Management Options to Prevent Anchoring, Grounding, and Accidental Impacts to Coral Reef and Hardbottom Resources in Southeast Florida – Phase IV

Southeast Florida Coral Reef Initiative
Maritime Industry and Coastal Construction Impacts Focus Team
Local Action Strategy Project 9 & 25 - Phase IV

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Final Report

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List of Acronyms

AAUS	American Academy of Underwater Sciences
AIS	Automated Identification System
BCEPGMD	Broward County Environmental Protection and Growth Management Department
BMPs	Best Management Practices
CORAL	Coral Reef Alliance
CRCA	Coral Reef Conservation Act
CRCP	Coral Reef Conservation Program
CRPA	Coral Reef Protection Act
CSI	Crime Scene Investigation
DARRP	Damage Assessment Remediation and Restoration
DEP	Florida Department of Environmental Protection
DERM	Miami-Dade County Division of Environmental Resources Management
ECDIS	Electronic Chart Display and Information System
EMRTF	Ecosystem Management and Restoration Trust Fund
ENC	Electronic Navigation Chart
ERM	Palm Beach County Department of Environment Resource Management
ERP	Environmental Resource Permitting
ESA	Endangered Species Act
ESRI	Environmental Systems Research Institute
FCO	Florida Coastal Office
FDOU	Fishing, Diving, and Other Uses
FKNMS	Florida Keys National Marine Sanctuary
F.S.	Florida Statute
FWC	Florida Fish and Wildlife Conservation Commission
FWC LE	Florida Fish and Wildlife Conservation Commission Law Enforcement
FWRI	Fish and Wildlife Research Institute
GIS	Geographic Information System
HEA	Habitat Equivalency Analysis
IHO	International Hydrographic Organization
LBR	Legislative Budget Request
LBSP	Land Based Source of Pollution
MCGMED	Martin County Growth Management Environmental Division

MICCI	Maritime Industry and Coastal Construction Impacts
MOU	Memorandum of Understanding
MPA	Marine Protected Area
NCRI	National Coral Reef Institute
NMFS	National Marine Fisheries Services
NOAA	National Oceanographic and Atmospheric Administration
NOV	Notice of Violation
OGC	Office of General Council
OSHA	Occupational Safety and Health Administration
POC	Point of Contact
PSA	Public Service Announcement
REA	Rapid Ecological Assessment
RIPR	Reef Injury Prevention and Response Program
RP	Responsible Party
SED	Southeast District
SEFCRI	Southeast Florida Coral Reef Initiative
SEAFAN	Southeast Florida Action Network
SEMERP	Southeast Marine Event Response Program
SFWMD	South Florida Water Management District
SNPWG	Standardization for Nautical Publications Working Group
SOPs	Standard Operating Procedures
SWP	State Warning Point
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USCRTF	United States Coral Reef Task Force

1. Introduction

Commercial and recreational anchor damage and groundings within southeast Florida have historically resulted in severe negative impacts to the Florida Reef Tract. Since 1979, there have been 181 reported incidents in the southeast Florida region (Miami-Dade, Broward, Palm Beach, and Martin counties) of vessels potentially damaging coral reefs either as a result of direct vessel impact, or by other means such as cable drags or improper anchoring practices. In reality however, the true number of commercial and recreational vessels impacting reef resources is most likely much higher, as many impacts go un-noticed or un-reported. Since assuming responsibility for the management and enforcement of coral reef resource impacts in southeast Florida in March 2006, the Florida Department of Environmental Protection's (DEP) Coral Reef Conservation Program (CRCP) has responded to, and managed, 137 of these documented cases as of June 30, 2014.

A number of these cases involved large commercial vessels that caused destruction of extensive areas of coral reef and associated benthic habitat. On July 1, 2009 the Florida Coral Reef Protection Act (CRPA) Section 403.9345, Florida Statute (Appendix 1), was enacted into Florida Law, increasing DEP's ability to enforce penalties for damages following a reef injury event. Since the CRPA's inception, 75 warning and educational letters have been sent to recreational vessel owners, and six notice of violations (NOV) or consent orders have been executed in cases involving commercial vessels.

The *Management Options to Prevent Anchoring, Grounding, and Accidental Impacts to Coral Reefs and Hardbottoms – Phase I Report* was finalized in November 2010, and is the product of Phase I of the Maritime Industry and Coastal Construction Impacts (MICCI) Project 9 & 25 - *Identification of Management Options to Prevent Coral Reef and Hardbottom Impacts*. The main objective of this project is to identify and prioritize management options to prevent impacts to coral reefs and benthic habitats from commercial and recreational vessel anchoring and groundings. Phase I initiated the implementation of immediately feasible recommendations from the MICCI Project 2 – *Rapid Response and Restoration for Coral Reef Injuries in Southeast Florida: Guidelines and Recommendations.* Phase II of the MICCI 9 & 25 project continued with implementation of both the management options from Phase I and the recommendations from the MICCI Project 2 report, in addition to providing funds for mooring buoy support in Miami-Dade, Broward, and Martin counties. During Phase III and IV of this project, the effort to implement recommendations from the MICCI Project II report was continued and additional mooring buoy funding was provided for Miami-Dade Broward, Palm Beach, and Martin counties.

1.1 Establishment and Growth of the Reef Injury Prevention and Response (RIPR) Program

In 2006, the DEP Florida Coastal Office's (FCO), formerly known as the Office of Coastal and Aquatic Managed Areas, Coral Reef Conservation Program was tasked with leading response to southeast Florida's (Miami-Dade, Broward, Palm Beach, and Martin counties) coral reef injury events. Due to limited staff capacity at the time, the need for a staff member to work full time on grounding related issues became apparent in 2006 when two major commercial ship groundings and five ship anchoring incidents occurred on Broward County reefs. Accordingly, in early 2008 the first Reef Injury Prevention and Response (RIPR) Program Coordinator was hired.

Since June 2010, the CRCP along with members of DEP's Office of General Council (OGC) and Southeast District (SED), and advisors from the National Coral Reef Institute (NCRI) at Nova Southeastern University have participated in three mediated meetings with the responsible parties (RP) in two vessel groundings and one anchor drag case in an effort to avoid proceeding to a full trial. All meetings were successful, resulting in the signing of consent orders, and the recovery of over one million dollars in compensatory mitigation funds.

The primary functions of the RIPR Coordinator are to lead coordination of the State's response to reef grounding and impact events, monitor a 24-hour coral reef injury cell phone, and act as the primary contact for any coral reef injury event in southeast Florida. Additional duties for the RIPR Coordinator include:

- Create and maintain a database to track all coral reef injury events including: date, location, the identification of a responsible party (RP), type or cause of event, size of injury, if primary restoration was done, and what enforcement actions were taken.
- Create and maintain a database of local, state, and federal coral reef biologists or law enforcement employees that are involved when coral reef injuries occur.
- Develop salvage guidelines for vessel removal from a coral reef (see Appendix 2).
- Develop and keep up-to-date the RIPR program website (located online at: http://www.dep.state.fl.us/coastal/programs/coral/ripr.htm).
- Maintain geographic information system (GIS) files related to coral reef injury events.
- Serve as Point of Contact (POC) for interagency coordination, response, and damage assessments for vessel groundings, anchor damage, and other non-permitted coral reef injury events in southeast Florida.
- Organize and lead safe, timely, and coordinated responses to, and management of, coral reef and other hardbottom injury events.

- Provide support for vessel salvage operations (to reduce secondary reef impacts).
- Organize and participate in hardbottom injury site assessment, restoration, and monitoring.
- Maintain all files associated with injury events.
- Coordinate the review and approval process for all pre- and post- primary restoration plans between the state's trustees (i.e., local, state, and federal resource managers that work with the DEP on coral reef injury events) and the RP.
- Work with DEP's legal counsel and SED staff to assist in the recovery of monetary or resource damages from the RP.
- Lead and organize the Ecosystem Management Restoration Trust Fund (EMRTF) Project (see Section 1.2 below).

1.2 Ecosystem Management Restoration Trust Fund (EMRTF) Project

The EMRTF is the repository for monies recovered for injury to, or destruction of, coral reefs and other natural resources of the State of Florida. The Florida CRPA of 2009 requires monies deposited into the EMRTF resulting from coral reef injuries to be used for the purpose of:

- Reimbursing DEP for reasonable costs incurred to assess coral reef resource damages and pursue recovery of penalties for, and compensatory mitigation of damages,
- Funding triage and primary restoration when the responsible party is unknown, unresponsive, or unable to fund restoration activities, and
- Funding activities to restore or rehabilitate injured or destroyed coral reefs, as well as alternative projects that benefit coral reefs.

