies and plans for the conservation of coral reefs. This implies that the solution to the organizational issue is a priority.

Finally, Act No. 147 suggests the legislative intent of the policy maker in regard to the organizational structure to follow, to appoint the Director of the Negociado de Pesca y Vida Silvestre as the Chair of the Advisory Committee. This appointment implicitly suggests that the responsibility of the program is that this Unit and not necessarily the Negociado de Costas, Reservas y Refugios where the program is currently located.

## II. CASE STUDY: EXPERIENCE OF OTHER JURISDICTIONS

This section contains the results of the second task, "Case Study" that is part of the work plan to carry out the survey on the development of the Coral reefs program within the Departamento de Recursos Naturales y Ambientales [Natural and Environmental Resources Department] (DRNA).

The case study is a research method that is defined as the deep exploration of a defined system, based on extensive data collection, which can be applied to individuals, groups, programs, events or activities, among others (Creswell, 2002). For the aim of this report, the analysis of case study was conducted to assess the experiences of other jurisdictions in which programs have been established as coral reef programmatic units. This allows the study of organizational, programmatic, financial, and legal aspects, among other topics that are relevant to this study and that can be replicated in Puerto Rico. The results of the case studies will form the foundation for making recommendations to the programmatic unit that is proposed within the organizational structure of the DRNA.

### 2.1 Methodology

The case study can be performed by following the next five steps.

#### Illustration 2. Suggested steps for the usage of case studies in the research



#### 2.1.1 Approach

The analysis will be carried out through the study of multiple cases. In this, multiple cases are researched- in this case jurisdictions and topics- to address a subject matter.

#### 2.1.2 Selection of cases to be studied

Two states of the US have been selected for a detailed survey: Florida and Hawaii, due to the jurisdictional and legal similarities of both states with Puerto Rico, which include

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the involvement in federal programs, grants, enforcement of laws, among others. In addition, the programs of Florida and Hawaii are the most developed among the seven jurisdictions in the U.S.

Other jurisdictions internationally acknowledged for their formations of coral reefs were also studied. These include Australia (*Great Barrier Reef (GBR)*) and Belize (*Belize Barrier Reef Reserve System - BBRRS*). Both formations are registered as a World Heritage Site of the United Nations and have appointed units to protect coral reefs.

### 2.1.3 Data collection

#### 2.1.3.1 Examined criteria

For each jurisdiction, the following criteria were reviewed.

Origin and evolution of the Program	<ul style="list-style-type: none"><li>• Since when was the Program established</li><li>• The way it was created: (For example, through law, agreement or changes in administrative structure)</li></ul>
Organizational Context	<ul style="list-style-type: none"><li>• Location of the program within the governmental responsible agency</li><li>• The way it works: for example, advisory body or board of directors</li><li>• Partners</li></ul>
Organizational structure and internal programmatic	<ul style="list-style-type: none"><li>• Structure</li><li>• Staff (for example: managerial, technical, administrative, voluntary).</li><li>• Functioning modes</li><li>• Responsibilities</li><li>• Scope</li></ul>
Funding	<ul style="list-style-type: none"><li>• Budget</li><li>• Source of funds</li><li>• Distribution of funds</li></ul>

#### 2.1.3.2 Consulted information sources

To carry out this research, sources of primary and secondary information were combined.

### Secondary sources

Among the secondary sources of information that were reviewed are:

#### | Laws and regulations

Federal:

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- *U.S. Executive Order 13089: Coral Reef Protection (1998)*
- *U.S. Coral Reef Conservation Act (2000)*
- *United States Coral Reef Task Force Charter (2001)*
- *Puerto Rico Resolution (2002)*

#### Florida:

- *Florida Coral Reef Protection Act (2009)*
- *Southeast Florida Coral Reef Initiative Team Charter (2012)*

#### Hawaii:

- *Hawaii Coral Reef Working Group Charter (Draft Revisions 2015)*

#### Australia

- *Emerald Act (1979)*
- *GBR Intergovernmental Agreement (2009)*

#### Belize:

- *Coastal Zone Management Act (1998)*

#### Strategic Plans:

- *Florida: Coral Reef Conservation Program 2011-2016 Strategic Plan. (2011)*
- *Hawaii: Hawaii Coral Reef Strategy: 2010-2020. (2009)*
- *Australia: Reef 2050 Long-Term Sustainability Plan. (2015)*
- *Belize: Belize Integrated Coastal Zone Management Plan. (2013)*

#### Web pages of the responsible agencies:

- *Florida: Florida Department of Environmental Protection (FDEP)*
  - Office: Florida Coastal Office (FCO)
  - Web page of the program: *Coral Reef Conservation Program (CRCP)*
- *Hawaii: Hawaii Department of Land and Natural Resources (DLNR)*
  - Office: Division of Aquatic Resources (DAR)
  - Web page of the program: *State of Hawaii Coral Reef Program (HCRP)*
- *Australia: Australia Government Great Barrier Reef Marine Park Authority (GBRMPA)*

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- Web page of the entity: <http://www.gbrmpa.gov.au/>
- Belize: Coastal Zone Management Authority and Institute (CMZAI)
  - Web page of the entity: <http://www.coastalzonebelize.org/>

## Primary Sources

To check the secondary gathered information, particularly in the jurisdictions of Hawaii and Florida, telephone interviews with staff of these two programs were conducted.

- *Hawaii*: The interview was carried out on August 4, 2015 at 3pm AST. The following persons were interviewed:

Name: Ray K. Chimera<sup>5</sup>  
Title: Department Contract Specialist  
Institution: DAR, DLNR

Name: Anne Rossini  
Title: Marine Resource Specialist  
Institution: DAR, DLNR

Name: Charisa (Rise) Minato  
Title: Program Coordinator  
Institution: Hawaii Coral Reef Initiative, University of Hawaii, Social Science Research Institute

Name: Brian Kadenaka  
Title: Acting Program Manager  
Institution: Environmental Program, DAR, DLNR

- *Florida*: The interview was carried out on August 7, 2015 at 10:30am AST. Joanna Walczak was interviewed, Southeast Florida Regional Administrator for the Florida Coastal Office (FCO) Florida Department of Environmental Protection (FDEP).

### 2.1.4 Analysis

To consolidate the gathered information and to ease the comparison, several tools of analysis were used. These include:

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<sup>5</sup> Subsequently, on September 17, 2015 we had a call from Mr. Chimera to clarify several issues on the operation of the Program.

## Recommendations

### Coral Reef Conservation and Management Program

- Comparison chart: To ease the comparison among jurisdictions, the information for each examined criterion was discussed in a chart.
- Flowcharts: For the jurisdictions of the US that were studied, the organizational and programmatic information has been consolidated on flowcharts.
- Timelines: The legal framework and the evolution of the different programs of the US were summarized using timelines.
- The relevant information was also described for each reviewed criterion.

## 2.2 Results

In the following sections summarize the findings for each of the reviewed jurisdictions. At the end, a table that summarizes these findings is presented, in addition to other international reviewed jurisdictions.

### 2.2.1 General Evolution of the Programs in the U.S.

In the jurisdictions in the U.S., the reef programs were driven by the same federal legal foundation. This legislation basically consists of *Executive Order 13809 of 1998* that created the *U.S. Coral Reef Task Force (USCRTF)*; the *Coral Reef Conservation Act of 2000*, by which the *National Action Plan to Conserve Coral Reefs* was adopted, developed in 2002 and the *Puerto Rico Resolution 2002*, which provides for the creation of the *Local Action Strategies (LAS)* in each jurisdiction. Even when these are born from the same federal legal foundation, each jurisdiction has evolved in a different way, depending on existing programs and the local context.

It is relevant to note that among Puerto Rico, Hawaii, and Florida, Puerto Rico is the only jurisdiction that has an Act that provides for the creation of a reefs program (Act No. 147-1999, as amended). In the other jurisdictions, the programs were created in response to the federal legislation and the need to lead the LAS. However, since the creation of the programs in Hawaii and Florida, these jurisdictions have passed laws and *charters* that support and strengthen their programs and expand their powers and responsibilities.

For example, in Florida the *Florida Coral Reef Act* was passed in 2009, which establishes penalties for the damage caused to coral reefs and associated resources and provides how to handle the raised funds. This Act expands the responsibilities of the program in Florida, as for example, to respond to groundings of vessels, among others. In addition, Hawaii and Florida, both jurisdictions have created strong advisory committees to lead the efforts of their programs. The responsibilities of these committees and their

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respective roles in the reefs programs are delimited in *charters* or legal agreements. Also, in Florida and Hawaii, strategic plans have been created at 5 and 10 years term, respectively, to lead the efforts over time. In comparison with these two jurisdictions, Puerto Rico is lagging behind in the development of its Program, considering that has not developed a strong advisory committee with legal agreements, or a strategic plan.

Another important finding for the aim of this survey is the fact that none of the programs in the jurisdictions of Florida or Hawaii works as units or divisions within their respective agencies. Instead, these are programs that exist within an office or division. In Florida, the program can be found on the *Florida Coastal Office* along with other programs and projects. In Hawaii, the program can be found at the *Division of Aquatic Resources* within the branch of *Environmental Protection*, along with other programs.

In the following sections, we get in depth into the evolution of each of these jurisdictions and their characteristics.

## 2.2.2 Florida

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### 2.2.2.1 Origin and evolution of the program

The Florida *Coral Reef Conservation Program (CRCP)* was created in response to Federal legislation previously described, which proposed the need to lead the LAS. Among the programs in the U.S., this has been one of the first to evolve and develop. According to the results of this research, the program of Florida is shown as the most complete, organized, and successful of the three surveyed jurisdictions in the US.

Its development started in 2003 with the incorporation of the *Southeast Florida Action Strategy Team (SEFAST)* to develop the *Local Action Strategies (LAS)* in Florida. The SEFAST was developed by the *Florida Department of Environmental Protection (FDEP)*, along with the *Florida Fish and Wildlife Conservation Commission (FWC)*, with the support of USCRTF.

In 2004 the membership of SEFAST was extended to include representatives outside the agency. The SEFAST was renamed as the *Southeast Florida Coral Reef Initiative (SEFCRI)* group. In that year, the FDEP created the *Coral Reef Conservation Program (CRCP)* through administrative mechanism to coordinate the SEFCRI and manage the Southeast region of Florida. The CRCP became the entity responsible for the program, with support and advice of SEFCRI, which became the interagency advisory committee.

In 2009, the *Florida Coral Reef Protection Act* was passed, by which the penalties for damage to coral reefs were established. Through this Act, the responsibilities of the

## Recommendations

### Coral Reef Conservation and Management Program

CRCP were expanded and the *Reef Injury Prevention and Response Program (RIPR)* was created. Also in 2009, the process for the development of the *Coral Reef Conservation Program 2011-2016 Strategic Plan* started, which provides the framework for the development of the reef program.

In the same year, the *FDEP Office of Coastal and Aquatic Managed Areas (CAMA)* implemented a new state policy for the involvement of stakeholders interested in the programs of CAMA. The *SEFCRI Team Charter* was revised and in 2012 the new *charter* was issued in accordance with the new involvement policy. This *charter* clarifies the role of the SEFCRI as adviser entity to the CRCP, led by the FDEP, mainly with respect to the development and coordination of the LAS projects. The *Charter* of 2012 established the mission, the objective, and the organizational structure of SEFCRI and its relationship with the CRCP of FDEP. CAMA was renamed as the *Florida Coastal Office (FCO)*.

#### 2.2.2.2 Organizational Structure

The FDEP is the primary government agency responsible for the management and administration of the environmental resources of the state. It is formed out by three programmatic areas; 1) *Regulatory Programs*, 2) *Land and Recreation*, and 3) *Policy and Planning*. The CRCP is subordinated to the FCO, which is under the programmatic area of *Land and Recreation*. Besides the CRCP, FCO has other three programs: 1) *Aquatic Reserves*, 2) *National Estuarine Research Reserves*, and 3) *Florida Keys National Marine Sanctuary*.<sup>6</sup>

The location of the CRCP at the same office, where these other marine programs are located, facilitates coordination. Each program has a defined geographical area, a clear purpose and a separate legal foundation, but has the flexibility to partner in areas where geographic or thematic overlapping exists.

As noted in the following flowchart, the FDEP works jointly conjunction with other agencies and initiatives at the federal, state, and local levels to support the CRCP. The CRCP is supported by 12 federal agencies, state a partner agency, the *Florida Fish and Wildlife Conservation Commission (FWC)*, four local governments, in addition to partner with other entities and NGOs.

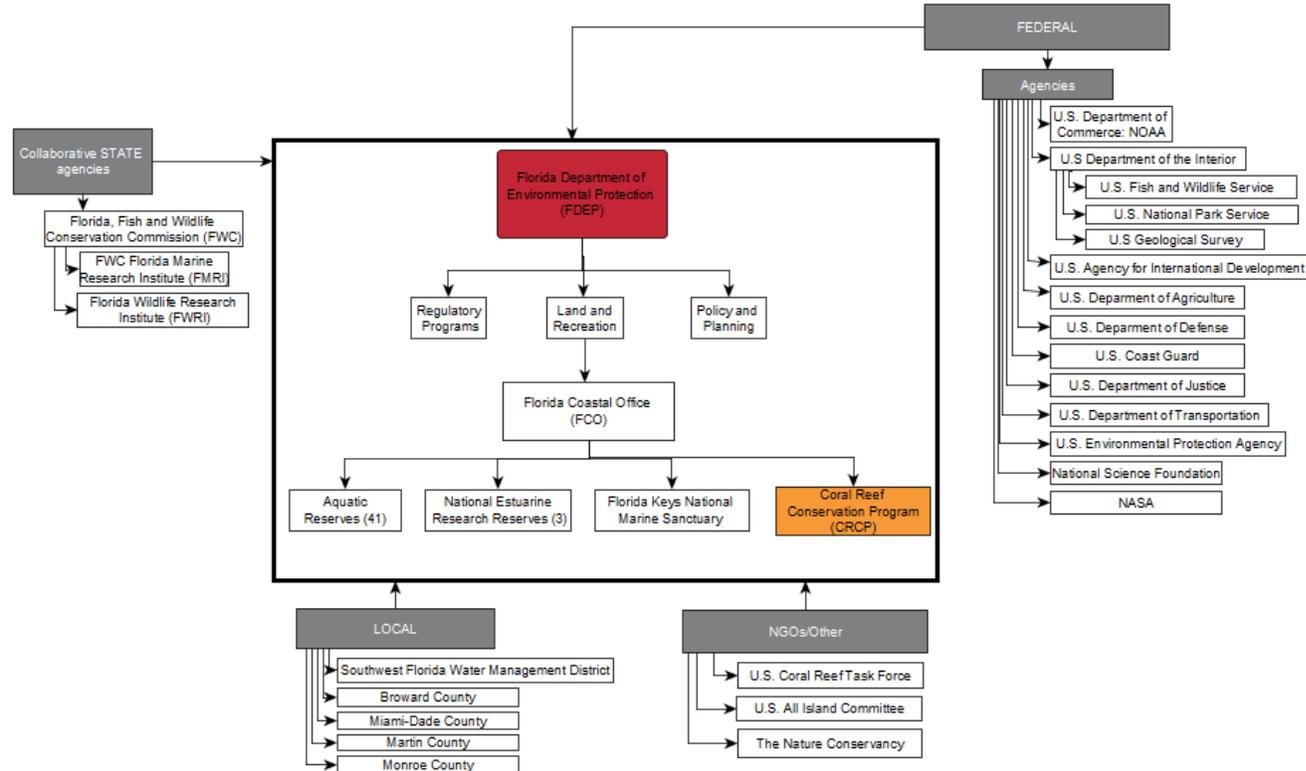
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<sup>6</sup> In addition to the CRCP, FCO has other three divisions: (1) *Aquatic Reserves*: Monitors 41 aquatic reserves, which comprise approximately 2.2 million acres. Aquatic reserves have a legal origin with the establishment of the *Aquatic Preserve Act* in 1975, incorporated by the state of Florida; (2) *National Estuarine Research Reserves*: Monitors 3 researching reserves, which include 420,880 acres. The reserves have legal origin under section 315 of the *Coastal Zone Management Act (CZMA)* which provides the *National Estuarine Research Reserve System (NERRS)*; (3) *Florida Keys National Marine Sanctuary*: Supervises 1 sanctuary. In 1972, the Federal Congress passed the *Marine Protection, Research and Sanctuaries Act*. Currently, 14 sanctuaries exist across the U.S.; the sanctuary of 2,900 nautical miles<sup>2</sup> of Florida which legal origin is in the *Florida Keys National Marine Sanctuary and Protection Act* of 1990, also established by the Federal Congress.