The State of Florida governs the yearly spending authority of funds from the EMRTF. Spending authority can be best described as the granted authority, to spend a designated amount of money, which must be used for a defined purpose. During the 2012 Florida legislative session, the DEP CRCP was granted increased spending authority from the EMRTF. The increased spending authority granted during the 2012 legislative session will extend through July 1st, 2015.

The increased spending authority has allowed the CRCP to evaluate existing damage sites for restoration potential, evaluate the success of previously conducted restoration, plan and execute underwater reconstruction and restoration, and continue assessment of the sites to determine recovery rates and success of the restoration efforts.

Two vessel grounding sites offshore of Broward County have been chosen for this restoration project and approximately 1,600 m^2 of reef will be restored. Coordination for the restoration project began in 2012 and Olsen Associates, Inc. were contracted to identify conceptual engineering alternatives for restoration, acquire all permits, and assist in construction bidding and oversight. The project will be complete in 2015.

To Be Completed in Phase V:

- Lead, organize, and complete the Ecosystem Management Restoration Trust Fund Project by July 1st, 2015.

2. Management Options Evaluated to Reduce Coral Reef Impacts

The MICCI Combined Projects 9 & 25 team has researched and evaluated several management options to prevent anchoring, groundings, and accidental impacts to coral reefs and hardbottoms. Several options for reducing vessel impacts have been addressed by supporting county mooring buoy programs as well as through working groups that formed to address commercial anchorage issues.

2.1 Introduction of coral reef layers onto recreational and commercial electronic navigation charts

In Phase I of the MICCI 9 & 25 project, the possibility of adding GIS benthic habitat layers, which were a product of the Southeast Florida Coral Reef Initiative's (SEFCRI) Land Based Sources of Pollution (LBSP) Projects 6, 7, 8, 9, onto recreational electronic navigation charts (ENCs) was preliminarily investigated. In Phase II, this option was more fully explored. Based on discussions with private equipment manufacturers (e.g., Garmin, etc.), the DEP could enter into a limited liability and use agreement with the private companies to allow their navigation units to display a reef habitat boundary layer on top of existing ENC's. The layer would not differentiate between different coral reef habitats, rather the reef would be depicted as one generic layer displayed on top of the existing nautical charts.

It was determined in Phase II that it is not currently possible to display the coral reef layers on commercial ENCs, as they have to follow standards established by the International Hydrographic Organization (IHO) that do not allow for the incorporation of GIS data formats. Since the completion of Phase II however, the IHO has started to develop the S-100 universal hydrographic data model. S-100 provides the data framework for the development of the next generation of ENCs products, as well as other related digital products required by the hydrographic, maritime, and GIS communities. The S-100 standard extends the scope of the previous S-57 standard, supporting a wider variety of hydrographically related digital data sources.

Currently, the National Oceanographic and Atmospheric Administration (NOAA) is working with the IHO to include Marine Protected Areas (MPAs) on ENCs. Additionally, the IHO's Standardization for Nautical Publications Working Group (SNPWG) is working on an S-100 based product specification that would standardize the encoding and display of coral reefs and other MPA type features. Once complete, this would be a separate product that would be used in conjunction with ENCs. It must also be noted that the new format and layouts will not be compatible with the many Electronic Chart and Information Display Systems (ECDIS) that are still running on the S-57 format. Only when the units are upgraded will it be possible to see any new layers that are introduced. The current estimation of the timeframe required to develop and adopt the new specifications is 2-3 years away, and does not include the time that would be required to develop a system capable of reading the new data format. The status of this project and the development of the new commercial standards will continue to be monitored.

During Phase III, the southeast Florida reef habitat layers were made available for public use by Friends of Biscayne Bay through the Environmental Systems Research Institute's (ESRI) ArcGIS free mobile application (commonly referred to as an 'app'). The Friends of Biscayne Bay is a non-profit, citizen support organization whose purpose is to support Biscayne Bay Aquatic Preserve. The free app is available on the Apple iPhone, Android operating system, and Windows Phone 7. The map on the ESRI ArcGIS app is titled 'Southeast Florida Coral Reef Locator' and provides benthic habitat maps for Miami-Dade, Broward, Palm Beach, and Martin counties.

During Phase III the benthic habitat files were uploaded to DEP's web based mapping application, Map Direct, which can be found at: http://ca.dep.state.fl.us/mapdirect/gateway.jsp. This final aggregated reef layer is now available on the internal DEP dataminer, an application that allows GIS boundary and image files to be shared amongst all DEP GIS users. The file is accompanied by an extensive metadata document, which gives details on the layers creation, accuracy, and spatial reference.

In Phase IV the Southeast Florida Coral Reef Locator map was made available for public use by DEP though the ESRI ArcGIS free mobile application, therefore eliminating the need for Friends of Biscayne Bay support. Mooring buoy locations for Miami-Dade, Broward, Palm Beach, and Martin counties were added to the map along with the commercial anchorages for Port Miami, Port Everglades, and Port of Palm Beach. Spanish and English instruction cards on how to download the ESRI ArcGIS mobile app and locate the map were professionally designed and printed (Appendix 3). These instructions will be distributed by DEP staff and SEFCRI volunteers at outreach events, included in educational letters sent to boaters found anchoring on the reef, and provided during vessel inspections and boater safety classes by the Auxiliary United States Coast Guard (USCG).

To Be Completed in Phase V:

- Continue to monitor progress of new commercial standards.
- Update the current Southeast Florida Coral Reef Locator map to include updated benthic habitat information and layers from the project "Southeast Florida shallow-water coral reef community baseline habitat mapping and characterization of mapped communities."

2.2 Designation of no anchor zones and prioritize coral reef communities of particular importance

The need to establish no anchor zones due to the practical implications of enforcing the CRPA was highlighted in Phase I. State law enforcement personnel reported that even if a recreational boat user was observed anchoring in an area that contained coral reef habitat, visible proof of the anchor directly impacting reef resources was needed in order to issue a citation. This would require the officer to dive on each suspected anchor incident and visually establish that the vessel is, in fact anchored on coral reef resources. The establishment of no anchor zones would provide definitive evidence of noncompliance and eliminate the need to establish intent or link specific people to actions resulting in reef damage; thereby increasing the ability of enforcement and willingness of enforcement of the CRPA. In order to establish no anchor zones, it needs to be determined which agency has the authority to designate them, which agency will be responsible for the enforcement, and what the penalty schedule will be for violations. Phase I determined that according to Florida Statute (F.S.) (*F.S. 253.03(7)(b)*), the Board of Trustees of the Internal Improvement Trust Fund has the authority to designate such zones. Furthermore, research into the ease and practicality of zone creation will have to be completed. This will occur in Phase V through the SEFCRI *Our Florida Reefs* community planning process.

To Be Completed in Phase V:

- Assist the *Our Florida Reefs* process to address the issue of no anchor zone designation.

2.3 Creation of an outreach campaign to educate the public on the CRPA

During Phase III, a number of outreach initiatives were completed that aimed to educate the general public on the importance of the Florida Reef Tract and the CRPA. A tri-fold color brochure was designed and printed that outlines the importance of the Florida Reef Tract and how the CRPA helps protect it (Appendix 4). Ten thousand copies of the brochure were distributed amongst dive operators, marinas, and boatyards throughout the four counties. In Phase IV, a Spanish version of the CRPA brochure was created, printed, and distributed. Also in Phase IV, the RIPR Program has been contacting the USCG Auxiliary's flotilla leaders and Boater Safety class

instructors to include information about the CRPA and to hand out the CRPA brochure to class participants. This outreach will continue in Phase V.

In addition to producing and distributing hard copies of the brochure, a high resolution PDF file was produced, which could be emailed to persons who have a registered vessel or a saltwater fishing license in Florida. An updated list of the contact details of all recreational saltwater fishing license holders and registered vessel owners needs to be obtained from the FWC. An appropriate distribution strategy to reach the maximum number of users will be investigated in Phase V.

A public service announcement was developed and broadcasted during Phase III on local radio stations during high listening periods in an effort to reach large numbers of reef users. The script was designed to be concise yet still convey the main purpose of the CRPA:

> *It is now illegal for any vessel to anchor on, or damage, Florida's fragile and valuable coral reefs. When boating use current nautical charts and fish finders to locate reefs. Avoid harming the reefs by using mooring buoys or anchoring in the sand! This important message is brought to you by the DEP. More information about how you can protect the Florida Reef Tract is available online at southeastfloridareefs.net.*

During Phase IV, 1,900 PSAs ran on at least 21 radio stations between July 1st, 2013 and August 20th, 2013.