## Recommendations

### Coral Reef Conservation and Management Program

**Illustration 3. Organizational Structure and Supporting Federal, State, and Local entities**



## Advisory Group

Interagency communication is facilitated by the advisory committee, better known as the SEFCRI team, whose members come from federal, state, and local agencies.

According to the *SEFCRI Team Charter of 2012*-this advisory unit was created with the aim of formulating, coordinating, developing, reviewing, and implementing the LAS projects in the southeast region of Florida and to provide recommendations to the CRCP about these topics. SEFCRI consists of 64 voting members. It is a multidisciplinary team that is formed out by members of federal, state, local, regional agencies, academics, NGOs, and private entities, among others.

The Charter of 2012 describes in detail the mission, vision, objectives, strategies, and the role of the SEFCRI, along with its relationship to the CRCP. The SEFCRI provides ongoing feedback to the CRCP on projects development. In this way, CRCP may improve and coordinate their programs.

### 2.2.2.3 Organizational structure and internal programmatic

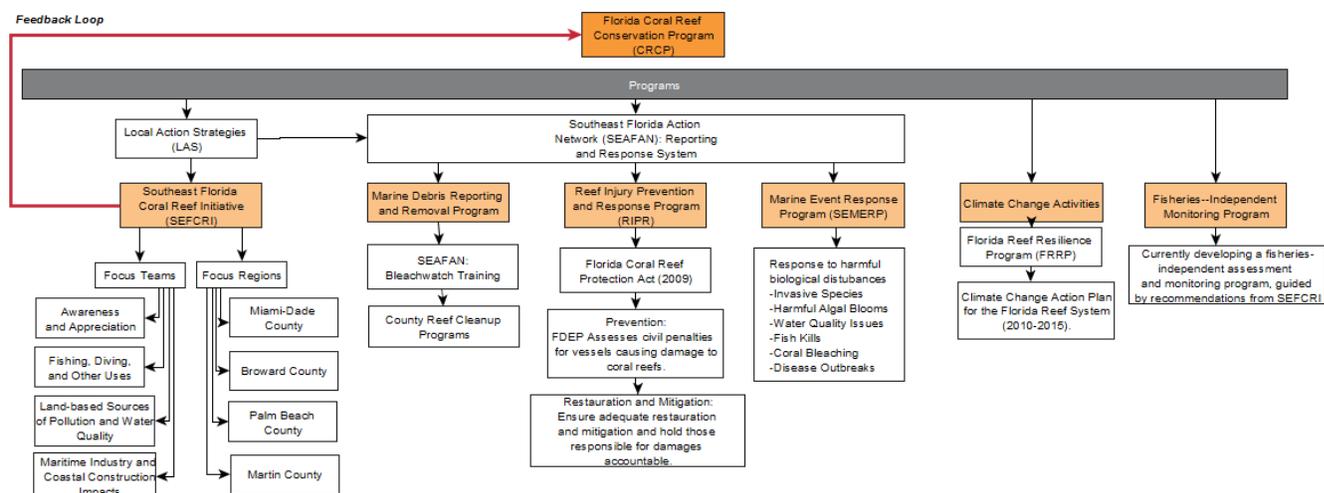
## Recommendations

### Coral Reef Conservation and Management Program

## Internal Structure of the CRCP

As noted in the following illustration, multiple programs exist under the CRCP. In general, programs are oriented to address the focal topics and regions of the LAS, established by the SEFCRI advisory body. SEFCRI is the program and body responsible for the LAS and provides information to the CRCP.

Illustration 4. Programmatic structure-Florida



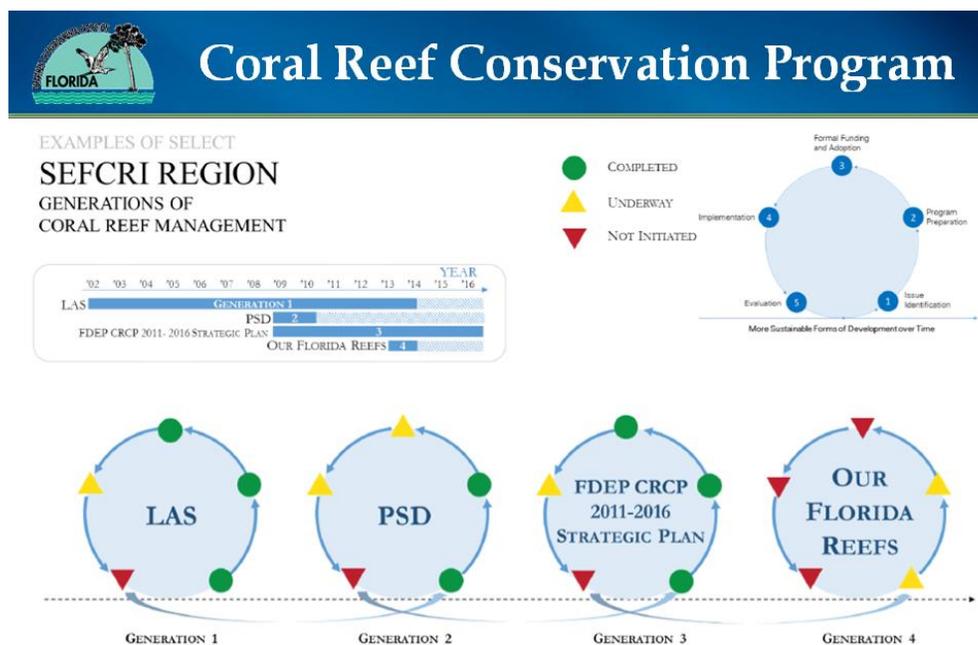
The three programs under the *Southeast Florida Action Network (SEAFAN)* support the efforts of the LAS. The other programs support and expand these efforts, through monitoring, mitigation activities and regulations, reporting, and the drafting of responses to harmful effects to reefs, such as climate change or grounding of vessels.

While the LAS allow Florida to respond to the federal legal scope, the action scope of the Program is not limited to these. On the contrary, Florida has established new local laws, as the *Florida Coral Reef Protection Act of 2009*, which creates new programs that integrate the established efforts. In addition, Florida considers the LAS as the first generation of a series of programs that have evolved, as shown in the following diagram. Currently the state is working on a fourth-generation programming, called *Our Florida Reefs*. This is developed through a partnering and community planning effort to protect and manage the reefs.

## Recommendations

### Coral Reef Conservation and Management Program

Illustration 5. Evolution of the Program in Florida



## Operation of the Program

The programmatic coordination of CRCP is based in the *CRCP 2011-2016 Strategic Plan*, which clarifies the responsibilities of the different entities and provides the framework for the reefs program. This paper describes the evolution and organizational structure of the CRCP, delimits its vision and mission, and establishes the goals, objectives, and strategies for the implementation of the program. The paper was published in 2011 and serves as a guide for the coordinated development of the program.

The program is monitored through a *CRCP 2011-2016 Strategic Plan Tracker*, a paper in Excel format that documents the annual progress towards achieving the goals and objectives. (See Appendix B for the structure and contents of the *Tracker*).

## Responsibilities

In accordance with the *CRCP 2011-2016 Strategic Plan*, the main responsibilities of the CRCP are the following:

- Coordinate research, monitoring, and mapping
- Implement the LAS
- Promote communication and partnership with the stakeholders
- Promote educational activities to raise awareness among the public on the value of coral reefs and related resources and the need for protection

## Recommendations

### Coral Reef Conservation and Management Program

- Implement the Southeast Florida Coral Reef Initiative (SEFCRI)
- Contribute to the National Action *Plan* to preserve coral reefs.

Recently, due to the growing pressure due to the usage of resources, the responsibilities of the CRCP have been expanded to include topics that include coordinating and leading answers towards groundings or any other event which impact on the resources would be harmful, among other responsibilities.

## Staff

In accordance with the *CRCP 2011-2016 Strategic Plan*, the program must have the following staff: 1 Manager, 1 assistant to the manager, 1 office manager, 3 project managers, 1 coordinator of the *Reef Injury Prevention & Response Program* (RIPR), 1 project associate coordinator, 1 program assistant, 1 specialist in the maintenance of the facilities, 1 NOAA CRCP fellow, 1 NOAA Fisheries liaison, and in-house.

According to the interview with the program staff and supporting documents provided by these, currently 14 employees are working at the CRCP<sup>7</sup>:

- 1 Full-time employee (funded by the state - devoted to the CRCP)
- 2 Full-time employees (funded by the state - divided with the CRCP)
- 7 Full-time employees (federally funded)
- 2 Part-time employees (funded by the state - 1 part-time)
- 1 Part-time employee (funded with federal funds CMZA)
- 1 Full-time employee (NOAA Coastal Fellow).

It was also stated that the program has two offices, two vehicles, and one boat.

## Scope

Several entities are managing the coastal area of Florida, as detailed in the following map. The CRCP serves mainly the focal regions established by the LAS, which include the waters and reefs in the counties of: Miami-Dade, Broward, Palm Beach and Martin, and cover 240,000 acres. The Florida Keys National Marine Sanctuary is another 2.3 million acres area, which is managed separately from the CRCP, through a partnership between NOAA and the FDEP. Finally, the Biscayne Bay Aquatic Preserves are also independently managed and covers 67,000 acres. In total, the entire area described as the Florida Reef Tract covers about 330 nautical miles from Dry Tortugas in Stuart to Martin County.<sup>8</sup>

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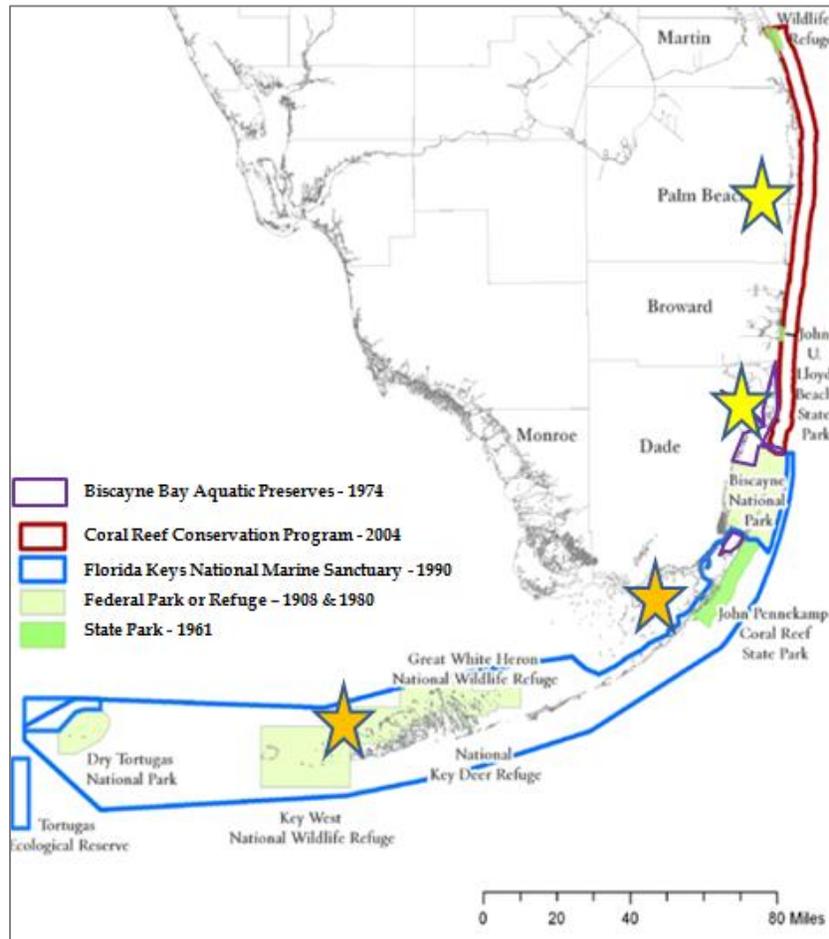
<sup>7</sup> Taken from the presentation: Florida Department of Environmental Protection. Coral Reef Conservation Program (CRCP). May 21, 2015. Presented by: Joanna Walczak, SE Regional Administrator - Florida Coastal Office.

<sup>8</sup> Map and data obtained from the interview with Joanna Walczak of Florida Coastal Office.

**Recommendations**

Coral Reef Conservation and Management Program

**Illustration 6. Scope-Jurisdiction of Florida**



Source: Provided by the Florida Coastal Office.

## Recommendations

### Coral Reef Conservation and Management Program

#### 2.2.2.4 Funding

##### Budget

According to the interview and the supplementary documents, the annual budget for the CRCP is approximately \$1,200,000.

##### Source of funds

According to the interview with Joanna Walczak, Florida is the only jurisdiction in the US that has a formalized coral program with appointed employees from the FDEP, which provides additional funds to the ones provided by the NOAA. 50% of the annual funds (or approximately \$500,000) comes from federal resources, while the other 50% comes from state funds.

The CRCP also has a trust fund which pays the fines imposed to vessels that have damaged coral reefs. The *Florida Coral Reef Protection Act* details the fines. The CRCP is authorized to spend \$50,000 per year of this fund, to pay one technical position for the *Reef Injury Prevention and Response Program*. Recently, a civic supporting organization was established, known as the *Friends Group*, a non-profit entity (501c3), able to receive donations.

The *Florida Fish and Wildlife Conservation Commission (FWC)*, the partner agency of the FDEP, also receives federal funds from the *Sport Fish Restoration Program*. The FWC also contributes with protection, implementation, research, and education programs that have an impact on the coral reef management.<sup>9</sup>

However, it was noted that even with the government's contribution to the CRCP, the growing programmatic needs are not met. Currently, leaders of the state are working to increase the role of the private sector and the civil society to contribute to the management of these resources. From the management point of view, gathering more federal or state funds for the management of coral reefs is not usually perceived as an achievement or goal, as these funds come from a tax base. On the contrary, the concept of public-private partnering is increasingly emerging as a solution to reduce the expenditure of the state or federal government. However, additional efforts are needed to identify these alternative sources of funding.

Furthermore, it was stated that there is a high turnover of employees, due to the shortage of resources.

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<sup>9</sup> This is similar to the *Negociado de Pesca y Vida Silvestre* of the DRNA.

## **Distribution of funds**

Approximately half of the budget is spent on the wages of the employees.

### **2.2.3 Hawaii**

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#### **2.2.3.1 Origin and evolution of the Program**

Similar to Florida, the Hawaii Coral Reef Program (HCRP) was also created to respond to the federal legislation. In particular, the *Puerto Rico Resolution 2002*, which provides the incorporation of the LAS in each jurisdiction. The program was created by the DAR to respond to this responsibility. Although there was no specific legislation for the creation of this program, the DLNR-the agency of Hawaii responsible for the program-is subject to the following two passed laws in 2005:

- HAW REV. STAT §26-15 – Delegates the DLNR the authority and responsibility to manage and administrate aquatic life of the state and
- HAW REV. STAT §187A-2 – Delegates the DLNR the powers and responsibilities of:
  - Managing and administrating aquatic life and resources of the State;
  - Establish and keep stations to disseminate aquatic life.

To comply with their responsibilities, for several years the DAR of the DLNR was coordinating initiatives related to the marine resources, mainly the conservation of coral reefs. These included the development of various plans and strategies for the management of marine resources and, as of 2002, to lead the development of the LAS. However, many of the initiatives were developed independently. This led, on one hand, for areas without management to exist on the other hand, duplication of roles within the same organizational structure. To address this need, in May 2007 various efforts started through the development of the paper "*The Hawai'i Coral Reef Strategy: Priorities for Management in the Main Hawaiian Islands, 2010-2020*" (HCRS). The paper was issued in 2010 and serves as a guide for conservation projects of reefs in the state.