During Phase III, DEP CRCP's Southeast Marine Event Response Program (SEMERP) was re-branded into the Southeast Florida Action Network (SEAFAN). SEAFAN is a reporting and response system designed to improve the protection and management of southeast Florida's coral reefs by enhancing marine debris clean-up efforts, increasing response to vessel groundings and anchor damage, and providing early detection of potentially harmful biological disturbances. The SEAFAN logo was created as a way to inform the public on how and what to report. Multiple promotional items were created to advertise SEAFAN and its associated website and hotline including a pamphlet, dive whistle, waterproof sticker, ruler sticker, and dive mask strap.

<u>To Be Completed in Phase V:</u>

- Develop distribution strategy for hard and electronic copies of the CRPA brochure.
- Continue working with USCG Boater Safety class instructors and Auxiliary Flotilla leaders to include information about the CRPA and possibly expand to other classes offered by the USCG.
- Contact and establish communication with the Maritime Professional Training School and Facility in Ft. Lauderdale Florida regarding integrating information about captaining in reef areas, and Florida specific information and regulations that effect the commercial and large yacht industries.

2.4 Continuation of support for mooring buoy supplies

In continuation with the support for mooring buoy supplies, Phase III funds were used to purchase supplies for Miami-Dade County Division of Environmental Resources Management (DERM) and Palm Beach County's Environmental Resources Management Department (ERM). In Phase IV funds were used to purchase mooring buoy supplies for DEP's District 5 Division of Recreation and Parks in Martin County and Broward County Environmental Protection and Growth Management Department (BCEPGMD). The agreement with the recipients is that the funds are only used to purchase mooring buoy supplies to perform any necessary repairs, with no assistance provided for any installation or maintenance. A letter of agreement stipulating this arrangement was signed by each county.

During Phase IV, a mooring buoy brochure depicting the location of all of the mooring buoys in Miami-Dade, Broward, Palm Beach, and Martin counties was professionally designed and printed on waterproof paper (Appendix 5). This brochure was created to streamline the effort of informing boaters of mooring buoy locations and will be disseminated during CRCP outreach events, included in educational letters sent to boaters found anchoring on the reef, and distributed during vessel inspections and boater safety classes by the Auxiliary USCG.

To Be Completed in Phase V:

- Continue support of local mooring buoy programs, as necessary.
- Continue working with USCG Boater Safety class instructors and Auxiliary Flotilla leaders to include information about mooring buoys and possibly expand to other classes offered by the USCG.

2.5 Increased Oversight of Commercial Vessel Anchorages

In Phase III, DEP CRCP obtained a license for the use of PortVision. PortVision is a web-based service that allows users to monitor vessels equipped with Automatic Identification System (AIS) technology. AIS technology is required by the International Marine Organization (IMO) for vessels of 300 gross tonnage and upwards engaged on international voyages, cargo ships of 500 gross tonnage and upwards not engaged on international voyages, and all passenger vessels irrespective of size. The license was obtained by DEP CRCP in trade for placing a range antenna on the DEP Miami office building – which assists PortVision by increasing their area by which AIS data can be received. The license provides visibility of all commercial ship traffic, including real-time vessel locations and ship tracking as well as up to five years of historical data. Additionally, PortVision allows the user to create special 'vessel zones' and can alert the user via e-mail or text message when a commercial vessel enters or anchors in that area. In Phase IV the RIPR Program has used this technology to assist in the oversight of three federally designated commercial vessel anchorages (Port of Palm Beach, Port Everglades, and Port Miami) in the southeast

Florida region. Vessel zones have been set up around these anchorages to encompass a large portion of the southeast Florida reef tract and alert the RIPR Coordinator when vessels anchor in these areas. The goal of using PortVision is to eliminate orphan reef injury sites. Orphan reef injury sites are when an injury to reef resources is reported, but there is no information on what or who caused it.

To Be Completed in Phase V:

- Continue to use PortVision and explore other ways it can help to reduce impacts to coral and hardbottom habitats.

3. MICCI Project 2 Recommendations

In 2006, DEP's CRCP held a public workshop for MICCI Project 2. The objective was to gather information to improve response to, and restoration of, coral reef injuries in southeast Florida. The workshop compiled information on existing emergency response processes, identified deficiencies, and developed consensus-based solutions among numerous agencies of state and local governments, marine industry representatives, and other stakeholders. The outcome of the workshop was a series of 19 recommendations (Appendix 6) that were incorporated into a final MICCI Project 2 document titled, *Rapid Response and Restoration for Coral Reef Injuries in Southeast Florida: Guidelines and Recommendations Handbook*. The following section is a brief overview of the progress made on the 19 recommendations in Phase IV.

3.1 Recommendation 1

Recommendation 1 calls for agencies that are issuing permits that may affect coral reef resources to ensure that permit conditions provide the maximum protection for reef resources. The adoption of the CRPA in 2009 provided a legal framework for this recommendation, since it provides a schedule of damages, and authorizes DEP to collect from the responsible party the costs related to natural resource damage assessments, enforcement actions, the replacement or restoration of the injured coral reef, and the cost of monitoring the restored, injured, or replaced reef for at least 10 years. The full text of the provision contained within the CRPA can be found in Appendix 1.

MICCI Combined Project 4, 21, 23 and 24 – *Policy Recommendations and Training to Improve Agency Permitting, Compliance and Enforcement for Coral Resource Conservation in Southeast Florida* examined issues relating to coastal construction permits for projects impacting coral reef and hardbottom resources. The project aimed to improve permitting, compliance, enforcement, and penalty assessment processes to protect coral reef resources, another provision of Recommendation 1. The project was split into two phases: Phase I included data mining of permit special conditions from local coastal construction project permits and interviews with field level enforcement staff

to determine the perceived enforceability of those conditions; Phase II conducted an in depth analysis of the legal and regulatory issues that were discovered in Phase I. Some of the key report findings that relate specifically to maximizing the permitting mechanisms designed to increase coral reef protection include:

- The increased agency coordination that was recommended in Phase I could be accomplished through small modifications to the informal networks already in place between agencies.
- Permit compliance at all levels can be increased by making permit language clear, concise, and consistent amongst agencies.
- Agencies directly involved in permitting activities that are directly related to corals and coral reef habitat [DEP and the U.S. Army Corps of Engineers (USACE)] should develop template special conditions for coral resource protection (this is covered in more detail in Recommendations 10 and 11).
- Interagency standards should be developed for acceptable methods, monitoring standards, and reporting requirements for activities such as benthic resource and water column sediment monitoring, and artificial reef construction.

MICCI Combined Projects 4, 21, 23 and 24 also developed a modular training package, aimed at improving the coral reef knowledge of current regulatory personnel. The training has three subject units that are designed to be administered on an individual or group basis. The units include: *Overview of Corals and Hardbottom Resources in Southeast Florida, Rules and Regulations Involving Corals in Southeast Florida,* and *Permitting and Field Approaches for Efficient Compliance and Enforcement.* For a full copy of the report see:
http://www.dep.state.fl.us/coastal/programs/coral/reports/MICCI/04/MICCI_04_21_23_24_Phase_2_Report.pdf

To Be Completed in Phase V:

- Continue to work with regulatory staff to ensure permit conditions are integrated.

3.2 Recommendation 2

The establishment of a 24-hour coral reef hotline to receive reports of coral reef injuries has been completed through the day to day operation of the RIPR Program, as described above in Section 2.3 of the management options. Florida Division of Emergency Management's State Warning Point (SWP) was unwilling to host the hotline due to the potential high call volume, so it has now been organized in conjunction with DEP's SEAFAN. The hotline has been created, and will allow the caller to leave a message in one of three voicemail boxes (marine debris, disturbance events, groundings and anchoring). Each mailbox will contain detailed instructions and is checked daily by the SEAFAN Coordinator. The hotline will be used to receive

calls from members of the general public. The RIPR Coordinator will also continue to monitor the cell phone dedicated to grounding calls from other Trustees.

During Phase III and IV, DEP's SEAFAN and RIPR Programs have collaborated with NOAA on the development of their free NOAA Coral app for the Android operating system. This app will provide users with information about corals and fisheries, local fishery regulations, local coral bleaching updates, and local fish identification.

To Be Completed in Phase V:

- Continue to monitor the cell phone dedicated to grounding calls.
- Continue to monitor and respond to coral reef injuries reported on the 24-hour coral reef hotline.

3.3 Recommendation 3

The public outreach campaign that has been developed to educate stakeholders on the CRPA and the importance of reporting reef injuries is outlined in Section 2.3 above. The need for local, state, and federal, employees to be aware of their responsibilities to report reef injuries to the RIPR Program also forms part of Recommendation 3. During Phase III and IV, several coral reef grounding cases were either settled or brought to conclusion through enforcement, naturally facilitating increased inter-agency coordination. The relationships that have been developed will help ensure that any impact events are quickly and accurately reported through the appropriate channels.