The process of creating this new strategic plan led to the establishment and restructuring of the *Coral Reef Working Group (CRWG)*, which is an interagency advisory group, formed out by representatives of key federal and state agencies.

Similar to the SEFCRI in Florida, the CRWG was established to advise the reefs program in Hawaii, mainly with the drafting and implementation of the LAS. In 2008 the CRWG was reorganized and its mission was developed. In addition, the commitment of guiding the Hawaii Coral Reef Strategy was requested to the group. The CRWG added

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### Coral Reef Conservation and Management Program

key members to comply with the commission, who were identified by the CRWG and NOAA themselves.

The decisions made by the CRWG determine how a reef program is being developed. The HCRP receives federal funds allocated to implement their projects.

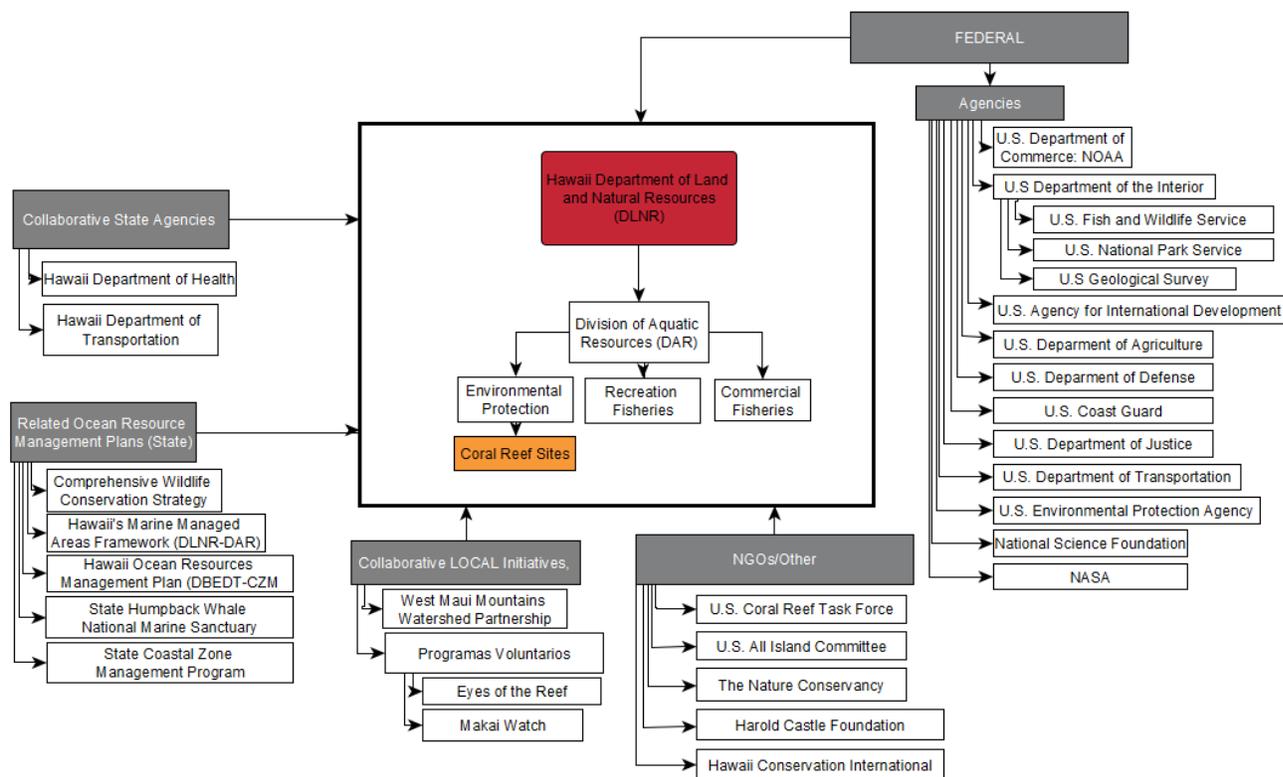
#### 2.2.3.2 Organizational Structure

The HCRP is under the Division of Aquatic Resources (DAR) of the Hawaii *Department of Land and Natural Resources (DLNR)*. As described, the DLNR is the primary governmental agency responsible for the management and control of public land and aquatic resources, including the marine waters and coastal areas (but trading ports).

There are many divisions within the agency. The DAR manages aquatic resources and ecosystems through programs aimed to the management of ecosystems, management strategies, and management of fisheries. The DAR has three branches; 1) *Environmental Protection*, 2) *commercial fisheries*, and 3) *Recreational Fisheries*. The reefs program is under the Environmental Protection branch. As discussed below, in the programmatic analysis, there is a lot of overlap between the responsibilities and the staff of these three branches. Therefore, the role of the HCRP is to coordinate efforts to manage and protect coral reefs.

As noted in the flowchart, the HCRP/GIVE partners with several entities outside of the agency. These include 12 federal agencies, 2 state agencies, several NGOs, universities, foundations, and voluntary programs. Additionally, it seeks to coordinate with other marine resources management plans relevant at the state level. Similar to SEFCRI in the case of Florida, the HCRP also has an advisory group--in this case the *Coral Reef Working Group (CRWG)*--to coordinate entities and local, state, and federal efforts.

**Illustration 7. Organizational Context: Supporting Federal, State, and Local Entities**



This year (2015) the *Hawaii Coral Reef Working Group Charter* is being reviewed, which sets out the structure of the CRWG, its roles, and responsibilities. Currently, in accordance with its Charter, the CRWG provides the following services:

- | Oversees and guides the conservation of coral reefs in Hawaii;
- | Develops the performance metrics for the conservation of coral reefs;
- | Defines the criterion for the selection of projects to be funded by the NOAA Coral Management Grant;
- | Looks for several forms of support (monetary, technical, and political);
- | Develops processes for the integration of research, management, and public policy.

The voting members of the CRWG consist of thirteen representatives from federal and state agencies. Members responsible for the review include representatives of the program, the NOAA *Federal Program Officer* and representatives of NGOs. The members that appear before the CRWG are the coordinators of the local priority sites and project coordinators of the DAR. The CRWG is must meet four times a year.

## Recommendations

### Coral Reef Conservation and Management Program

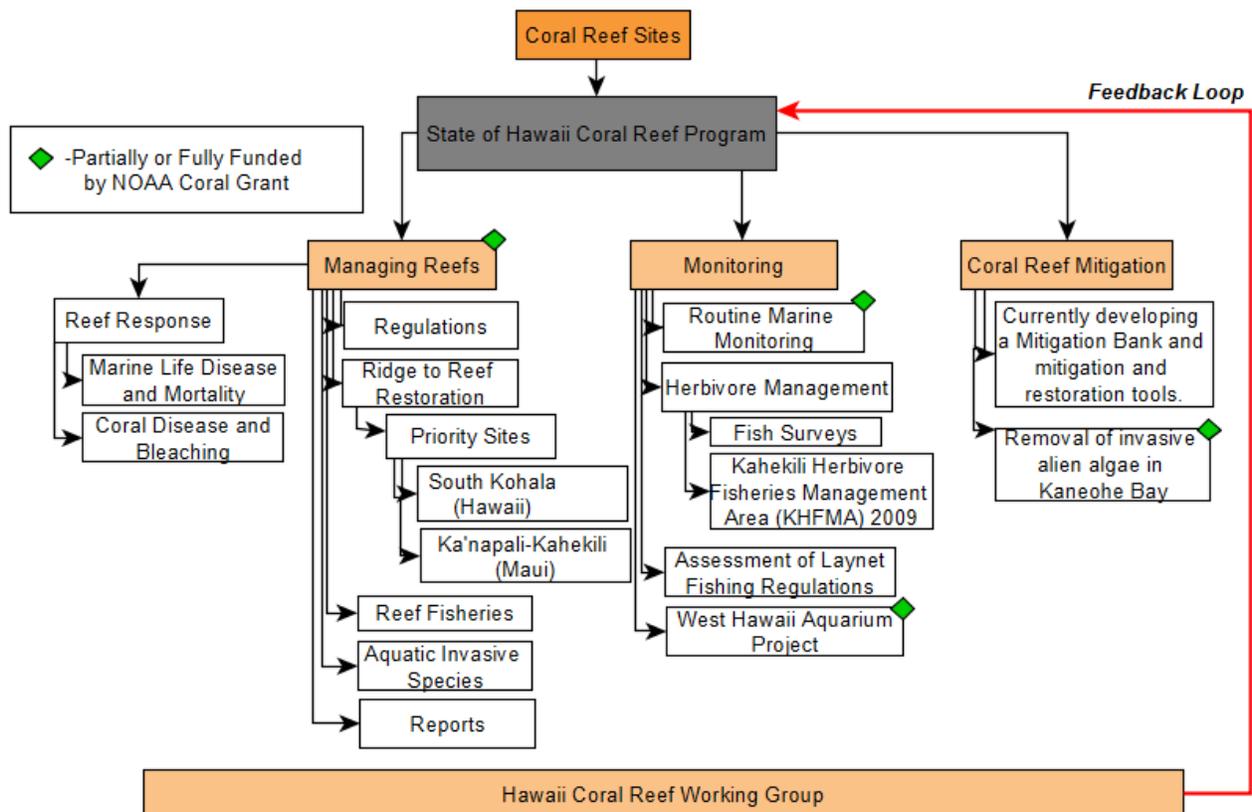
In this way, the DAR, the CRWG and local coordinators work together to lead the efforts. The role of the HCRP is coordinating the programs of these entities.

### 2.2.3.3 Organizational and programmatic structure

#### Structure

According to the interview, the HCRP is responsible for coordinating the efforts of the DAR that correspond to coral reefs.

Illustration 8. Programmatic structure-Hawaii



As previously described, the three programs of the DAR have overlap in terms of areas, topics, and staff. In general, through these programs the DAR, projects are operated to:

- | Protect and restore the aquatic environment
- | Protect extinction endangered aquatic species
- | Conserve and restore endemic and native aquatic species and their habitats
- | Effectively manage fishing areas and

## Recommendations

### Coral Reef Conservation and Management Program

- | Develop systems of education and public dissemination.

The HCRP is part of the *Environmental Protection* and its role is to coordinate programs and initiatives that include management, monitoring, and mitigation efforts of the coral reefs. As noted in the previous chart, each programmatic area has several subprograms. Some of the activities of the HCRP also support other programs of the DAR of trading and recreational fisheries in the monitoring and mitigation efforts. In the flowchart, the stated programs with the green diamond are those that are fully or partially funded by the *NOAA Coral Reef Grant*.

## Operation of the Program

The *Hawai'i Coral Reef Strategy: Priorities for Management in the Main Hawaiian Islands, 2010-2020* (HCRS) is the main paper that guides the evolution of the program. It was developed through an intensive process of collaborative planning among the DAR, the CRWG, the *Advisory Groups*, and other stakeholders. This paper includes thirty four goals and objectives, which were prioritized. Out of these, five were chosen as a priority for the next ten years. In addition, two priority sites were chosen for the implementation of the program over the next three to five years.

## Responsibilities

The HCRP is responsible for coordinating the local, state, and federal efforts for the management of the reefs. The CRWG is responsible for determining the distribution of federal funds and the priority sites. The HCRP is responsible for the following efforts:

- | Critical efforts of planning
- | Community Action
- | Awareness-raising activities
- | Scientific research with direct applications to the management of resources
- | In-situ management projects.

The results of these efforts resulted in larger capacity for the development of strategies to protect the reefs and a better understanding of the main threats to coral reef ecosystems in the priority sites.

## Staff

The HCRP works as the entity that coordinates the various efforts of the DAR/DLNR to protect coral reefs. In accordance with the interview and the *Draft Charter* of the

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CRWG, within the DLNR, two permanent positions exist with responsibilities within the HCRP, which are funded by the state. These are:

- | *The DAR Planner:* It is responsible for the supervision and coordination of the HCRP and its technical processes. It is supported by staff from the DLNR-DAR. Currently, this position is vacant.
- | *Contract Specialist:* Provides accounting and recruitment services to support the management of the funding of the HCRP, its programs and projects.

In the interview, it was reported that the program currently is also in a restructuring process, because this year was possible to get state funding for three positions that previously were financed with funds from the NOAA. These three positions are:

- | *Legal Fellow-During the past seven years, this position was funded entirely by federal funds and now will be funded by the state.*
- | *Marine Resource Specialist - For 2 years was funded by federal funds and also will be fully funded by the state.*
- | *Community Based Subsistence fishing Area Coordinator-This position works with specific communities to design the rules for the usage of particular areas. For two years, the position was funded by nonprofit organizations and now it will be funded by the state. The division is complying with a legislative mandate by means of the support of this position.*
- | *Through the program, the state also provides funds for three divers' positions, whose role is to study and monitor the reef.*

In the interview the importance of initially obtain federal funds for programs and positions was mentioned, as the three previously listed. This allows demonstrating its effectiveness before the state and then to achieve the permanent funding with local funds which, as stated, makes them more stable.

The HCRP depends on the support of other staff from the DLNR-DAR whose responsibilities are not limited to the reef program. According to the interview, the support staff within the DAR comprises 10 technicians, 10 biologists, the administrator of the DAR and four teachers.

In addition, in accordance with the HCRS and the *Draft Charter*, each of the two identified priority areas has a coordinator (*site-based coordinator*), planning team and an associated action plan. The interview should indicate that these positions are funded 50% by federal funds from NOAA and the remaining money comes from other

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### Coral Reef Conservation and Management Program

sources, such as nonprofit organizations. The program also counts with a NOAA Coral Fellow.

Finally, the HCRP accounts with two completely voluntary programs. The first is called *Eyes on the Reef*, which has four coordinators (one for each of the large islands). These are responsible for recruiting volunteers to report damages. So far we have trained more than 300 volunteers. The other program is called Makai Watch and has 90 volunteers in eight locations throughout the state. It works on education, awareness raising, monitoring, illegal incident reporting topics, among other issues.

In the interview it was indicated that once the position of the *DAR Planner* is filled, it is perceived that the staff is sufficient to support the program.

## Scope

In the *Comprehensive Wildlife Conservation Strategy (CWCS)*, issued in 2005, the coastal area of Hawaii, protected areas, and the jurisdictions of different agencies are described, including the DAR as follows:

- | *Hawaii consists of 8 large islands and approximately 124 small islands. It has 830 miles of coastline, the fourth longest length of the U.S. The state is technically the owner of the waters and underwater lands up to three miles of the coast.*
- | *The National Park Service manages marine habitats adjacent to three national parks.*
- | *The DLNR Division of Forestry and Wildlife manages the waters in the 'Āhihi Kīna'u Natural Area Reserve in Maui. The Kaho'olawe Island Reserve Commission manages the waters up to two miles from the coast of Kaho'olawe. The DOT-Harbors Division controls access to ten commercial ports in the state and several recreational ports.*

Additionally, all of these areas are also under the jurisdiction of the DLNR-DAR, since it is the agency is responsible for managing the waters of Hawaii. The DLNR-DAR manages 11 districts for the conservation of marine life, 19 management areas of fish, nine areas of breeding of fish, two wildlife sanctuaries, 18 banned areas and fishing area in South Kona 'Ōpelu. In addition, the DLNR jointly with NOAA protects 900,000 acres of marine waters through the *Hawaiian Islands Humpback Whale National Marine Sanctuary*.