To Be Completed in Phase V:

- Continue to develop methods to inform the public on ways to report coral reef injuries.

3.4 Recommendations 4 and 14

Recommendations 4 and 14 call for long-term coordination amongst all parties and agencies involved in responding to coral reef injuries through the development and maintenance of a password protected website and a database designed to track injured areas. The website should be set up to contain data that relates to the information provided during the initial incident report, the contact information of the responsible party including legal and technical contacts, the contact information for each agency involved in any aspect of the response, and all contractor and subcontractor information. The database should be developed to track injured areas and their restoration status so that areas where no action is taken (due to monetary or other constraints), may be identified and prioritized for restoration efforts at a later time.

The practicalities of developing a password protected website were investigated in Phase II. The hiring of a private contractor to develop and host a website that had the

capability for users to upload and download documents proved to be cost prohibitive. Preliminary discussions have been held with FWC's FWRI to develop and host a groundings website that will perform all of the functions outlined in the recommendation. A scope of work will be drafted with FWC in Phase V, and once operational, all historical injury event reports will be scanned and uploaded to the server, eliminating the need for various agencies to have to search for old files. Newer electronic reports and associated GIS files and maps will also be shared online. The groundings database will be developed internally in Phase V, using skills that developed as a result of the Incident and Report Tracking (Access 2007) consultation that was held for CRCP staff in June 2011.

To Be Completed in Phase V:

- Re-engage FWRI to develop a scope of work for a password protected website for trustee use.
- Develop an Access-based groundings database to efficiently track cases.

3.5 Recommendation 5

Phase III and IV has continued to explore the various avenues of potential enforcement authority of the CRPA. As previously discussed, the CRPA offers statutory protection to the Florida Reef Tract, but practical enforcement has proved difficult. Currently, only DEP can enforce the CRPA. CRCP and SED staff have continued to send out formal warning letters to persons reported to have violated the CRPA. See Appendix 7 for an example of the warning letter for recreational vessels, 20 of which were issued in Phase IV. A new educational letter for commercial vessels anchored outside of the federally designated anchorage areas was created in Phase III with assistance from SED staff. This educational letter contains specific language about why it is a violation for commercial vessels to anchor outside of the federally designated anchorage areas and information about the CRPA (Appendix 8). A consent order for smaller commercial incidents and repeat recreational offenders which outlines the amount of damages assessed and acts as a final resolution once signed (Appendix 9) has continued to be issued. Three consent orders were issued and subsequently executed during Phase IV.

In Phase V, the RIPR Coordinator should coordinate a meeting with FWC Law Enforcement (FWC LE) staff to continue discussions on how to address FWC LE concerns about taking on enforcement of the CRPA – including new technology (e.g., drop cameras) that may address their concerns. Although out of the scope of the CRCP RIPR program, a similar discussion needs to also occur with FWC LE staff in Monroe County including the Florida Keys National Marine Sanctuary in order to provide consistent State enforcement across the entire Florida Reef Tract.

To Be Completed in Phase V:

- Continue to provide assistance preparing warning and educational letters.

- Coordinate a meeting with FWC LE staff to continue discussions on how to address FWC LE concerns about taking on enforcement of the CRPA – including new technology (e.g., drop cameras) that may address their concerns.

3.6 Recommendations 6 and 7

Both Recommendations 6 and 7 were initially addressed during Phase III. Recommendation 6 states that the trustees should develop criteria for evidence collection based upon anticipated litigation needs. Recommendation 7 requires that all divers collecting evidence, including divers collecting scientific data, should be trained in accredited evidence collection policies and procedures. As part of the RIPR Program, the CRCP contracted the Coral Reef Alliance (CORAL) to provide a classroom and field training workshop in Coral Reef Crime Scene Investigation (CSI) methods. This week long course took place on April 30th – May 4th, 2012 with 21 participants from the following agencies:

DEP CRCP
DEP SED
DEP OGC
DEP Biscayne Bay Aquatic Preserve
DEP District 5 Division of Recreation and Parks
FWC Division of Habitat and Species Conservation
FWC FWRI
FWC Law Enforcement
BCEPGMD
DRER
NCRI

This course trained key individuals within the southeast Florida region in the standards and protocols developed for conducting legally defensible investigations of marine natural resource impacts on coral reefs to determine responsible parties, mitigation strategies, and gather evidence for decision making. Lead by the RIPR Coordinator in Phase III and IV, participants have developed coral reef injury response protocols using information from the CSI course and updated the Memorandum of Agreement (MOA) between FWC, FWRI, and DEP that allows for resource trustees to easily assist DEP CRCP during injury events. Also during Phase IV, the annual refresher CSI training was held to ensure the updated data collection and response protocols were reviewed by the relevant resource trustees and advisors. An annual refresher CSI training will be given every year and will be mandatory in order for a resource trustee to assist DEP with southeast Florida injury events.

<u>To Be Completed in Phase V:</u>

- Hold annual refresher CSI training.

3.7 Recommendation 8

Since the completion of Phase I, the DEP dive program has undergone a transition, due to internal staff changes, and is no longer pursuing American Academy of Underwater Sciences (AAUS) diving safety standards. As per the new DEP diving directives, any activities which can be described as 'diving operations' are to follow the U.S. Department of Labor's Occupational Safety and Health Administration (OSHA) regulation set forth in 29 CFR, Part 1910, Subpart T, Commercial Diving Operations, as stated in Recommendation 8. DEP may use the OHSA requirements as its safety standard when the requirements do not conflict with applicable Florida law or prevent DEP from carrying out its mission. This change in direction means that Recommendation 8 is more closely met, in that only divers operating under OHSA standards will collect evidence or scientific data that will be used as evidence in subsequent litigation.

To Be Completed in Phase V:

- Recommendation 8 has been completed.

3.8 Recommendation 9

The development of a tiered contractor certification process has been on hold during both Phases I, II, and III. The recommendation calls for the qualification to be based upon criteria such as past performance, the ability to work with federal, state, and local governments, and the possession of necessary skills, certificates, or degrees verifying ability and equipment capability to conduct specific activities. This process is on hold pending the reauthorization of the Coral Reef Conservation Act (CRCA) of 2000 which, if approved, will provide NOAA with the capability to provide assistance to state and local government agencies during groundings and other impact events.

If guidelines were developed before the passing of the bill, it would have to be ensured that they would allow NOAA, and other federal or state resource trustees to provide assistance during an impact event, if requested by the State resource trustees.

One bill was introduced in the 113th Congress in an effort to reauthorize the CRCA. On January 3, 2013 H.R. 71, the Coral Reef Conservation Act Reauthorization and Enhancement Amendments of 2013 was introduced by Representative Madeleine Bordallo (Gu) with 10 other co-sponsors. The bill was referred to the House Subcommittee on Fisheries, Wildlife, Oceans, and Insular Affairs but did not pass.

In April 2013, Florida Senator Bill Nelson re-submitted the bill but it did not move out of committee. As of June 2014, no other movement has been made on the bill. The progress of the reauthorization bills will continue to be monitored during Phase V. Due to Legislative progress not being made, DEP will start to internally develop guidelines for a contractor certification process during Phase IV. Any internal

guidelines that are developed will include provisions that ensure federal, state, and local government partners are not excluded from being able to provide assistance during impact response, if requested.

To Be Completed in Phase V:

- Continue to monitor progress of the CRCA Reauthorization.
- Initiate development of guidelines for contractor certification.

3.9 Recommendations 10 and 11

Recommendations 10 and 11 call for the streamlining of the permitting and regulatory authorization process following coral reef injuries. Recommendation 10 states that DEP should employ a process, such as the existing Environmental Resource Permitting (ERP) process, that incorporates the conditions requiring trustee approval for the authorization and regulation of primary restoration, compensatory restoration, and monitoring activities associated with reef impacts. As stated in Phase I, some of these issues have been addressed through the adoption of the CRPA, such as the requirement for the RP to cooperate with DEP to undertake assessment and restoration in a timely fashion.

A meeting to discuss these issues was held December 5, 2012 with representatives from DEP CRCP, DEP SED, South Florida Water Management District (SFWMD), FWC, BCEPGMD, Martin County Growth Management Environmental Division (MCGMED), DRER, USACE, USCG, and NOAA NMFS. During the meeting each agency discussed what permits and authorizations would be required to perform coral triage, emergency stabilization, installation of temporary submerged buoys, installation of temporary mooring buoys, large scale restoration, and installation of data loggers. Additionally, permit fees and timelines for issuance were discussed. One suggestion from the agencies was for CRCP to create standard operating procedures (SOPs) for a list of tasks and their associated best management practices (BMPs) that typically take place after a reef injury event for the agencies to have on file. The Reef Injury Event Stabilization & Restoration Best Management Practices was finalized and implemented during Phase IV (Appendix 10).

To Be Completed in Phase V:

- Recommendations 10 and 11 have been completed.

3.10 Recommendation 12

Recommendation 12 calls for development of a streamlined process for issuing authorizations for the installation of temporary moorings at reef injury sites. In Phase I, it was established that the USCG is the lead agency during this process, and following impact events a notification of intended buoy locations is required so that a Notice to Mariners can be issued.

The installation of temporary moorings was also discussed during the December 5, 2012 meeting DEP held with representatives from DEP CRCP, DEP SED, SFWMD, FWC, BCEPGMD, MCGMED, DRER, USACE, USCG, and NOAA NMFS. The Reef Injury Event Stabilization & Restoration Best Management Practices discussed in Section 3.9, includes the installation of temporary moorings (Appendix 10).

To Be Completed in Phase IV:

- Recommendation 12 has been completed.

3.11 Recommendation 13

The need for providing a flexible legislative spending authority of funds contained within the EMRTF became evident during Phase II. The RIPR Program along with the DEP SED and OGC has recovered $492,631 in compensatory mitigation funds in Phase IV, all of which was deposited into the EMRTF. At of the end of Phase IV, the total balance reserved in the EMRTF for prevention of, response to, and activities to support restoration following coral reef injuries is $1.1 million. However, DEP CRCP's annual statutory spending authority for EMRTF funds is limited to $57,834.

The CRCP developed an internal Legislative Budget Request (LBR) that proposed an increase in the program's spending authority. The LBR was submitted and during the 2012 Legislative Session, DEP CRCP was granted the ability to use $600,000.00 over three years from the EMRTF for large-scale coral reef restoration in the southeast Florida region. In October 2012, a RIPR Other Personnel Services (OPS) Technician was hired to co-lead the EMRTF Project and assist with all other RIPR related job duties.

Two vessel grounding sites, *M/V Clipper Lasco* and *M/V Spar Orion*, have been chosen for this restoration project. These two grounding sites were chosen because they are not recovering after emergency stabilization was conducted by the RP, mainly due to chronic presence of high rock rubble loads. During the first portion of the EMRTF Project, sidescan and multi-beam sonar data of the seafloor was completed and a detailed map of the grounding sites was created. Olsen Associates, Inc. was contracted to identify cost-effective conceptual engineering alternatives for restoration at these sites and to assist in the permitting and construction portions of the project. As of June 2014, the project permit applications have been submitted to the USACE, SFWMD, and Broward County. If necessary, the NOAA Endangered Species Act (ESA) Section 10 permit will be obtained in conjunction with NOAA's Damage Assessment Remediation and Restoration Program (DARRP) and will be obtained before June 2015.

To Be Completed in Phase V:

- Plan, develop, and complete the EMRTF Project within the 3-year period.
- If necessary, work with NOAA to obtain the ESA Section 10 permit.

3.12 Recommendation 15

Implementing the use of Habitat Equivalency Analysis (HEA) for determining compensatory mitigation for reef resource injuries, Recommendation 15, was authorized through the adoption of the CRPA, Section 403.93345(7), F.S., in 2009 which states:

> *The Department may use habitat equivalency analysis as the method by which the compensation described in subsection (5) is calculated. The parameters for calculation by this method may be prescribed by rule adopted by the Department.*

Since 2009, HEA has been used by the RIPR Program to determine compensatory areas in the *Clipper Lasco*, *Spar Orion*, and *Anzhela Explorer* groundings cases. During the *Clipper Lasco* and *Spar Orion* mediations, the HEA values were used to start negotiations between the RP and State resource trustees.

DEP has also strived to develop key relationships with acknowledged HEA experts (e.g., NCRI, Broward County's EPGMD, and NOAA) to better understand the applicability of the tool, as well as determining scientifically accurate, and legally defensible, input parameters. Meetings were held in Phase II and Phase III with NOAA economists to better understand the concept of discounting as it relates to natural resource damages. Additionally, discussions were held with NOAA marine habitat resource specialists to try to understand the methods and theory used to determine accurate recovery rates and trajectories, both key inputs in the HEA process. NOAA's DARRP has preliminarily started using the Rapid Ecological Assessment (REA) to see if it is a more appropriate method to assess injury to coral reefs and determine replacement habitat. Research into the understanding and development of how to appropriately utilize the HEA and REA will continue in Phase V.

<u>To Be Completed in Phase V:</u>

- Continue to train DEP staff on how to appropriately utilize HEA for determining compensatory mitigation for reef resource injuries.
- Work with NOAA's DARRP in understanding the applicability of the REA versus the HEA.

3.13 Recommendation 16

Recommendation 16 calls for the development of a publication on guidelines to restoration monitoring. FWC's Florida State Wildlife Grants Program is funding the project, "*Developing a Strategy for Coral Reef Restoration for Florida*" that was thought to satisfy this recommendation. However, the goal of the project is to produce a document that will outline the essential strategies necessary for restoration of a natural coral reef in Florida and not restoration of a reef damaged by a vessel or other

anthropogenic sources. During Phase V, an outline of the guidelines will be drafted and ways to complete its publication will be investigated.

To Be Completed in Phase V:

- Outline guidelines to restoration monitoring.
- Investigate methods to have the document drafted and published.

3.14 Recommendations 17 and 18

As was described in the Phase I report, both Recommendation 17 and portions of Recommendation 18, which call for the development of a penalty schedule, have been met by the passing of the CRPA (Appendix 1). The CRPA, Section 403.93345(8), F.S., penalty schedule is as follows:

(a) For anchoring of a vessel on a coral reef or for any other damage to a coral reef totaling less than or equal to an area of 1 square meter, $150, provided that a responsible party who has anchored a recreational vessel as defined in s. 327,02 which is lawfully registered or exempt from registration pursuant to chapter 328 is issued, at least once, a warning letter in lieu of penalty; with aggravating circumstances, an additional $150; occurring within a state park or aquatic preserve, an additional $150.

(b) For damage totaling more than an area of 1 square meter but less than or equal to an area of 10 square meters, $300 per square meter; with aggravating circumstances, an additional $300 per square meter; occurring within a state park or aquatic preserve, an additional $300 per square meter.

(c) For damage exceeding an area of 10 square meters, $1,000 per square meter; with aggravating circumstances, and additional $1,000 per square meter; occurring within a state park or aquatic preserve, an additional $1,000 per square meter.

(d) For a second violation, the total penalty may be doubled.

(e) For a third violation, the total penalty may be tripled.

(f) For any violation after a third violation, the total penalty may be quadrupled.

(g) The total of penalties levied may not exceed $250,000 per occurrence.

Similarly, the requirement to reimburse all Trustee costs, as per Recommendation 18, is met in the CRPA, Section 403.93345(5), (6)(a)(b)(c), F.S., as follows:

(5) …..The responsible party must cooperate with the department to undertake damage assessment and primary restoration of the coral reef in a timely fashion.

(6)(a) Compensation for the cost of replacing, restoring, or acquiring the equivalent of the coral reef injured and the value of the lost use and services of the coral reef pending its

restoration, replacement, or acquisition of the equivalent coral reef, or the value of the coral reef if the coral reef cannot be restored or replaced or if the equivalent cannot be acquired.

(6)(b) The cost of damage assessments, including staff time.

(6)(c) The cost of activities undertaken by or at the request of the department to minimize or prevent further injury to coral or coral reefs pending restoration, replacement, or acquisition of an equivalent.

The need to require restoration to the maximum extent has not yet been met.

To Be Completed in Phase V:

- Continue to work at requiring restoration to the maximum extent.

3.15 Recommendation 19

Phase I reported that Recommendation 19 had been met by the passing of the CRPA; however, after further discussions with the project team it became clear that there is currently a lack of ratified US Congressional support to allow for collection of damages greater than the value of the vessel and cargo, which forms the basis of Recommendation 19. The House bill (HR:71 described in Section 4.8) submitted early in 2013, in an effort to reauthorize the CRCA, would provide this support. HR:71, in a similar manner to HR:738 submitted in 2011, HR:860 submitted in 2009 and HR:1205 submitted in 2007, contains no applicable language on the removal of limitations of liability. Senate bill S.46 and S.2859 submitted in 2011, which never reached a House vote, contained supporting language as follows:

SEC.213. DESTRUCTION, LOSS, OR TAKING OF, OR INJURY TO, CORAL REEFS.

(a) Liability –

(4) NO LIMIT TO LIABILITY – Nothing in sections 30501 through 30512 or section 30706 of title 26, United States Code, shall limit liability to any person under this title.

A senate bill that states the above language was not submitted in 2013 to accompany HR:71. The CRCA was not reauthorized in Phase IV.