Since 2002, the DAR has been responsible for developing six thematic LAS to protect the coral reefs of Hawaii. To focus the available resources towards the conservation efforts, in 2010 the HCRS was developed, where two priority areas were declared as

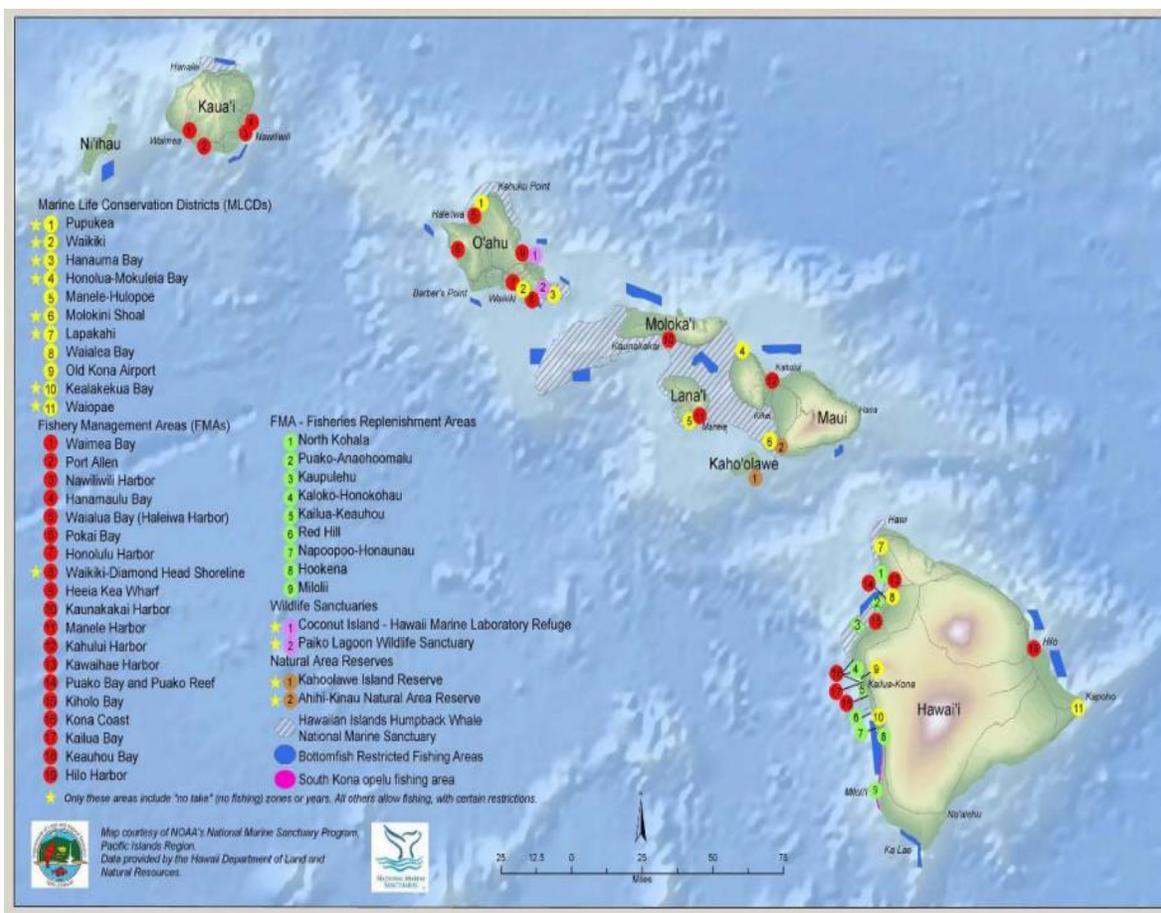
## Recommendations

### Coral Reef Conservation and Management Program

priority under the management of DAR to implement the LAS, guided by the CRWG. The two priority areas are:

- | West Maui Watershed: 24,000 acres. Includes the basins of Wahikuli, Honokōwai, Kahana, Honokahua, and Honolulu.
- | South Kohala Watershed, Hawaii: Includes 4 basins, 24,797 marine acres and 138,105 land acres.

Illustration 9. Marine protected areas in Hawaii



Provided by: Hawaii Department of Aquatic Resources, Department of Land and Natural Resources.

### 2.2.3.4 Funding

#### Budget

In accordance with the *Executive Supplemental Budget* for the DLNR, under LNR-401, the budget for the *Division of Aquatic Resources* for the fiscal year 2014 was US\$5,964,517. By 2015, the approved budget remained the same, although the recommended budget was US\$8,363,444. The budget allocated to the HCRP varies on

## Recommendations

### Coral Reef Conservation and Management Program

an annual basis, depending on the available funds. In the interviews it was stated that the program receives approximately US\$650,000 - US\$750,000 in federal funds on an annual basis, and that the state provides additional funds.

### Source of funds

The funds for the CRCP originate from several sources. In the interview it was reported that 75% comes from federal sources and 25 from the state. The federal sources are mainly grants from the NOAA, covering several positions and pilot programs. However, as previously discussed, the state has increased its contribution to the program to see its effectiveness and the effectiveness of its staff. This has led to the reduction of its dependence on federal funds.

At the time of the issuing of the HCRS, the possibility of a *coral reef Mitigation Fund* was under discussion, supported by local, state, and federal organizations. This paper recommends that such fund to be developed jointly with a sustainable funding plan to guide the management of the income. The HCRS was also discussing the issue of the high turnover rate of employees, because the majority of the positions were funded by federal funds.

In the interview it was stated that the funding plan and trust fund were still in development projects. However, a trust fund exists, which is nourished by fostered from fines due to groundings or other damage to these resources, such as pollution. Fines are set on a case by case basis, depending on the severity of the offense.

### Distribution of funds

The federal and state funds pay staff salaries. The Income to the trust fund is used to support research activities. During the interviews it was reported that it is difficult for them to break down the budget per category, because the funds are mostly federal, vary each year and depend on the negotiation with the NOAA.

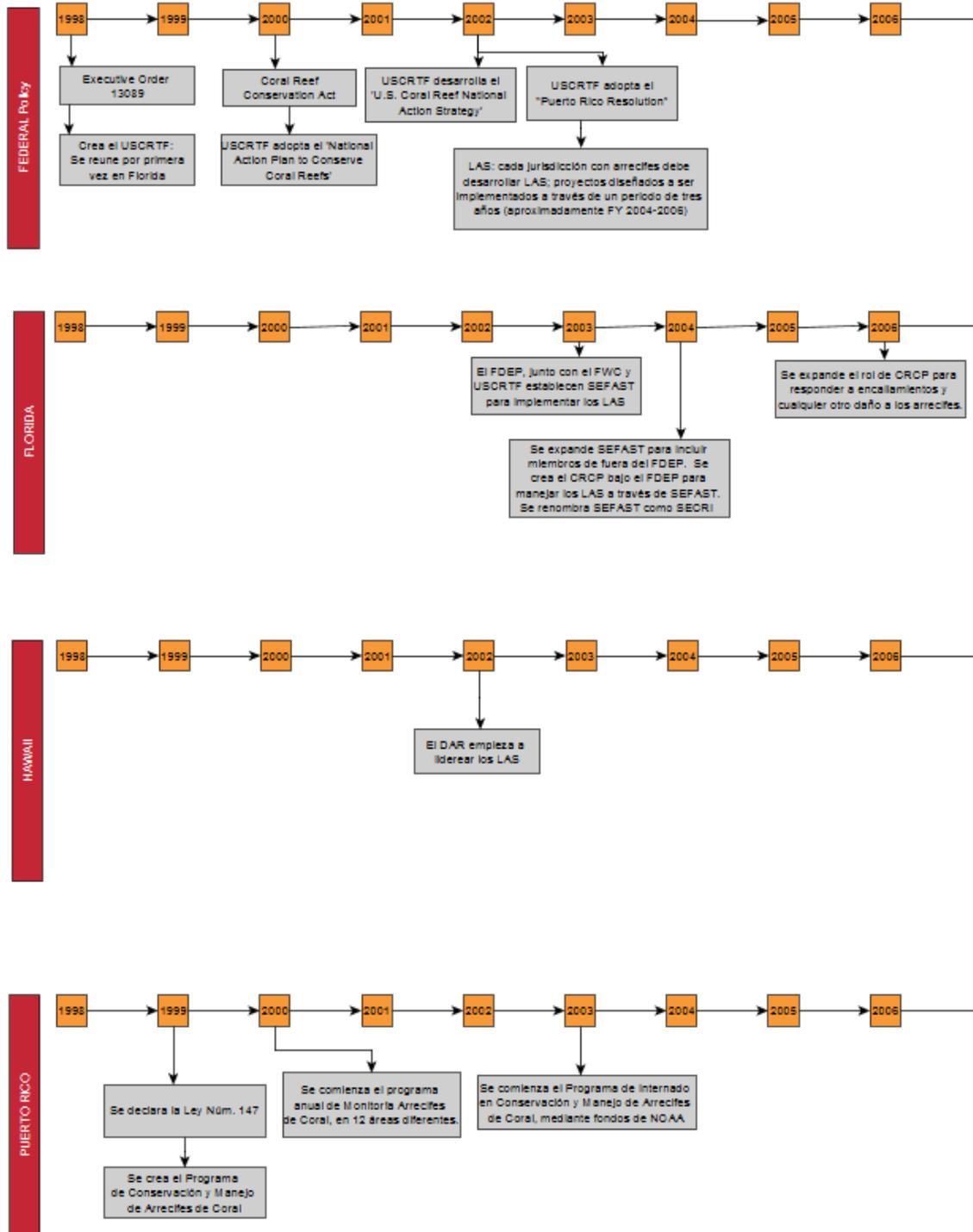
## 2.2.4 Summary of the evolution of the programs: Jurisdictions in the U.S.

The following diagram summarizes the evolution of each of the reef programs at the federal level and in different surveyed jurisdictions in the US.

### Illustration 10. Timetables that summarize the evolution of the surveyed programs

## Recommendations

### Coral Reef Conservation and Management Program



## Recommendations

### Coral Reef Conservation and Management Program

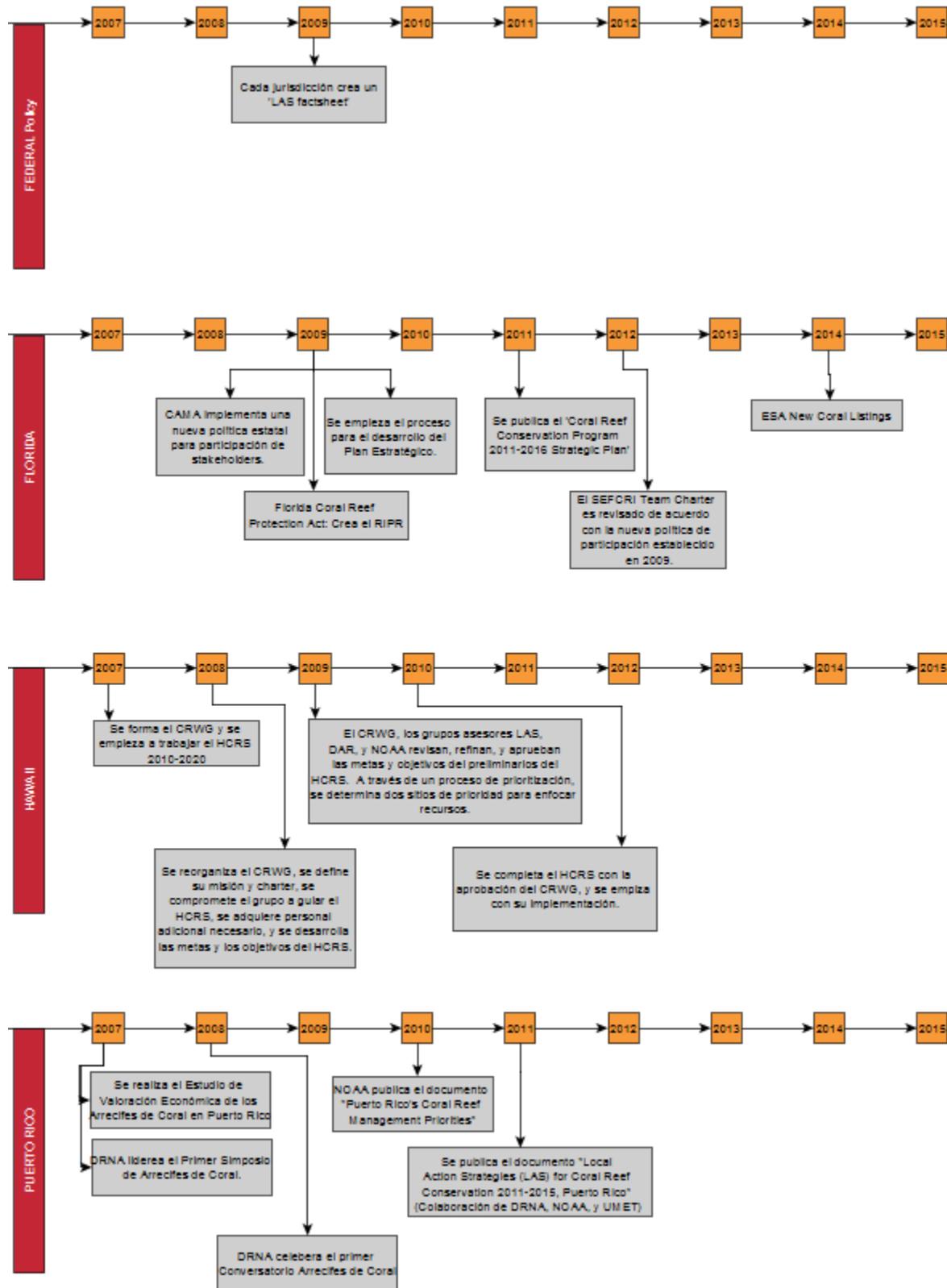


Chart 1. Summary of the cases studied in the jurisdictions of the U.S.A., Australia, and Belize