To Be Completed in Phase V:

- Continue to monitor future senate bills related to the CRCA reauthorization, and provide support regarding removal of limitations on liability when possible.

Appendix 1 – The Coral Reef Protection Act

403.93345 Coral reef protection.--

(1) This section may be cited as the "Florida Coral Reef Protection Act."

(2) This act applies to the sovereign submerged lands that contain coral reefs as defined in this act off the coasts of Broward, Martin, Miami-Dade, Monroe, and Palm Beach Counties.

(3) As used in this section, the term:

(a) "Aggravating circumstances" means operating, anchoring, or mooring a vessel in a reckless or wanton manner; under the influence of drugs or alcohol; or otherwise with disregard for boating regulations concerning speed, navigation, or safe operation.

(b) "Coral" means species of the phylum Cnidaria found in state waters including:

1. Class Anthozoa, including the subclass Octocorallia, commonly known as gorgonians, soft corals, and telestaceans; and

2. Orders Scleractinia, commonly known as stony corals; Stolonifera, including, among others, the organisms commonly known as organ-pipe corals; Antipatharia, commonly known as black corals; and Hydrozoa, including the family Millaporidae and family Stylasteridae, commonly known as hydrocoral.

(c) "Coral reefs" mean:

1. Limestone structures composed wholly or partially of living corals, their skeletal remains, or both, and hosting other coral, associated benthic invertebrates, and plants; or

2. Hard-bottom communities, also known as live bottom habitat or colonized pavement, characterized by the presence of coral and associated reef organisms or worm reefs created by the *Phragmatopoma* species.

(d) "Damages" means moneys paid by any person or entity, whether voluntarily or as a result of administrative or judicial action, to the state as compensation, restitution, penalty, civil penalty, or mitigation for causing injury to or destruction of coral reefs.

(e) "Department" means the Department of Environmental Protection.

(f) "Fund" means the Ecosystem Management and Restoration Trust Fund.

(g) "Person" means any and all persons, natural or artificial, foreign or domestic, including any individual, firm, partnership, business, corporation, and company and the United States and all political subdivisions, regions, districts, municipalities, and public agencies thereof.

(h) "Responsible party" means the owner, operator, manager, or insurer of any vessel.

(4) The Legislature finds that coral reefs are valuable natural resources that contribute ecologically, aesthetically, and economically to the state. Therefore, the Legislature declares it is in the best interest of the state to clarify the department's powers and authority to protect coral reefs through timely and efficient recovery of monetary damages resulting from vessel groundings and anchoring-related injuries. It is the intent of the Legislature that the department be recognized as the state's lead trustee for coral reef resources located within waters of the state or on sovereignty submerged lands unless preempted by federal law. This section does not divest other state agencies and political subdivisions of the state of their interests in protecting coral reefs.

(5) The responsible party who knows or should know that their vessel has run aground, struck, or otherwise damaged coral reefs must notify the department of such an event within 24 hours after its occurrence. Unless otherwise prohibited or restricted by the United States Coast Guard, the responsible party must remove or cause the removal of the grounded or anchored vessel within 72 hours after the initial grounding or anchoring absent extenuating circumstances such as weather, or marine hazards that would prevent safe removal of the vessel. The responsible party must remove or cause the removal of the vessel or its anchor in a manner that avoids further damage to coral reefs and shall consult with the department in accomplishing this task. The responsible party must cooperate with the department to undertake damage assessment and primary restoration of the coral reef in a timely fashion.

(6) In any action or suit initiated pursuant to chapter 253 on the behalf of the Board of Trustees of the Internal Improvement Trust Fund, or under chapter 373 or this chapter for damage to coral reefs, the department may recover all damages from the responsible party, including, but not limited to:

(a) Compensation for the cost of replacing, restoring, or acquiring the equivalent of the coral reef injured and the value of the lost use and services of the coral reef pending its restoration, replacement, or acquisition of the equivalent coral reef, or the value of the coral reef if the coral reef cannot be restored or replaced or if the equivalent cannot be acquired.

(b) The cost of damage assessments, including staff time.

(c) The cost of activities undertaken by or at the request of the department to minimize or prevent further injury to coral or coral reefs pending restoration, replacement, or acquisition of an equivalent.

(d) The reasonable cost of monitoring the injured, restored, or replaced coral reef for at least 10 years. Such monitoring is not required for a single occurrence of damage to a coral reef damage totaling less than or equal to 1 square meter.

(e) The cost of enforcement actions undertaken in response to the destruction or loss of or injury to a coral reef, including court costs, attorney's fees, and expert witness fees.

(7) The department may use habitat equivalency analysis as the method by which the compensation described in subsection (5) is calculated. The parameters for calculation by this method may be prescribed by rule adopted by the department.

(8) In addition to the compensation described in subsection (5), the department may assess, per occurrence, civil penalties according [1]to the following schedule:

(a) For any anchoring of a vessel on a coral reef or for any other damage to a coral reef totaling less than or equal to an area of 1 square meter, $150, provided that a responsible party who has anchored a recreational vessel as defined in s. 327.02 which is lawfully registered or exempt from registration pursuant to chapter 328 is issued, at least once, a warning letter in lieu of penalty; with aggravating circumstances, an additional $150; occurring within a state park or aquatic preserve, an additional $150.

(b) For damage totaling more than an area of 1 square meter but less than or equal to an area of 10 square meters, $300 per square meter; with aggravating circumstances, an additional $300 per square meter; occurring within a state park or aquatic preserve, an additional $300 per square meter.

(c) For damage exceeding an area of 10 square meters, $1,000 per square meter; with aggravating circumstances, an additional $1,000 per square meter; occurring within a state park or aquatic preserve, an additional $1,000 per square meter.

(d) For a second violation, the total penalty may be doubled.

(e) For a third violation, the total penalty may be tripled.

(f) For any violation after a third violation, the total penalty may be quadrupled.

(g) The total of penalties levied may not exceed $250,000 per occurrence.

(9) To carry out the intent of this section, the department may enter into delegation agreements with another state agency or any coastal county with coral reefs within its jurisdiction. In deciding to execute such agreements, the department must consider the ability of the potential delegee to adequately and competently perform the duties required to fulfill the intent of this section. When such agreements are executed by the parties and incorporated in department rule, the delegee shall have all rights accorded the department by this section. Nothing herein shall be construed to require the department, another state agency, or a coastal county to enter into such an agreement.

(10) Nothing in this section shall be construed to prevent the department or other state agencies from entering into agreements with federal authorities related to the administration of the Florida Keys National Marine Sanctuary.

(11) All damages recovered by or on behalf of this state for injury to, or destruction of, the coral reefs of the state that would otherwise be deposited in the general revenue accounts of the State Treasury or in the Internal Improvement Trust Fund shall be deposited in the Ecosystem Management and Restoration Trust Fund in the department and shall remain in such account until expended by the department for the purposes of this section. Moneys in the fund received from damages recovered for injury to, or destruction of, coral reefs must be expended only for the following purposes:

(a) To provide funds to the department for reasonable costs incurred in obtaining payment of the damages for injury to, or destruction of, coral reefs, including administrative costs and costs of experts and consultants. Such funds may be provided in advance of recovery of damages.

(b) To pay for restoration or rehabilitation of the injured or destroyed coral reefs or other natural resources by a state agency or through a contract to any qualified person.

(c) To pay for alternative projects selected by the department. Any such project shall be selected on the basis of its anticipated benefits to the residents of this state who used the injured or destroyed coral reefs or other natural resources or will benefit from the alternative project.

(d) All claims for trust fund reimbursements under paragraph (a) must be made within 90 days after payment of damages is made to the state.

(e) Each private recipient of fund disbursements shall be required to agree in advance that its accounts and records of expenditures of such moneys are subject to audit at any time by appropriate state officials and to submit a final written report describing such expenditures within 90 days after the funds have been expended.

(f) When payments are made to a state agency from the fund for expenses compensable under this subsection, such expenditures shall be considered as being for extraordinary expenses, and no agency appropriation shall be reduced by any amount as a result of such reimbursement.

(12) The department may adopt rules pursuant to ss. 120.536 and 120.54 to administer this section.

History.--s. 57, ch. 2009-86.

[1]Note.--The word "to" was inserted by the editors.

Appendix 2 – DEP Salvage Guidelines

Avoiding Coral Reef Injuries During Vessel Salvage

INTRODUCTION:

Historically, marine salvage efforts focused on the protection of private property including the recovery of the damaged vessel and rescue of the cargo or vessel contents. In recent years, however, heightened ecological concerns and increasing financial liabilities regarding marine pollution and damage to marine habitats have shifted the role of the salvor. Protection of the environment is now an equally important goal and a requirement of the salvage operation. The salvors actions may prevent or reduce the size of an oil spill, or protect marine sensitive habitats such as coral reefs, and hopefully reduce the overall environment impacts of an incident. However, there are significant environmental trade-offs, and even when the primary goal of the operation is environmental protection, salvage and wreck removal activities can result in unexpected and sometimes considerable collateral damage. In some cases, a shipwreck may pose an obvious threat (e.g., fuel oil), but the actions taken to reduce that threat should consider the broader impacts of the salvage to mitigate potential collateral impacts and maximize the environmental benefit of the overall operation (Michel and Helton, 2003).

One of the keys to successful wreck removal is addressing environmental considerations in all aspects of the salvage operation, including appropriate planning and execution. Many of the following considerations are integral components of best management practices. During salvage emergencies, however, these good practices can be forgotten. In past occasions, salvors have come on scene during an emergency action, operating independently without consulting with environmental specialists. Environmental considerations do not have to become impediments to a quick and successful operation; rather, they can become part of the overall success of the operation. Good environmental practices during wreck removal begin with involving environmental specialists early in the process (Michel and Helton, 2003).

The Florida Department of Environmental Protection's Coral Reef Conservation Program (DEP-CRCP) requires that salvage plans be submitted to DEP-CRCP for review prior to any salvage activities that occur on or adjacent to Southeast Florida's nearshore coral reef and hardbottom habitats (contact information provided on page 3). Additionally, local governments often have resources and knowledge to assist in the assessment, preparation, and development of a salvage plan that minimizes additional impact to marine resources. Many of the following recommendations are common practices during

salvaging operations, but are offered here to highlight environmental benefits and encourage avoidance and minimization of coral reef impacts during salvage operations, pursuant to Section 253.04, Florida Statutes.

Salvage Guidelines:

- At a minimum, while recognizing that 'time is of the essence' in salvage operations, the following salvage techniques should be employed to reduce any additional environmental harm without sacrificing safety:
- Contact regional and/or local agencies to request assistance with environmental assessment of the site and to evaluate potential salvage plans (contact information provided on page 3).
- GPS coordinates should be recorded at the bow and both stern quarter locations on the grounded or wrecked vessel.
- Portable GPS units should be maintained at the bow and stern of the grounded vessel to record any shift in the vessel's position, as well as, to record an accurate track of the extraction path.
- Prior to refloating the vessel and if conditions permit, qualified divers should evaluate the benthic resources in the immediate area and determine an extraction path that will have the least impact to the surrounding coral habitat (may or may not be the same as the ingress path). Bathymetric maps can be used to facilitate this process.
- Temporary buoys should be used to mark the extraction path and GPS plots of the extraction path should be input into the grounded vessel and all towing vessel's navigational systems to assist the salvors in staying on course.
- If transit of the salvaged vessel is to occur in (or through) waters with minimal navigable depths, the path should be plotted over areas of sand bottom, or bottom clear of benthic resources.
- Spill containment booms should be onsite, ready, and available for immediate deployment in the event of a fuel/oil or other spill associated with the grounding and salvage operations.
- During salvage activities, GPS tracking should be operating and recorded on all salvage vessels, barges, and/or tugboats involved with the salvage operation. The tracks associated with all vessels involved in the salvage should be submitted to the USCG as part of any salvage report.
- If salvage vessels need to anchor or moor, minimize the number of anchors or spuds, control drag, and seek appropriate anchoring locations devoid of sensitive benthic habitats like coral reefs and sea grasses.

- Fuel and/or cargo may need to be offloaded from the grounded vessel to reduce the vessels draft and prevent other environmental and safety hazards.
- All vessels, barges, and tugboats involved in salvage operations should take actions to avoid prop scars and prop wash injuries to marine resources. In shallow water, avoid using the propulsion systems and if possible, moor the tugs and use a ground tackle system to provide maneuvering and pull.
- Only floating lines should be used in salvage operations. Non-floating lines and cables have caused extensive resource damages in past operations.
- Salvage activities should be conducted at high tide to facilitate re-floating the grounded vessel over reef resources and other sensitive habitats.

Consultation with NOAA, the State, and County is recommended to evaluate reef resources in the area and to determine the extraction route. Contact information for these agencies is provided below.

- NOAA, Marine Habitat Resource Specialist: Tom Moore, Tom.Moore@noaa.gov , 727-551-5716
- NOAA, Injury Assessment Coordinator: Daniel Hahn, Daniel.Hahn@noaa.gov , 727-551-5715
- Florida Dept. of Environmental Protection, Coral Reef Conservation Program: Mollie Sinnott, mollie.sinnott@dep.state.fl.us, 305-795-2167 or 786-385-3054
- Broward County Dept. of Environmental Resources and Growth Mgmt: Ken Banks, kbanks@broward.org, 954-519-1207
- Martin County: Kathy Fitzpatrick, kfitzpat@martin.fl.us, 772-288-5429
- Miami-Dade Dept. of Regulatory and Economic Resources: Steve Blair, BlairS@miamidade.gov, 305-372-6853
- Palm Beach County Dept. of Environmental Resources Management: Janet Phipps, JPhipps@pbcgov.org, 561-233-2513
- If you have questions, please contact Jena Sansgaard at the numbers listed above for further information.

References:

Michel, Jacqueline and Helton, Douglas. 2003. Environmental Considerations During Wreck Removal and Scuttling.

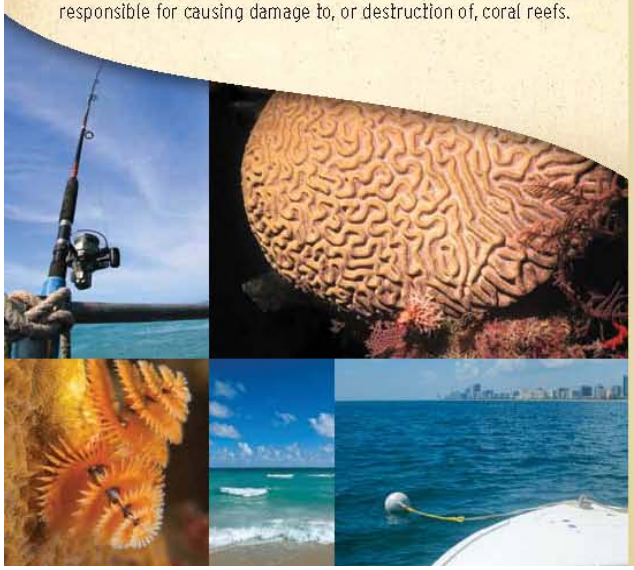
Appendix 3 – Southeast Florida Coral Reef Locator Instructions

Appendix 4 – CRPA Brochure

FLORIDA'S CORAL REEF PROTECTION ACT

LEARN ABOUT THIS LAW AND HOW IT MAY AFFECT YOU.

Florida's *Coral Reef Protection Act* went into effect on July 1, 2009. The law increases protection of Florida's endangered coral reefs by raising awareness of the damages associated with vessel groundings and anchoring on coral reefs. The law affects all vessels (commercial and recreational) that transit state waters within Monroe, Miami-Dade, Broward, Palm Beach, and Martin counties, and holds those that injure reefs responsible for causing damage to, or destruction of, coral reefs.



WHERE CAN I GET MORE INFORMATION ABOUT FLORIDA'S CORAL REEFS AND THE *CORAL REEF PROTECTION ACT*?

TO LEARN MORE, PLEASE VISIT:

WWW.DEP.STATE.FL.US/COASTAL/PROGRAMS/CORAL/

AND HTTP://WWW.DEP.STATE.FL.US/COASTAL/PROGRAMS/CORAL/RIPR.HTM

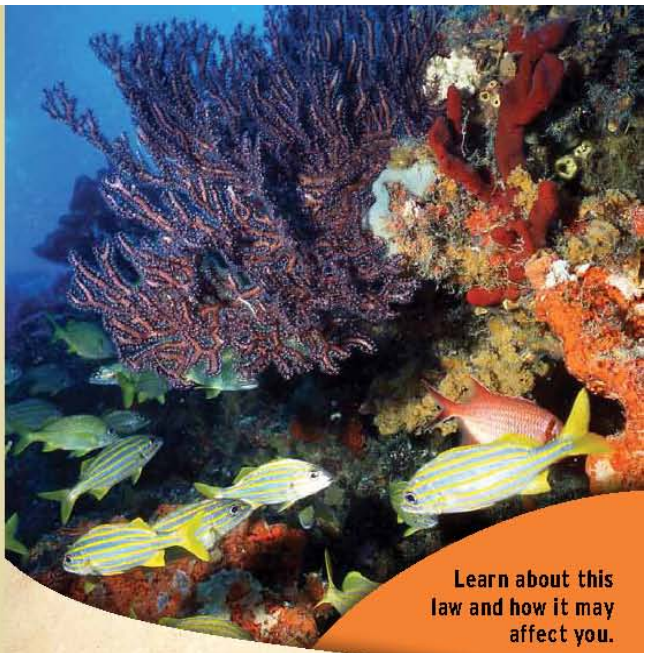
Vessel grounding and anchoring impacts (clockwise from top left): broken knobby brain coral (Diploria clivosa), severed giant barrel sponge (Xestospongia muta), an abandoned anchor on the reef, and a healthy southeast Florida coral reef.