Tema	FLORIDA	HAWAII	AUSTRALIA	BELIZE	PUERTO RICO
<b>Origen y Evolución</b>					
<b>Nombre del Programa/Unidad</b>	Florida Coral Reef Conservation Program (CRCP)	Hawaii Coral Reef Program (HCRP)	Great Barrier Reef Marine Park Authority (GBRMPA)	Coastal Zone Management Authority and Institute (CZMAI)	Programa de Conservación y Manejo de Arrecifes de Coral
<b>Fecha de origen</b>	2004	DAR empezó trabajo en los LAS en 2002, y se formalizó el Coral Reef Working Group (CRWG) en el 2008.	1979- Emerald Act 2009-GBR Intergovernmental Agreement	El CZMAI fue establecido en 1998. Estuvo fuera de servicio entre 2005, y reinició actividades en 2010.	Ley efectiva desde 1999.
<b>Mecanismo mediante el cual fue creado</b>	El programa fue impulsado por legislación federal y establecida a través de mecanismos administrativos que fueron reforzados por mecanismos legales: • 2003: Se establece SEFAST para desarrollar LAS en Florida. • 2004: se expandió la membresía de SEFAST para incluir representantes fuera de la agencia. SEFAST fue renombrado SEFCRI. El FDEP-CRCP fue creado. • 2009: Florida Coral Reef Protection Act. • 2012: Revisión del SEFCRI Team Charter. • 2014-15: ESA New Coral Listings	El programa fue impulsado por legislación federal y se fue formalizando a través de mecanismo administrativos: • Desde 2002 el DAR ha liderado el desarrollo de los LAS. • En 2007 se comenzó el desarrollo del documento HCRS, el cual fue publicado en 2010. • En 2008 se formalizó el CRWG. • Este año se está actualizando el Hawaii CRWG Charter	El programa de conservación surgió tras varias leyes locales: • En 1975, se aprobó el Great Barrier Reef Marine Park Act • En 1979: Emerald Agreement • En 2009: Great Barrier Reef Intergovernmental Agreement	La unidad fue impulsada por presión y legislación internacional del parte de las Naciones Unidas y a través de mecanismos administrativos locales: • 1990 se estableció una pequeña unidad en el Fisheries Department y se formó un Comité Técnico. • 1993: UNDP/GEF apoya la creación de un Coastal Zone Management Project para Belize. • En 1998 el Coastal Zone Management Act declara el CZMAI como la entidad responsable de diseñar el plan de manejo. • Entre 2005-2010, debido a la falta de recursos, CZMAI quedó inactivo. Los proyectos continuaron de manera ad-hoc. • Se reinstauró el CZMAI en 2010 y se retomaron las actividades de planificación.	Ley para la Protección, Conservación, y Manejo de los Arrecifes de Coral: Ley Número 147 de 15 de julio de 1999.
<b>Contexto Organizacional</b>					
<b>Ubicación del Programa (dónde está adscrito)</b>	Florida Coastal Office (FCO), Florida Department of Environmental Protection (FDEP), Florida Government	Environmental Protection, Division of Aquatic Resources (DAR), Hawaii Department of Land and Natural Resources (DLNR), Hawaii Government	Ministry for the Environment, Gobierno de Australia.	Ministry of Forestry, Fisheries, and Sustainable Development, Gobierno de Belize.	Departamento de Recursos Naturales y Ambientales. Actualmente el programa es liderado desde el Negociado de Costas, Reservas y Refugios.
<b>Cuerpo Asesor o Junta Directiva</b>	• Southeast Florida Coral Reef Initiative (SEFCRI) Cuenta con 64 miembros con derecho al voto. Estos provienen de las entidades colaboradoras descritas abajo, además de ONG, instituciones académicas y el sector privado, entre otros.	• Coral Reef Working Group (CRWG) es el grupo asesor compuesto de socios federales y estatales clave que ayudan con la coordinación de los programas.	• GBR Ministerial Forum. Cuenta con cuatro representantes: dos ministerios de cada uno de los gobiernos de Australia y Queensland.	• Junta Directiva: Cuenta con miembros de 4 ministerios, académicos, ONG y el sector privado.	Actualmente no se reúne, aunque previamente se reunió entre 2-3 veces. Se informó que ni el POC ni los miembros del comité interno tienen tiempo para ser secretariate del comité asesor.
<b>Entidades Colaboradoras</b>	Existen una variedad de entidades colaboradoras: • Agencias y programas federales (12) • Agencias y cuerpos estatales (1) • ONGs y otros instituciones (3) • Gobiernos/regiones locales (4)	El HCRP del DLNR colaboran con varias entidades fuera de la agencia: • Agencias y programas federales (12) • Agencias y cuerpos estatales (2) • Iniciativas, programas y fundaciones locales (5) • University of Hawaii –Hawaii Coral Reef Initiative	Existen una variedad de entidades colaborativas: • Dueños tradicionales del país submarino (grupos aborígenes) • Agencias y Organizaciones del Gobierno de Australia (9) • Agencias del Gobierno de Queensland (8) • Programas voluntarios • Colaboración con la Industria de Pesca Comercial. • Alianza turística • Comités de asesoría • Comités de asesoría marina locales • Científicos e investigadores • La comunidad	Existen una variedad de entidades colaboradoras: • Entidades internacionales: naciones Unidas y la Unión Europea • Ministerios gubernamentales colaboradores (3) • Grupos asesores locales (9) • Otros: Institutos académicos, ONG, sector privado, proyectos relacionados	NOAA
<b>Estructura Organizacional y Programática Interna</b>					
<b>Estructura Programática</b>	El CRCP está compuesto de 6 programas principales: 1. SEFCRI 2. Marine Debris Reporting and Removal Program 3. Reef Injury Prevention and Response Program 4. Marine Event Response Program 5. Climate Change Activities 6. Fisheries-Independent Monitoring Program. Programas 2-3 forman el Southeast Florida Action Network (SEAFAN): Reporting and Response Program (SEAFAN) y sus esfuerzos complementan el programa LAS dirigido por SEFCRI	El HCRP coordina varios proyectos y programas dentro del DLNR/DAR que apoyan la protección y manejo de arrecifes y recursos asociados. El DAR está dividido en tres programas: 1) Recreational Fisheries 2) Commercial Fisheries 3) Environmental Protection Dentro del DAR, existen varios programas que responden al tema de los arrecifes. Estos incluyen los siguientes: 1) Manejo 2) Monitoreo 3) Mitigación	El GBRMPA cuenta con una multitud de programas. Estos caen en tres áreas programáticas generales: 1. Strategic Policy and Reef Stewardship 2. Biodiversity, Conservation, and Sustainable Use 3. Operations	El CZMAI está compuesto de dos entidades: • CMZ Authority cuya función principalmente es la coordinación y asesoría • CMZ Institute cuyo papel principal es investigación y monitoreo. Las responsabilidades de cada uno están descritas abajo. Los programas actuales que lleva a cabo el CZMAI son 5: 1. Monitoreo de los arrecifes 2. Recopilación y análisis de datos 3. Planificación Costera 4. Investigación de manatí 5. Monitoreo de calidad de aguas costeras	No está bien definida
<b>Personal</b>	Cantidad total de empleos: 14 personal: • Full-time: 11 • Part-time: 3	Cantidad total de empleos apoyando el programa: 35 personal: • Full-time, permanent: 10 • DAR personal de apoyo: 24 • Fellow: 1	Cantidad total de empleos 214 60: Executive Level 1 or 2 4: Senior Executive Service Level 150: Australia Public Service Levels 1-6 164: Full-time ongoing employees 17: Part-time ongoing employees 22: Full-time non-ongoing employees 11: Part-time non-ongoing employees	Cantidad total de empleos 12 personal	Actualmente hay un puesto dedicado al programa el Coordinador del Programa. Además existe el Comité Interno compuesto por seis representantes de diferentes negociados y divisiones, y el POC con la NOAA.
<b>Gerenciales</b>	6 puestos total: 1 Gerente 1 Asistente al Gerente 1 Gerente de la Oficina.	1 DAR Administrador (DAR apoyo) 1 DAR Planner (vacante)	60: Executive Level 1 or 2 4: Senior Executive Service Level	2 puestos totales: 1 Chief Executive Office: Trabaja temas de prioridad; actualmente está desarrollando el Coastal Zone Management Plan. 1 Director: Supervisa el manejo costero y programas de investigación técnica.	1 POC 1 Coordinador del Programa
<b>Administrativos</b>	6 puestos total: 3 Coordinadores de Proyectos 1 Coordinador del Reef Injury Prevention & Response Program (RIPR) 1 Coordinador Asociado de Proyecto 1 Asistente de Programa.	1 Contacto de Oficina (vacante) 1 Legal Fellow 1 Contract Specialist	N/A	6 puestos totales: 1 Administrative Officer: Responsable por el manejo del sistema de contabilidad del instituto y los recursos humanos. 1 Administrative Clerk: Coordina citas, mantiene documentos, y provee asistencia secretarial. 1 Data Entry Clerk 1 Boat Captain and Ranger: Maneja Goff's Caye durante los días que llegan los cruceros. Mantiene la isla y asiste con investigación y monitoreo. Asegura que las mejores prácticas marinas se lleven a cabo para proteger el arrecife. 1 Boat Captain Assistant & Ranger 1 Conserje	
<b>Especialistas/ Científicos</b>	1 especialista en el mantenimiento de las instalaciones	3 Buceadores 1 Community Coordinator 1 Marine Resource Specialist 10 Técnicos (DAR apoyo) 10 Biólogos Acuáticos (DAR apoyo) 4 Especialistas en Educación (DAR apoyo)	N/A	4 Puestos total: 1 Data Manager 1 Coastal Planner 1 Research Technician 1 Belize Manatee Conservation Program Coordinator.	
<b>Fellows/Interns Voluntarios</b>	1 NOAA Coral Fellow, 1 NOAA fisheries liaison, interns	1 NOAA Coral Fellow	Ofrece un internado a través del HQ Acuario	Programa de internados.	
		Existen dos programas para voluntarios, los cuales cuentan con aproximadamente 400 voluntarios.	El Reef Guardian Stewardship Program es un programa escolar que cuenta con 123.000 estudiantes a través de 300 escuelas. Los 12 local marine advisory committees también son esfuerzos voluntarios.		

**Recommendations**  
Coral Reef Conservation and Management Program

Tema	FLORIDA	HAWAI	AUSTRALIA	BELIZE	PUERTO RICO
<b>Cómo opera</b>	CRCP Strategic Plan 2011-2016	Hawaii Coral Reef Strategy: Priorities for Management in the Main Hawaiian Islands (2010-2020) – (HCRS)	Reef 2050 Long-Term Sustainability Plan (2015), lo cual se alimenta del GBR Outlook Report (2014) y del Strategic Assessment and 25-Year Management Plan (2014)	Belize Integrated Coastal Zone Management Plan (2013)	Mediante reuniones del Comité Interno
<b>Cóales son sus responsabilidades</b>	Responsabilidades principales del CRCP incluyen: • Coordinar investigación, monitoreo, mapas • Implementar LAS • Promover colaboraciones y comunicación con grupos de interés • Actividades educativas para concientizar el público • Implementar SEFCRI • Contribuir al National Action Plan • Coordinar y liderar respuestas a encallamientos o cualquier otro eventos de impacto dañino sobre los recursos.	El HCRP, con el apoyo del CRWG, coordina los esfuerzos locales, estatales y federales para el manejo de los arrecifes. En conjunto, estos apoyan: • Esfuerzos de planificación crítico • Acción comunitaria • Actividades de concientización • Investigación científica con aplicaciones directas al manejo de los recursos • Proyectos de manejo in-situ.	• Las responsabilidades de las entidades gubernamentales encargadas (gobiernos de Australia y Queensland) incluyen lo siguiente: □ Evaluación ambiental del Arrecife; □ Procesos para tomar decisiones para la protección del parque; □ Temas ambientales con importancia nacional, y; □ Great Barrier Reef World Heritage Area's Outstanding Universal Value.	• Las responsabilidades principales del CMZAI son: 1. Desarrollar el marco de planificación por las regiones costeras 2. Establecer y desarrollar colaboraciones 3. Desarrollar la capacidad de los comités locales 4. Coordinar evaluaciones 5. Monitorear y documentar el desarrollo costero 6. Promover niveles de desarrollo bajos en densidad	Definidas por la Ley 147
<b>Cómo se monitorea</b>	El CRCP se monitorea a través del CRCP 2011-2016 Strategic Plan Tracker, el cual documenta el logro de las metas y objetivos a través de los años.	El DAR tiene un área programática dedicada al monitoreo	El GBRMPA, a través del 'Reef-Wide Integrated Monitoring and Reporting Program'; debe desarrollar un informe anual para monitorear el éxito del Reef 2050 Plan e informar su manejo adaptativo. Además del informe anual, este programa cuenta con una revisión integral cada cinco años.	El CMZ Institute es la entidad encargada de monitorear el programa.	La ejecución del Programa no se monitorea. No obstante, debido a que depende en su totalidad de fondos de la NOAA, se podría decir que su gestión se monitorea a través de los informes de progreso e informes finales emitidos a dicha agencia federal.
<b>Área de cobertura</b>	CRCP maneja una área de 240,000 acres y 150 millas náuticas desde Biscayne Bay National Park hasta Martin County.	El DAR es responsable por todas las aguas estatales en Hawaii, pero existen varias entidades que colaboran en el manejo de las aguas. Existen dos sitios de prioridad que cubren un total de aproximadamente 49,000 acres.	La Gran Barrera de Coral de Australia se extiende a través de 2,300 km a lo largo de la costa noreste de Australia. Comprende 3,000 arrecifes de coral y 600 islas continentales, 300 cayos y 150 islas de mangles. Comprende 344,400 kilómetros cuadrados.	El Arrecife se extiende 280 km desde el norte al sur del país. Existen 8 reservas marinas en Belize, las cuales comprenden 165,263 hectáreas de hábitats marinos. El área denominada Patrimonio de la Humanidad comprende un total de 96,300 hectáreas.	En Puerto Rico, la jurisdicción de Gobierno Estatal se extiende hasta una distancia mar afuera de nueve millas náuticas. Se estima que Puerto Rico está rodeado por más de 5,000 km² de ecosistemas de arrecifes de coral (CSCOR, 2007). Se entiende que el programa es responsable por los arrecifes que caen bajo esta jurisdicción.
<b>Financiamiento</b>					
<b>Presupuesto</b>	Aproximadamente \$1,200,000 anualmente	De acuerdo a la entrevista, el presupuesto anual del HCRP es aproximadamente \$875,000 anuales.  De acuerdo al Executive Supplemental Budget, el presupuesto anual del DAR es actualmente \$5,964,517.	De acuerdo con el Informe anual 2013-2014, el presupuesto operacional fue de \$52,467 millones.  De acuerdo con el GBRMPA Website, los gobiernos de Australia y Queensland están programados a invertir \$2 mil millones en la próxima década.	No se pudo encontrar información de presupuesto en la revisión de la literatura.	Funciona con fondos federales, que se solicitan vía propuestas competitivas; no está garantizado fondos cada año. No hay presupuesto estatal. El financiamiento del programa es un reto.
<i>Federal</i>	50 por ciento, o aproximadamente \$500,000-\$600,000	75 por ciento o aproximadamente \$650,000-\$700,000	\$140 millones anuales a través del Australian Government Reef Trust, además de \$100 millones para mejoras a la calidad de agua.		
<i>Estatal</i>	50 por ciento, o aproximadamente \$500,000-\$600,000	25 por ciento, o aproximadamente \$175,000	El gobierno de Queensland se comprometió a proveer \$100 millones anuales además de los \$35 millones actuales.		
<b>Origen de Fondos</b>	Fondos para los proyectos e iniciativas para ser continuados o implementados bajo el Plan serán solicitados a través de: • Federal Funds • Matching State Funds • Trust Fund • Donations	Fondos para el programa se obtiene a través de: • Federal Funds (NOAA Grants) • Matching State Funding • Trust Fund • In-kind donations (minimal)	El GBRMPA recibe fondos mediante varios mecanismos: • Commonwealth Appropriation: 44 % • Related Government Entity: 24% • Queensland Government: 16% • Special Appropriation/Environmental Management Charge: 10% • Reef HQ Aquarium: 5% • Otro: 1%	Los fondos para el programa provienen de las siguientes fuentes: o Cargos/Permisos de Acceso administrados por el gobierno, o Protected Areas Conservation Trust: provee apoyo financiero a todas las áreas protegidas en Belice. o Fuentes internacionales: Por ej.: Environmental Defense Fund, United Nation Development Program—Community Management of Protected Areas for Conservation (COMPACT). Sin embargo, de acuerdo con un informe del Belize Audobon Society en 2008, existe un problema recurrente en la falta de fondos.	Subvenciones federales obtenidas mediante propuestas competitivas de la NOAA
<b>Distribución de Fondos</b>	50 Por ciento por salarios de empleados	N/A	Los gastos totales de operación fueron \$54,517 millones: 44% para empleados, 29 % para proveedores, 23% manejo activo en Queensland, 4% Otros.		El comité interno se reúne para determinar los proyectos.

## 2.3 Comparison with Puerto Rico

### 2.3.1 Discussion

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#### 2.3.1.1 Challenges

Compared to other jurisdictions, Puerto Rico is lagging behind with respect to the development of its *Program on the Conservation and Management of Coral Reefs*. The main differences are the following:

- | *Advisory Committee:* The other jurisdictions in the US have developed strong advisory committees with a clear mission, which helps in the interagency communication, coordination of the different efforts and programs and the effective implementation of priorities for the management and conservation. Although Act 147 provides the creation of an advisory committee, it is not operating and an internal committee exists, which does not have a formal structure.
- | *Internal Structure of the Program:* Although all programs are experiencing restructuring events due to the dependence on federal funds and the limited funding sources, the programs of Florida and Hawaii more clear organizational structures than Puerto Rico. The responsibilities of the Program in Puerto Rico are led by an official who has other responsibilities (and recently a contractor). Since other roles that are necessary for the program are scattered among various units, and there is no intention to receive of an internal coordination of support for it.
- | *Strategic Plans:* All the jurisdictions have developed Strategic Plans to focus and lead their efforts and resources, with clear goals and measurable objectives. The program in Puerto Rico does not yet have a strategic plan and operational plans to lead its management.
- | *Funding:* Puerto Rico has not been able to take advantage of all opportunities for federal funds as other jurisdictions in the US have done, according to what was examined in Hawaii and Florida, it is important to seek for additional sources of funds to be able to get more federal funding.
- | The experiences of Hawaii, Florida, Australia, and Belize provide some practices that could serve to strengthen the program in Puerto Rico. Lessons learned from these jurisdictions serve as the foundation for the recommendations described in the third issue of this project.

## Recommendations

### Coral Reef Conservation and Management Program

#### 2.3.1.2 Opportunities

- | *Legislation:* In addition to federal legislation, the Program of Puerto Rico has a legal foundation in Act No. 147, which has provisions that need to be implemented for their strengthening and development.
- | With the support of the federal agencies, the other jurisdictions of the U.S. have overcome organizational challenges similar to those Puerto Rico is facing. For example in Hawaii, there were a number of initiatives that were independently developed to conserve coral reefs. Through the development of the HCRS, these efforts started to be coordinated and consolidated.
- | *Funds:* Several sources of federal funds exist, which could benefit the program in Puerto Rico and help it to grow.
- | *Previous surveys:* The DRNA has taken several steps to adhere to Act No. 147. Surveys, plans, and robust data exist to support the management of the Program.

## 2.4 Conclusion

The case study, jointly with the literature review, will serve to make recommendations to strengthen the *Program for the Conservation and Management of Coral Reefs of Puerto Rico*. The recommendations on how to structure a Coral Reef Unit within the DRNA will deem this information, framed in the realities and needs of Puerto Rico. The recommendations will provide suggestions on topics such as the location of the program in the DRNA, internal structure of the program (including staff), organizational context (including recommendations on the Advisory Committee and how to strengthen partnerships and agreements with entities outside of the agency), funding: budget, source and dissemination of funds, among other measures as may be necessary.

## 3 RECOMMENDATIONS

This section contains the results of the third task, "Development of the recommendations to the DRNA" that is part of the work plan to carry out the survey on the development of the Coral reefs program (hereinafter will be named the Program) within the Departamento de Recursos Naturales y Ambientales [Natural and Environmental Resources Department] (DRNA).

These recommendations are based on:

- | The revision of the legal framework and results of plans and initiatives related to the topic;
- | The study of cases, which included a literature review and interviews with the staff of Hawaii and Florida, and research in Australia and Belize, and
- | Perform interviews with the staff of the DRNA and the NOAA in order to understand the context and the current status of the Program.

The findings from these last interviews allowed the learning of the major challenges the Program faces and the opportunities for its improvement. We conducted three interviews with staff that is directly linked to the Program. Respondents were:

- | Dana Wusinich-Mendez –Atlantic and Caribbean Team Lead for the Coral Reef Conservation Program (CRCP) of NOAA:
  - Manages the partnering on topics related to the reefs in Puerto Rico and other jurisdictions.
  - Handles the awarding of grants and federal funds in Puerto Rico and other jurisdictions.
- | Miguel García Bermudez- Director of the Negociado de Pesca y Vida Silvestre of the DRNA (NPVS):
  - According to provisions of the Act for the Protection, Conservation and Management of Coral Reefs in Puerto Rico, Act No. 147 dated July 15, 1999, the Director of the NPVS shall be the chair of the Advisory Committee, whose responsibility is to provide the required technical and professional advice to the Secretary for the implementation of the Act.
  - He was involved in the Internal Committee of the Reefs Program of the DRNA.

## Recommendations

### Coral Reef Conservation and Management Program

- | Damaris Delgado- Director of the Negociado de Costas, Reservas y Refugios (NCRR) and Point of Contact, POC of the CRCP.
  - Program Coordinator: Currently, he is training a Coral Program Coordinator (CPC) for that, eventually, such person to take its coordination.
  - Develops the proposal to request competitive funds of the NOAA for the Program, serves administrative and financial aspects of the proposal.
  - Internal Committee Coordinator.

The results of this report are presented in two main sections:

- | Status of the Program
- | Priorities of the DRNA and roles of the Unit and
- | Recommendations for the strengthening of the Program in Puerto Rico.

## 3.1 Status of the Program in Puerto Rico

This section presents a summary of the status of the Program, which is presented in the following topics: operation of the Program, objectives of the Program and the Challenges and Opportunities of the Program. The presented information is the result of the interviews conducted as part of this report and of the literature reviewed during the previous tasks.

### 3.1.1 Operation of the Program

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- | There is a lack of a strong Coral Reefs Program in Puerto Rico. The Program is coordinated by the Director of the NCRR, who is also the POC. In the DNER there is an internal committee, which role is essentially to identify priorities for the request for federal funds. Its members are representatives of various units of the DNER, who also have other responsibilities so they do not have enough time to devote it to the Program.
- | The Internal Committee does not have a formally defined structure, with responsibilities and resources allocated to it. It was noted that at the DRNA a draft of administrative order exists to formalize the Committee, which has not yet been subscribed.

## Recommendations

### Coral Reef Conservation and Management Program

- | The Program as it exists, does not have the human resources that are necessary to fulfill the responsibilities delegated in Act 147-1999 and, in addition, comply with the requirements associated with the received federal funds (for example, submit proposals, supervise the usage of funds, drafting progress reports, arrange meetings). This would make the development and implementation of a work/management/strategic plan, the development of a funding plan even harder, among other aspects that would allow the strengthening of the Program.
- | The Advisory Committee provided by Act 147-1999 is not operating. It is understood that it is necessary to begin to strengthen the internal structure of the DRNA, for then work the interagency partnership that involves such Committee.
- | Recently, the professional services of a Coral Program Coordinator (CPC) were recruited. These services are subsidized by the NOAA. Among the responsibilities of the CPC we can list the strengthening and coordination of the Program, to provide scientific and management advice, support the development and ongoing management of the initiatives related to coral reefs in Puerto Rico and request and manage federal grants, among other roles.

### 3.1.2 Objectives of the Program

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- | The objectives of the Program are not clearly defined.
- | Differences exist between the objectives and priorities of the NOAA and the objectives and priorities that sometimes identify the DRNA.
- | Diverse prioritization mechanisms exist, which not always match.
  - Several years ago the NOAA developed several management priorities for Puerto Rico. This was a one-time event, but as we understand it, these priorities remain in force.
  - Also priorities are established in the Local Action Strategies (LAS), which identifies actions and priority geographic areas for the protection of coral reefs.
  - Annual priorities that are requested to the DRNA by the NOAA for the development of research by such federal agency.
  - Priorities identified by the DRNA based on information provided by the managers, the scientific community and the communities and stakeholders in Puerto Rico.

### 3.1.3 Funding for the Program

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- | There are no local funds allocated to the Program. The tax situation facing by Puerto Rico is not a very encouraging scenario for governmental funds to be allocated.
- | The Special Fund provided in Act 147-1999 has not been created. The Act provides that the Fund could be fostered by (1) donations, conveyances, assignments (2) administrative fines, and (3) the payment of fees for permits to carry out scientific surveys, educational activities on coral reefs and the permit for diving at reefs in the territorial waters of Puerto Rico.

According to the gathered information, the conditions for which these funds are generated have not been created yet: a regulation has not been approved for the amounts of fines. Neither a structure for receiving donations or to search for donors has been created nor has a fee structure been established for the exploitation of corals for research, education, or scuba diving.

- | Currently, the Program depends entirely on federal funds, which are competitive, so these are not guaranteed.

Federal funds require matching. It is extremely difficult for the DRNA to match 1:1, which reduces the competitiveness of Puerto Rico, although they have always received funds. The matching is commonly provided in kind.

### 3.1.4 Challenges and Opportunities

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- | Within the agency there is staff with the expertise to provide technical and scientific advice. Nevertheless, from interviews of current and previous studies what is evidenced is the workload of the staff that exceeds its capacity, and therefore it is necessary to find ways to optimize resources.
- | An opportunity exists for the DRNA to access to additional federal funds for the management and conservation of coral reefs, but it needs to strengthen its administrative structure.
- | The respondents have identified various scenarios under which the Program could be strengthened: (1) create a new unit, which poses the challenge of seeking funds to pay the necessary human resources or (2) locate the Program under an existing unit/office that can provide more administrative support. The respondents agreed that the ideal scenario would be to have a reefs unit, with its own staff. However,

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this requires exceeding several financial and public policy challenges and obstacles.

## 3.2 Priorities of the DRNA and roles of the Unit

### 3.2.1 Priorities

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According to the carried out research, the immediate priorities of the DRNA for strengthening the Program should be the following:

- | Assign additional human resources to the Program;
- | Diversify the sources of funds for the operation of the Program and
- | Strengthen the Internal Committee of the DRNA.

### 3.2.2 Roles

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The objectives of the Unit should be framed in the responsibilities of the Program, according to Act 147-1999, which can be summarized in: coordination, scientific advice (reef recovery areas) and the development of measures to restore (installation of artificial reefs). The Act gives additional powers to the Secretary, which should also be done from or in coordination with the Program.

In addition to complying with the provisions of such Act, the Program or unit to be created must be responsible for:

- | Drafting proposals to the NOAA;
- | The drafting of reports to comply with the provisions of the federal proposal;
- | The development of a plan to diversify the sources of funds, through drafting proposals to other entities, the development of activities and mechanisms that allow you to raise funds for the management of the Program;
- | Lead projects;
- | Review contracts;
- | Coordinating and formalize the internal and external advising committees;
- | Perform other administrative tasks that are necessary and

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### Coral Reef Conservation and Management Program

- | To be a deposit or *clearinghouse* of information and processes related to coral reefs within the agency.

## 3.3 Recommendations

The recommendations resulting from the research conducted for this project are presented in the following sections:

- | Organizational Structure
- | Mechanisms for strengthening the funding of the Program
- | Other general recommendations

### 3.3.1 Organizational Structure

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As we were informed, the DRNA will soon do an organizational restructuring. Such reorganization has not been completed, since it is necessary to carry out various processes within and outside the agency, including the coordination and approval of the Office of Management and Budget (OGP). In view of this uncertainty, it is difficult to recommend where exactly to locate a unit to shelter the Coral Reef Program.

Considering the organizational and fiscal realities, it may be that the concept of a unit is not realistic at this precise moment, but it should be kept as a final goal. Facing this view, the organizational recommendations are presented in the form of scenarios, which discusses how to organize the program in terms of structure, staffing, and funding. The recommendation is for these scenarios to bring before the consideration of the DRNA to implement the one that best fits their reality and aspirations.

The discussed scenarios arise from the recommendations provided in the interviews with the staff of the DRNA, NOAA and the jurisdictions of Hawaii and Florida, as well as in the studied cases. These can be seen as transitional options. For example, the DRNA can begin by developing scenario 1 or 2, while strengthening its structure to implement scenario 3.

#### 3.3.1.1 *Scenario 1. Locate the program under an existing unit and strengthen the internal Committee*

This scenario could be implemented in the short term. The same involves the location of the Program under some of the following two existing units that are linked to the topic:

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- | Coastal Zone Division, since it counts with administrative staff with experience in the management of grants and drafting of reports, which could provide support to the CPC.
- | In the NPVS, under the new Program of Marine Ecology, this could provide technical and scientific support to the CPC. In addition, the División de Coordinación de Pesca y Vida Silvestre [Coordination of Fisheries and Wildlife Division] could provide necessary administrative support.

In both cases it would be necessary to listen if the administrative support staff in those divisions can take on the additional responsibility of managing funds of CRCP of NOAA.

To make the Program efficiently under this scenario, it is essential to implement the general recommendations discussed in section 4. In particular, it is necessary to strengthen the internal Committee and diversify the sources of funds of the Program to evolve towards the following scenarios, which focus on creating strategies to alleviate the POC and the Program Coordinator through the description and funding for additional staff, among other recommendations.

In summary, under this scenario the Program will be located within the existing structure, in an effort to improve the internal coordination to provide support to the CPC and the POC.

#### 3.3.1.2 Scenario 2: Flexible and temporary structure

If in the short term it is not possible to develop a unit with the ideal team working exclusively and allocated to the Program, the recommendation is for the assignment of a person to the CPC (would be two in total), supported by the Internal Committee of the DRNA. This Program could be developed since the beginning as an independent unit, or under a unit or division as described in Scenario 1. This structure could evolve in a similar way as Hawaii, while they get the funds that are necessary to constitute an independent unit. Due to the similarities in faced challenges, Hawaii represents an interesting example of how to develop the Program in Puerto Rico.

In Hawaii, the Program began with two positions funded by the state: the *DAR Planner*<sup>10</sup> that supervises and coordinates the Program and the *Contract Specialist*, who provides accounting services, manages the contracts and funding of the Program. Under this structure, the Program depends on other staff within the *Department of Land and Natural Resources (DLNR)*, which works on project development and the consolidation

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<sup>10</sup> Department of Aquatic Resources Planner: It is responsible for the supervision and coordination of the Hawaii Coral Reef Program (HCRP) and its technical processes. It is assisted by staff from the DLNR-DAR. This position is currently vacant.

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or strengthening of the Program. These include 10 technicians, 10 biologists, the administrator of the DAR and 4 teachers.

Currently, the DLNR is under a restructuring process, similar to what is happening in Puerto Rico. The position of the DAR *Planner* is vacant; there is no manager and no program coordinators. During this period, the *Contract Specialist* has assumed some of the tasks of the *DAR Planner* and administrator, while other tasks have been outsourced. The Governor serves as the POC and the NOAA is in the process of drafting a letter addressed to the Governor to appoint a POC. It is understood that once the completion of the restructuring, the program would be located within the *Environmental Protection* unit, one of the three units of the DAR. The Program would continue to operate with the support of other staff of the DAR.<sup>11</sup>

Although currently the HCRP is under restructuring, the Program has been evolving gradually, making federal funds to support additional positions and projects. In terms of staff, federal funds were sought for three additional positions. The funds supported these positions for a period of 2 to 7 years, during which it demonstrated the need for and effectiveness of the positions and the devotion of the employees. This same year (2015), state funds were achieved for these three positions, and in that way they became more secure and longer term positions. The program also has three divers funded by the state, which purpose is to study and monitor the reefs.

In this same way, Puerto Rico could evolve from a temporary state - composed of two key positions - to a more robust and ideal structure, consisting of more staff permanently devoted to the Program. The DRNA is already in a good position, because there is an equivalent to the *DAR Planner* in Hawaii-the Program Coordinator. Only an equivalent to the *Contract Specialist* is missing. An additional position must be created, at least. This position could assume a large part of the responsibilities of the Program Coordinator, focusing on the tasks related to the funding of the Program and administrative support. These could include the following:

- | Assist in the development of a sustainable funding plan for the Program.
- | Support the coordinator in the preparation and management of requests for federal funds, while ensuring that these match with the goals, objectives, and state and federal priorities.
- | Support in the evaluation of internal and external proposals (NGOs, community groups, researchers, among others) related to the management, conservation,

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<sup>11</sup> Information provided by Ray K. Chimera, Dept. Contract Specialist, DLNR Aquatic Resources dated September 17, 2015.

## Recommendations

### Coral Reef Conservation and Management Program

and the protection of coral reefs of Puerto Rico and recommend projects for the request for federal funds.

In summary, the main goal of the additional position would be to provide administrative and technical support to the CPC in their tasks to strengthen and coordinate the Program. Its approach will be the provision of assistance in funding strategies for the Program. The DRNA should focus its efforts on describing this position and to achieve support for its funding. Facing the tax scenario, it could be possible to start by relocating and retraining a person for this position. Once this staff is integrated to the Program, it would have a good foundation where to grow and develop as a more independent unit.

#### 3.3.1.3 Scenario 3: Coral Reef Unit

The ideal structure would be a unit with its own staff, strategically located within the DRNA. The location of the unit could be determined during the restructuring process of the agency. It could be an independent unit that will report to the Secretary, or could be linked to a division or negotiated in the way it was described in scenario 1. Ideally, it is recommended for it to be located under the area that works the topics associated with marine resources.

To start, the unit should have 3 or 4 positions: a manager or coordinator with three supporting positions. The respondents agreed on the need for the following positions:

- | Program Coordinator (CPC)
- | Administrative staff (or *Contract Specialist*, similar to Hawaii)- responsible for managing the progress reports, proposals, among other similar topics. It is important to state that the administrative staff will not necessarily must have knowledge about coral reefs, but it must have knowledge on the management of federal proposals. Even, in many instances to assign scientific staff to administrative work under the premise that their knowledge could help in the process is counterproductive, because the person may feel discouraged or underutilized.
- | Staff education and Outreach (*Outreach and Education*) - The NOAA recommends that this staff also spend part of their time searching for sources of funds to finance the Program.
- | Scientific Advisor (biologist) - Of the interviews, it appears that there is a need for scientific staff to be the point of contact with the scientific community and

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### Coral Reef Conservation and Management Program

a *clearinghouse*. The same must be up to date with the scientific literature on the subject matter.

In the interviews the need for a Manager of Marine Protected Areas and a Manager of the Reserve System was mentioned, in addition to a Manager from Scattered Sources of Pollution. It is understood that these positions already exist in the Agency and, even with the reorganization, there will be staff with similar roles. Even work is done from the Division of the Coastal Zone the work with Task 1.6, scattered sources of pollution. Therefore, we understand that these needs could be remedied if effective coordination is sought between the various divisions related to the topic within the Agency. Even, the roles of a scientific adviser could be worked from the Marine Ecology Program which is being developed in the NPVS. In this way, the resources in the Coral Reefs Program are expected to focus on internal and external coordination and in the search for sources of funds for the effective management of these resources. Once they have sufficient resources and the Program is robust, it could widen its human resources base.

## Funding

The NOAA insists that it is important to have a unit within DRNA and that the required positions must be defined to receive federal funds. It recommends for the positions to be aligned with the objectives of the NOAA to be more competitive. It is imperative that the DRNA to define and describe your needs in terms of staff, to try to get the required funds. As we were informed, if the DRNA can achieve funding for two positions, the NOAA could possibly justify the funding for the rest of the Program.

According to the NOAA, there are substantial federal funds for the Program. A budget of approximately \$500,000 to \$600,000 a year to begin was recommended. Approximately US\$300,000 should be allocated to the abovementioned positions, to start a unit. The staff would earn about half of this or a little more, and the other funds would be for overhead expenses. It was reported that between US\$200,000 to US\$300,000 should be allocated for projects. The NOAA insists that if Puerto Rico is able to fund two of these positions, could be in a good position to achieve all the matching funds required to run the Program.

Once it is possible to create the unit, one of the priorities of this unit during the early years should be to seek alternative sources of funds to the NOAA to formalize and expand the Program. In this way, a Program less dependent on federal funds is created.

The Program could continue to grow and develop further as it secures additional sources of funds, adding staff and major projects. Florida and Australia could be

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### Coral Reef Conservation and Management Program

followed as role models, which programs are among the most consolidated ones. Florida and Australia have developed strong transparency and communication mechanisms. Their programs are robust and continually evolving to meet the identified needs.

In the following section, additional mechanisms are discussed to strengthen the funding of the Program.

### 3.3.2 Mechanisms for strengthening the funding of the Program

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As it was suggested in the case of Hawaii, a plan for sustainable funding to support the Program must be created, which must be developed with the help of experts on the subject matter.

There is a series of mechanisms that the DRNA could use to strengthen the funding of the Program. For example, Act 147-1999 contains several mechanisms that have not been implemented and that if handled properly, could foster the Fund, without this constituting an additional tax on the population at this time.

In addition, successful practices are performed in other jurisdictions that can be replicated. However, it is essential to create mechanisms for transparency and accountability to ensure the trust of the partners and the general population. It is also important to improve the internal communication channels and with the NOAA, in order to expedite the funding of the Program. The recommendations on these topics are presented below.

#### 3.3.2.1 *Implementation of Articles 8 and 9 of Act No. 147 on the Special Fund and administrative fines*

According to interviews, it is understood resistance exists from the Department of Finances to create another special account and that currently the funds for reefs are diluted among the funds for other initiatives. To respond to these limitations of access to funding, there must be an assurance that the Special Fund is fostered by the items provided for in Act No. 147 and to document what enters and exists from the Fund. It is understood that there is an opportunity to raise funds in accordance with the provisions of the Act (for example, scientific studies, grants), but apparently this is not being implemented.

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- | Implement mechanisms to receive donations: In Article 8 (1) of Act No. 147, provides that the Special Fund may be fostered by donations from public and private entities.

The Internal Revenue Code, act No. 1 of 2011<sup>12</sup> and Regulations No. 8104 and 8105 the Department of Finance (DF), provide tax benefits for donations from corporations and individuals for exclusively public purposes. The use of this alternative to provide funds for the Program will require coordination with the DF to certify that the DRNA can receive donations from private entities. Given that the Internal Revenue Code of the year 2011 is after the last amendment to the Operational Law of the DRNA that addresses the donations topic (2004), it is assumed that the new Code implicitly amends such Act to allow the DRNA to be able to receive donations from profitable corporations. The same can be surmised about the donation from an individual to a governmental agency. However, since this is only an interpretation of the applicable in force legislation, it will be necessary to refer to the DF to get an opinion or "ruling" confirming the abovementioned.

Once the possibility to obtain a private donation is determined, it is necessary to develop the administrative mechanism required for the management of the income in the Program. It is essential to establish an organizational structure to be responsible for managing, assign, and disseminate information about the funding raised from the grants.

- | Administrative fines: In Article 8 (2) of Act No. 147, provides that the Special Fund may be fostered by fines, which are described in Article 9. Act No. 147 provides that the administrative fines will not exceed ten thousand (10,000) dollars per offense nor will be less than five hundred (500) dollars. This requires that, once the fine is issued, an internal legal process to be started at the DRNA to examine each case and impose fines that are within this range according to the seriousness of the offense. This takes time, to a large extent due to the lack of human resources and costly for the agency. Therefore, to facilitate the implementation of this article, two things are recommended:

- The establishment of specific penalties per offense.

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<sup>12</sup> Sections 1033.10 (a) (1) and Section 1033.15 (a) (3)). The language the code uses refers to the granted or paid amount, for which it could be applied to monetary donations. In the case of a corporation, the deduction allowed is up to an amount not to exceed ten (10) percent of the net income of the taxpayer computed without the benefits of this section. In the case of individuals, the deduction that applies is limited to 50% of the adjusted gross income of the taxpayer for the tax year.

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### Coral Reef Conservation and Management Program

- For the DRNA to consider the possibility that instead of fines to issue tickets. This streamlines the process, could be less expensive for the agency and would ease the involvement of the Guards Body.

| Implement charges to usage permits: Article 8 (3) of Act No. 147 states that the Fund shall be fostered by the rights of the permits for doing scientific surveys, educational activities and permits for diving in the territorial waters of PR. It is understood that the Fishing Regulation of 2010 contains provisions associated with the capture, import and export permits of aquatic organisms for scientific and educational activities. However, the charges or penalties for diving in territorial waters have not yet established.

Again, there is concern over the imposition of additional charges or penalties, which possibly will have an objection. However, it is recommended, in the short term, to establish a mechanism for a voluntary contribution to exist, until there is a proper environment to establish charges or penalties for the usage.

It is important to state that in various surveys that have been made for the DRNA, the willingness to pay if the money is invested in the resources or natural areas has been asked and the population at large has expressed a Yes. Even, the hedonic valuation of coral reefs has been investigated, obtaining substantial values associated with the willingness to pay of the population under different scenarios.<sup>13</sup>

In this sense, the coordination could be done with providers of vendors of tours, hotels, and shops for the establishment of a voluntary position to enter to the Fund.

Subsequently, the possibility of establishing charges by due to exploitation must be examined, particularly in marine protected areas. There are experiences of several jurisdictions that may be examined. For example, Australia implemented an *Environmental Management Charge (ECM)*, framed in the *Great Barrier Reef Marine Park Regulations* of 1983. This charge provides approximately 10% of the funds for the Program, and includes charges for fees that are charged to the owners of tourist services, among others. The charges are listed in the *GBRMPA Website*, where it also explains the destination of the funds (daily management of the reef, education, research, monitoring, and development of public policy).

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<sup>13</sup> See the Study of Economic Valuation of Coral Reefs and Associated Environments in the east of Puerto Rico: Fajardo, Arrecifes la Cordillera, Vieques, and Culebra.

## Recommendations

### Coral Reef Conservation and Management Program

A successful case is the Bonaire, where there is an admission charge for diving in the *Bonaire National Marine Park*. The initial fee established in the year 1992 was of US\$10. The fee structure was increased to an annual fee of US\$10-US\$25. A study conducted in 2010 showed that users would be willing to pay between US\$61-US\$134, which is an indicator that an increase in the fees of users does not reduce the demand.<sup>14</sup> In this case, the park is managed by an NGO and the money is used in the management of the area, which builds trust in the population since they see where they invest their contribution.

#### 3.3.2.2 *Create mechanisms of transparency on the origin and dissemination of funds*

Act 147 is not specific as to the usage of the money that enters the fund, which would be desirable to ensure its proper usage. The adoption of a regulation of coral reefs that contain the specific items in which the money may be used is recommended, and, similar to the Fisheries Regulations 2010, to clearly state that the funds may not be used or adapted to other purposes but the management of the resource.

For example, in Florida, the *Coral Reef Conservation Act* describes the fund where the money collected from fines and usages is deposited. According to the interview with the representative of the Program of Florida, the CRCP is automatically authorized to spend US\$50,000 per year of this fund, which supports a technical position for the *Reef Injury Prevention and Response Program*. In this way, the income collected due to damage to the reefs is invested directly in the Prevention and Response Program.

Another recommended mechanism would be to post online all the information on the Program's budget, detailing the source of the income and its usage. In many jurisdictions, this type of measure of transparency has been adopted, which creates trust in the public, credibility in the Program, and allows a level of financial leverage. The public could even be invited to participate in measures to reach the financial goals by means of donations of time and money, and provide mechanisms for them to vote on the priorities. In Australia an annual report is issued with different sources and expenditure of funds for the Program, which is available on the web page.

#### 3.3.2.3 *Creative sources of funds*

In addition to the implementation of the mechanisms of Act No. 147, the Program could also be fostering from creative sources, according to the research that has been done from other jurisdictions. The development of the Program should be proactive, not

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<sup>14</sup> See: Sustainable Financing Options for a Marine Protected Area Network in British Columbia. <http://www.livingoceans.org/sites/default/files/sustainable-financing-options.pdf>

## Recommendations

### Coral Reef Conservation and Management Program

reactive. Instead of limiting to the existing funds, ways to expand the program and achieve new sources of funds must constantly be sought.

In the study of cases, the most effective mechanism that have been seen is the creation or the establishment of a liaison with one or more NGOs that can receive donations, creating fund-raising events and to channel funds to the protection of the resources.

An example to consider could be Florida. The CRCP of Florida considers the LAS as the first generation and is currently developing the fourth generation of its program. This last generation is called *Our Florida Reefs* and consists of a process of participatory planning with the community on how to protect coral reefs. In April 2015 *Friends of Our Florida Reef* was established that is described as: "a nonprofit citizen support organization dedicated to conserving and protecting over 100 miles of vital coral reefs directly offshore between Miami-Dade and Martin Counties by enhancing the critical efforts of the Florida Department of Environmental Protection's Coral Reef Conservation Program (FDEP CRCP)". This organization can receive donations that directly contribute to efforts that support the CRCP in Florida<sup>15</sup>.

Australia also has one of the more robust nonprofit organizations. Established in 2001, *Reef Check Australia* was founded as an NGO that supports conservation initiatives.<sup>16</sup>

According to the interview with the NOAA and additional research, in the US Virgin Islands, at least two non-profit organizations exist, aimed at the protection of coral reefs. The first is *Reef Jam*<sup>17</sup> a nonprofit organization that since 2008, arranges an annual concert to raise funds for the conservation of the reefs. In 2009, the concert attracted over a thousand persons and raised US\$10,000.<sup>18</sup> The event supports a number of initiatives which include free snorkeling classes; educational excursions; activities that promote sustainable fishing; the removal of invasive species and small grants to community-based organizations

Another important organization in the Virgin Islands is the *Friends of the Virgin Islands National Park*, established in 1988. In 1999, they received an Endowment Fund of US\$1.7 million. Each year, it provides US\$500,000 to US\$600,000 to support programs related to coral reefs.<sup>19</sup> This NGO uses creative methods to raise funds as an annual race in stand-

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<sup>15</sup> <http://www.floridareef.org/>

<sup>16</sup> <http://www.reefcheckaustralia.org/>

<sup>17</sup> <http://reefjam.com/>

<sup>18</sup> Sanpere, Ellen. "Reef Jam Raises Money Towards Preserving Coral Reefs in the U.S. Virgin Islands." *Repeating Islands*. N.p., Nov 13, 2009. Web. Sep 14 2015.

<sup>19</sup> <http://www.friendsvinp.org/about-us/major-accomplishments>

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up Paddle Board, called *Paddle the Park* and also has the program for the *Park Villas*, through which a percentage of the renting of the vacation villas is donated.<sup>20</sup>

### 3.3.3 Additional recommendations

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The recommendations discussed in the following paragraphs are equally important for the effective operation of the Program.

#### 3.3.3.1 *Strengthen the Advisory Committees to the Program*

In the other examined jurisdictions it has been seen how important is the role of the Advisory Committee for the development of a successful coral reefs Program. These committees serve several important purposes. First, they help to integrate key people from federal, state, and local agencies, as well as NGOs, educational institutions, community leaders, and private businesses. It is imperative to have good communication and coordination between all of these entities to ease the implementation of the Program. Second, the advisory committees have also been a key element for the development of projects of the Program and to align them with other efforts related to the reefs outside of it. The Advisory Committee serves as a liaison between the efforts that occur at the local, state and federal level with regard to scheduling, identification of priorities and distribution of funds. Finally, the advisory committees have been the entity responsible for the development of strategic plans and other important papers to coordinate and guide the efforts of the programs. The purpose of the advisory committee is to create effective channels of communication internally and externally, to create democratic and transparent processes on the disclosure of funds under the Program, and its priorities, capitalize on the local knowledge in Puerto Rico and to coordinate partnering efforts to conserve resources.

With this in mind, it is imperative for Puerto Rico to formalize its internal committee and Advisory Committee provided into in Act 147 as soon as possible.

- | Internal Committee: It is recommended to subscribe the Administrative Order to strengthen the internal Committee as supporting structure for the Program. By means of this order, the responsibilities of the members of the Committee could be assigned and establish the scope of their work regarding the Program. In the interviews, additionally, the recommendation was to have staff from the Guards Body actively participating in the Committee.
- | Structure the Advisory Committee according to Act No. 147 and seek their active participation. The Advisory Committee in Florida may be taken as an

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<sup>20</sup> <http://www.friendsvinp.org/how-to-help/villas-for-the-park>

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example, better known as the SEFCRI. To clarify the structure and role of the SEFCRI, the *SEFCRI Team Charter of 2012* was developed. This legal document sets out the composition of the committee (which contains 64 voting members), the organization that represents, their positions and roles, in addition to its mission and how it operates as a body. In addition, it establishes the non-voting members' positions of the FDEP within the committee and their roles within it. The Charter and the SEFCRI structure represent a role model to follow and to adjust to the particular needs of Puerto Rico.

#### 3.3.3.2 *Develop a Strategic Plan for the Program*

A strategic plan must be created, as in other jurisdictions, to guide the management of the program in the short, medium and long term. The plan must be developed by internal staff of the Program, but with the input of the internal and external Advisory Committee. The same must be aligned with the federal and state priorities and must be for a 5 to 10 year term, with the idea of creating a long-term vision for the conservation of the reefs of Puerto Rico.

#### 3.3.3.3 *Establish a network of volunteers who support the management of the Program*

The human resources subject matter is an issue that affects the management of the Program. Several jurisdictions have developed programs for very successful volunteers that contribute greatly to the success of the Corals Program. As it was described in the study of cases, Australia has one of the more extensive volunteers network, through their Reef Guardian Stewardship Program. Managed by the GBRMPA, this program supports efforts of volunteers to protect the reefs through the watershed.

It began in 2003 as a school-based program to encourage the community to take action. Today, the Reef Guardian Schools initiative has than 300 schools and 123,000 students. In 2007 the initiative was expanded to include the advice of local governments along the coast of the GBR, through the Reef Guardian program Councils. In 2011 the Reef Guardian Fisheries and Reef Guardian Farmers and Graciers were launched to encourage the participation of industries. The strategies used by this country in the development of its volunteer program should be deeply studied.

#### 3.3.4 *Conclusions*

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Compared with other reviewed jurisdictions, the Coral Reefs Program of Puerto Rico needs to be urgently strengthened to meet the faced needs and challenges. However, there is the chance to structure a strong and robust Program. This report identifies

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several options that can be implemented by the DRNA to effectively improve the Program, responding to the concerns, needs and aspirations of the stakeholders, as well as the taxing situation that Puerto Rico faces.

Puerto Rico must search for ways to create a world-class Program, based on lessons learned in jurisdictions of the USA and looking beyond, and to strategies applied in other countries who lead efforts at the global level. However, for its development it is crucial to allocate staff devoted to the Program and seek creative and recurring sources of funds that allow the diversification and not rely exclusively on sources of federal funds.

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## Recommendations

Coral Reef Conservation and Management Program

# ASSOCIATES

## Hawaii:

Name: Ray K. Chimera  
Title: Department Contract Specialist  
Institution: Department of Aquatic Resources, Department of Land and Natural Resources  
Date: 4/8/2015, 3pm  
\*\*A follow-up interview was held with Mr. Chimera the 9/17/15

Name: Anne Rossini  
Title: Marine Resource Specialist  
Institution: Department of Aquatic Resources, Department of Land and Natural Resources  
Date: 4/8/2015, 3pm

Name: Charisa (Rise) Minato  
Title: Program Coordinator  
Institution: Hawaii Coral Reef Initiative, University of Hawaii, Social Science Research Institute.  
Date: 4/8/2015, 3pm

Name: Brian Kadenaka  
Title: Acting Program Manager – Environmental Program  
Institution: Department of Aquatic Resources, Department of Land and Natural Resources  
Date: 4/8/2015, 3pm

## Florida:

Name: Joanna Walczak  
Title: Southeast Florida Regional Administrator for the Florida Coastal Office (FCO)  
Institution: Florida Department of Environmental Protection (FDEP)  
Date: 7/8/2015, 10am/

## Puerto Rico:

Name: Dr. Miguel García Bermudez  
Title: Negociado de Pesca y Vida Silvestre [Negotiation of Fishing and Wild Life]  
Institution: Departamento de Recursos Naturales y Ambientales, [Department of Natural and Environmental Resources] Puerto Rico  
Date: 9/9/2015, 10am

Name: Damaris Delgado  
Title: Negociado de Costas, Reservas y Refugios [Coasts, Reserves, and Refugees Unit] and POC  
Institution: Departamento de Recursos Naturales y Ambientales, [Department of Natural and Environmental Resources] Puerto Rico  
Date: 9/9/2015, 2pm

## NOAA

Name: Dana Wasunich-Mendez  
Title: Atlantic and Caribbean Team Lead  
Institution: NOAA's Coral Reef Conservation Program  
Date: 8/28/2015, 12pm

**Recommendations**

Coral Reef Conservation and Management Program

# APPENDIXES

**Recommendations**

Coral Reef Conservation and Management Program

## Appendix A: Florida SEFCRI Charter Members

Federal Agencies (8 Seats)	County/Regional Governing Entities (8 Seats)
National Oceanic and Atmospheric Administration - Coral Reef Conservation Program	Miami-Dade County - Department of Regulatory and Economic Resources
National Oceanic and Atmospheric Administration - National Marine Fisheries Service (SE Fisheries Sci Center)	Broward County - Natural Resources Planning and Management Division
National Oceanic and Atmospheric Administration - National Marine Fisheries Service (Habitat Cons. Division)	Palm Beach County - Environmental Resource Management
National Oceanic and Atmospheric Administration - National Marine Fisheries Service (Protected Resrcs Div)	Martin County
	Local Drainage Districts
National Oceanic and Atmospheric Administration - National Marine Sanctuaries (FKNMS)	Utilities
	<b>Academia (8 Seats)</b>
National Park Service - Biscayne National Park	Education & Outreach - Teachers, K - 12
National Park Service - Dry Tortugas National Park	Education & Outreach - SeaGrant/Nature Centers
National Park Service - Everglades National Park	Research Institutes - National Coral Reef Institute
U.S. Fish and Wildlife Service - Hobe Sound NWR	Research Institutes - Smithsonian Institute
U.S. Army Corps of Engineers - Regulatory	Universities - Florida Atlantic University
U.S. Army Corps of Engineers - Civil Works	Universities - Florida Institute of Technology
U.S. Coast Guard - Sector Miami	Universities - Florida International University
U.S. Department of Agriculture - Regional/Local	Universities - Nova Southeastern University
U.S. Environmental Protection Agency - Regional/Local	Universities - University of Florida
U.S. Geological Survey - Regional/Local	Universities - University of Miami
<b>State Agencies (8 Seats)</b>	<b>Non-Governmental Organizations (8 Seats)</b>
Florida DEP - Bureau of Beaches and Coastal	Conservation/Environmental NGO - Local
Florida DEP - Southeast Regulatory District (Submerged Lands & Environmental Resource Program)	Conservation/Environmental NGO - National
Florida DEP - Southeast Regulatory District (Water)	Conservation/Environmental NGO - International
	<b>Diving (5 Seats)</b>
Florida DEP - Southeast Regulatory District (Communications)	Charter Boat Operator
	Dive Instructor/Store
Florida DEP - Florida Park Service (Bill Baggs Cape Florida State Park)	Recreational Diver - Hunter
	Reef Research Team Diver
Florida DEP - Florida Park Service (John D. MacArthur State Park)	Diving Club
	<b>Fishing (5 Seats)</b>
Florida DEP - Florida Park Service (John Pennkamp Coral Reef State Park)	Charter Fishing
	Recreational Fishing
Florida DEP - Florida Park Service (John U. Lloyd Beach State Park)	Commercial Fishing
	Fishing Club
Florida DEP - Florida Park Service (St. Lucie Inlet Preserve State Park)	Fishing Tournament Organization
	<b>Private Business (8 Seats)</b>
Florida DEP - Aquatic Preserves (Biscayne Bay Aquatic Preserve)	Consultants - Environmental/Engineering
	Landscape Industry
Florida Fish and Wildlife Conservation Commission - Fish and Wildlife Research Institute	Marine Industries - Recreational Boating/Fishing
	Marine Contractors
Florida Fish and Wildlife Conservation Commission - Division of Marine Fisheries Management	Tourism
	<b>Other (6 Seats)</b>
Florida Fish and Wildlife Conservation Commission - Division of Habitat and Species Conservation	Ports - Port of Miami
	Ports - Port Everglades
Florida Fish and Wildlife Conservation Commission - Law Enforcement (Marine)	Ports - Port of Palm Beach
	Water Sports - Surfing/Wind Surfing, Paddle Boarding
South Florida Water Management District	Citizens at Large

**Recommendations**

Coral Reef Conservation and Management Program

# Appendix B: Florida CRCP 2011-2016 Strategic Plan Tracker

<i>Coral Reef Conservation Program 2011-2016 Strategic Plan Tracker</i>		1 = Achieved 0.5 = Partially achieved/ In progress 0 = Not yet started					
Goals & Objectives	Strategies	FY 11	FY 12	FY 13	FY 14	FY 15	FY 16
<b>CRCP Capacity</b>							
Objective 1: Sustain and improve CRCP core services (general operations, programs and projects).	1.1 Maintain CRCP general operations (as they exist at the start of state fiscal year 2011) to ensure program stability.	1	1	1			
	1.2 Maintain existing CRCP services, programs, and partnerships.	1	1	1			
Objective 2: Identify gaps in CRCP capacity and resources needed to fulfill the CRCP Strategic Plan, and where possible, fill identified gaps.	2.1 Seek and acquire sustainable state funding to support CRCP core services and strategic plan goals.	1	1	1			
	2.2 Continue to engage in resource management activities which support conservation and management of the Florida Reef Tract as a holistic system.	1	1	1			
	2.3 Foster development of expanded legislative authorities to protect coral reefs.	0	0	0			
	2.4 Complete Martin County bathymetric and benthic habitat mapping.	0.5	0.5	1			
	2.5 Initiate and sustain fisheries-independent monitoring in southeast Florida.	0.5	1	1			
	2.6 Sustain and expand long-term water quality monitoring in southeast Florida.	0.5	0	0.5			
	2.7 Expand the number of SECREMP sites and review survey design for potential expansion or modification of sampling parameters (e.g. recruitment).	0	0.5	1			
	2.8 Track locations and information for threatened, endangered, and unique coral colonies and masses off southeast Florida.	1	1	1			
	2.9 Expand recovery rate information for functional groups on southeast Florida reefs.	1	1	1			
<b>Education and Outreach</b>							
Objective 1: Build upon the existing CRCP Education and Outreach Program to expand coral reef awareness and protection with emphasis on, but not limited to: 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.	1.1 Maintain and update CRCP and SEFCRI websites.	1	1	1			

## Recommendations

### Coral Reef Conservation and Management Program

	1.2 Maintain a presence at community events with supporting education and outreach materials.	1	1	1		
	1.3 Sustain the ongoing multimedia public service announcement campaign.	1	1	1		
	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 reefs.	0.5	0.5	0.5		
	1.5 Continue to conduct coral reef teacher trainings.	1	1	1		
	1.6 Continue to produce and distribute the Southeast Florida Reef News.	1	1	1		
	1.7 Expand education programs that inform stakeholders about regulations and best practices when boating, fishing and diving (e.g. Marine Regulation Awareness Program).	0.5	0.5	0.5		
	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).	0.5	0.5	0.5		
	1.9 Compile and disseminate coral reef awareness and protection information, specifically targeting new southeast Florida residents.	0	0	0		
Objective 2: Work with local municipalities to establish higher environmental standards (e.g. greening programs, water reuse, sewage treatment, etc.).	2.1 Support development and implementation of storm drain labeling programs by southeast Florida counties and municipalities.	0	0	0		
Objective 3: Support continued development and implementation of the USCRTF National Action Plan, resolutions, working group recommendations and other initiatives, as appropriate for Florida.	3.1 Continue SE Regional Administrator's service as Florida's point of contact to the USCRTF.	1	1	1		
	3.2 Attend and participate in the USCRTF and its Steering Committee meetings, as required through Florida's membership in the USCRTF.	1	1	1		
	3.3 Provide or recommend Florida representatives to participate in USCRTF working groups, development and implementation of resolutions and other USCRTF actions, as appropriate.	1	1	1		
Objective 4: Support external efforts and partnerships that foster coral reef conservation.	4.1 Engage in partnerships and working groups that support Florida's coral reef conservation goals and priorities (e.g. FRRP, USAIC).	1	1	1		

## Recommendations

### Coral Reef Conservation and Management Program

Coral Reef Ecosystem Conservation				
<b>Objective 1:</b> Define and recommend management options for the mainland southeast Florida reef system based on management goals, best available science, monitoring results and stakeholder input.	1.1 Complete implementation of initial SEFCRI Fishing, Diving and Other Uses Focus Area LAS projects required for this objective.	0.5	0.5	0.5
	1.2 Fill gaps identified in CRCP Capacity Objective 2, Strategies 1-6.	0.5	0.5	0.5
	1.3 Identify, recommend and where feasible, work to establish protection zones (e.g. no take, no anchor, no entry) 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 options.	0	0	0
	1.4 Engage in state and nationwide marine spatial planning activities to inform local planning processes.	0.5	0.5	0.5
	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).	0	0.5	0.5
	1.6 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).	0.5	0.5	0.5
<b>Objective 2:</b> Work collaboratively with partners to develop, implement and support action plans including monitoring, research, stakeholder communication and response strategies to support management of the Florida Reef Tract as a holistic system.	2.1 Support the development and implementation of a comprehensive marine zoning strategy, in cooperation with partners, for the entire Florida Reef Tract.	0.5	0.5	0.5
	2.2 Work with regional partners to develop consistent messaging (e.g. terminology, signage, and maps) to the public about coral reef management actions.	0	0	0
	2.3 Continue to actively participate in the FRRP.	1	1	1
	2.4 Work with FRRP partners to implement the Climate Change Action Plan for the Florida Reef System 2010-2015.	0.5	0.5	0.5
<b>Objective 3:</b> Reduce the impacts of land-based sources of pollution on the Florida Reef Tract.	3.1 Sustain and expand (e.g. sites, frequency, parameters) the long-term SECRVQMP, and link the results to benthic habitat monitoring data, to aid in determining linkages between environmental factors and changes in the coral reef community.	0	0	0
	3.2 Identify cause and effect relationships between land-based sources of pollution and adverse effects on reef resources (e.g. biomarker studies).	0.5	0.5	0.5
	3.3 Support implementation and refinement of numeric nutrient criteria for the Florida Reef Tract.	0.5	0.5	0.5
	3.4 Continue to characterize and quantify amount and flux of pollution sources to southeast Florida's reefs.	0.5	0.5	0.5
	3.5 Engage in Comprehensive Everglades Restoration Plan and related activities and meetings.	1	1	1

## Recommendations

### Coral Reef Conservation and Management Program

Objective 4: Reduce impacts from extractive and non-extractive recreational and commercial uses.	4.1 Initiate fisheries-independent monitoring on southeast Florida's reefs.	1	1	1			
	4.2 Support fishery management agency actions to increase size and abundance of reef fish species.	0	0	0			
	4.3 Continue and expand upon the Marine Debris Reporting and Removal Program.	1	1	1			
	4.4 Support mooring buoy programs, if appropriate, in high-use areas.	1	1	1			
Objective 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.	5.1 Support the evaluation of existing innovative and emerging technologies and best management practices for coastal construction adjacent to coral reef resources.	0	0	0			
	5.2 Support ways to continually improve shoreline maintenance and restoration practices.	0	0	0			
	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.	0	0	0.5			
	5.4 Work with regulatory program staff to implement the SEFCRI cumulative impacts analysis tool, historical permit-tracking database, and associated guidance documents.	0	0	0			
Objective 6: Increase capacity to prevent and respond to coral reef injuries associated with vessel impacts and non-regulated activities.	6.1 Identify and implement new management actions to prevent and respond to reef injuries.	0	0	0.5			
	6.2 Conduct research and training to improve understanding and capacity to assess, restore and resolve reef injuries.	1	1	1			
Objective 7: Support and, where possible, strengthen agency capacity and authorities to conserve coral reefs.	7.1 Support development or strengthening of specific rules, regulations, and enforcement provisions to protect coral reef resources (e.g. Coral Reef Protection Act).	0	0	0			
	7.2 Provide local field support for agency regulatory, compliance and enforcement activities.	1	1	1			
Objective 8: Promote the development and implementation of new SEFCRI LAS projects by SEFCRI Team members, which include tangible outcomes and performance measures.	8.1 New LAS will directly support, or be compatible with, one or more of the following coral reef management and strategic plans: <ul style="list-style-type: none"> <li>• FDEP CRCP's 2011-2016 Strategic Plan</li> <li>• Florida's Coral Reef Management Priorities 2010-2015</li> <li>• Climate Change Action Plan for the Florida Reef System 2010-2015</li> <li>• Reef Resilience Conference 2008: Resilience Strategies</li> <li>• 2010-2015 NOAA Coral Reef Conservation Program National Goals and Objectives</li> <li>• U.S. Coral Reef Task Force National Action Plan</li> <li>• NOAA National Marine Fisheries Service Acropora Recovery Plan</li> </ul>	0	0	0.5			
	8.2 New LAS will address existing or emerging local threats to coral reef conservation in southeast Florida, or the top three global threats to coral reef conservation (fishing impacts, land-based sources of pollution, climate change) identified through the 2010-2015 NOAA Coral Reef Conservation Program National Goals and Objectives[1].	0	0	0.5			
<b>Total Number of Strategies Achieved per FY</b>		<b>29.5</b>	<b>30.5</b>	<b>34</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total Percentage of Strategies Achieved per FY</b>		<b>55.7%</b>	<b>57.5%</b>	<b>64.2%</b>	<b>0.0%</b>	<b>0.0%</b>	<b>0.0%</b>