TO REPORT A VESSEL GROUNDING OR OTHER CORAL REEF INJURY IN SOUTHEAST FLORIDA CALL:

1-866-770-SEFL(7335)

The production of this brochure was funded in part by a Coral Reef Conservation Program grant from the U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of Ocean and Coastal Resource Management, and by the Florida Department of Environmental Protection through its Coral Reef Conservation Program.

PHOTOS PROVIDED BY: LAD ATKINS, HARRY BOOTH, JOE MARINO, JENNIFER PODIS, REBECCA ROSS AND FDEP.



Learn about this law and how it may affect you.

FLORIDA'S CORAL REEF PROTECTION ACT

Why is the Florida Reef Tract important and how does the *Coral Reef Protection Act* help protect it?

- The Florida Reef Tract provides habitat for over 6,000 marine species, protects South Florida's shorelines from tropical storms and hurricanes, and sustains Florida's beaches, tourism and recreation.
- Coral reef development can only happen when certain factors such as water temperature, nutrients and wave action are all present in just the right amounts. South Florida is the only region in the continental United States with the right conditions to support coral reef growth. The Florida Reef Tract is the only barrier reef in the continental United States.
- South Florida's reefs are worth $6.3 billion dollars to the local economy and support more than 71,000 jobs annually.
- *The Coral Reef Protection Act* allows the Florida Department of Environmental Protection (FDEP) to better protect coral reefs through timely and efficient assessment and recovery of damages to coral reefs and to enter into delegation agreements with other agencies to carry out the intent of the Act.

What effect do vessel groundings and anchoring impacts have on Florida's coral reefs?

- Vessel grounding and anchoring incidents can cause significant damage to reef habitats, potentially changing their biological composition and as a result, the environmental health of coral reefs.
- Although the damage caused to a reef by anchoring a single recreational boat may be small in comparison to the damage caused by a large commercial vessel grounding, the cumulative damages resulting from anchoring and other recreational boating impacts may be greater due to the sheer numbers of recreational boat users in Florida.

Shattered great star coral (Montastraea cavernosa), resulting from a vessel impact.

What civil penalties are prescribed by the *Coral Reef Protection Act*?

FOR DAMAGE TO A CORAL REEF TOTALING LESS THAN, OR EQUAL TO, 1 M^2 - $150.

- For the first offense, a warning letter in lieu of a penalty may be issued.
- With aggravating circumstances - an additional $150.
- Within a state park or aquatic preserve - an additional $150.

FOR DAMAGE TO CORAL REEFS TOTALING MORE THAN 1 M^2, BUT LESS THAN OR EQUAL TO 10 M^2 - $300 PER M^2.

- With aggravating circumstances - an additional $300 per m^2.
- Within a state park or aquatic preserve - an additional $300 per m^2.

FOR DAMAGE TO CORAL REEFS GREATER THAN 10 M^2 - $1,000 PER M^2.

- With aggravating circumstances - an additional $1,000 per m^2.
- Within a state park or aquatic preserve - an additional $1,000 per m^2.

FOR A SECOND VIOLATION, THE TOTAL PENALTY MAY BE DOUBLED.

FOR A THIRD VIOLATION, THE TOTAL PENALTY MAY BE TRIPLED.

FOR A FOURTH VIOLATION, THE PENALTY MAY BE QUADRUPLED.

THE TOTAL OF PENALTIES LEVIED MAY NOT EXCEED $250,000 PER OCCURRENCE.

FLORIDA'S CORAL REEF PROTECTION ACT

What does the *Coral Reef Protection Act* require from the responsible party - the owner, operator, manager or insurer of any vessel - that has injured a coral reef?

THE RESPONSIBLE PARTY MUST:

- Notify FDEP within 24 hours of damaging or otherwise impacting a coral reef.
- Remove, or cause the removal of, a grounded or anchored vessel within 72 hours of the incident, unless prohibited by the U.S. Coast Guard or extenuating circumstances such as weather or marine hazards.
- Remove, or cause the removal of, a grounded or anchored vessel in a manner that avoids further damage to the reef and consult with FDEP in accomplishing this task.
- Cooperate with FDEP to undertake damage assessment and primary restoration of the injured coral reef in a timely fashion. Assessment and restoration efforts must be conducted by qualified, authorized individuals.

What compensation does the *Coral Reef Protection Act* authorize FDEP to collect from the responsible party who has injured a coral reef?

FDEP IS AUTHORIZED TO COLLECT FROM THE RESPONSIBLE PARTY:

- The cost of natural resource damage assessments and activities undertaken by, or at the request of, the resource trustees to minimize or prevent further coral reef injuries, including staff time.
- The cost of enforcement actions undertaken by the resource trustees, including court costs, attorney's fees and expert witness fees.
- The cost of replacing, restoring or acquiring the equivalent of the injured coral reef, including compensation for the value of the lost use and ecological services of the reef, as determined through habitat equivalency analysis.
- The cost of monitoring the injured, restored or replaced coral reef for at least 10 years if the injury area is greater than 1 square meter (m^2).

THE FLORIDA REEF TRACT PROVIDES HABITAT FOR OVER 6,000 MARINE SPECIES, PROTECTS SOUTH FLORIDA'S SHORELINES FROM TROPICAL STORMS AND HURRICANES, AND SUSTAINS FLORIDA'S BEACHES, TOURISM AND RECREATION.

What alternatives exist so vessel operators can avoid anchoring on coral reefs?

THE PREFERRED ALTERNATIVE IS TO USE AREAS WHERE MOORING BUOYS ARE PROVIDED FOR VESSEL USE. INFORMATION ABOUT CURRENT AND PLANNED MOORING BUOY LOCATIONS AND USE IS AVAILABLE ONLINE AT:

- Broward County: http://www.broward.org/bio/mooringbuoy.htm
- Martin County: http://www.martinreefs.com/index.html and http://www.floridastateparks.org/stlucieinlet/ParkSummary.cfm
- Miami-Dade County: http://www.miamidade.gov/derm/buoy.asp and http://www.nps.gov/biso/planyourvisit/mooring-buoys.htm
- Monroe County: http://floridakeys.noaa.gov/mbuoy/welcome.html
- Palm Beach County: http://www.pbcgov.com/erm/coastal/

ANOTHER ALTERNATIVE FOR VESSEL OPERATORS WHO WISH TO ANCHOR NEAR CORAL REEFS IS TO PLACE THEIR ANCHOR IN THE SAND LOCATED BEYOND THE EDGE OF THE REEF.

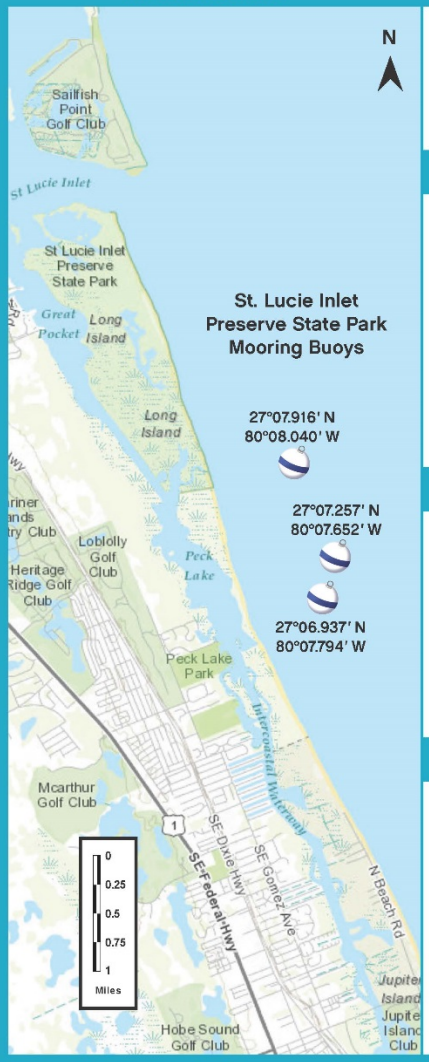
- Local knowledge of the area and holding capabilities of the anchor are critical to ensure a vessel is anchored in, and will remain in, the sand.
- Nautical charts, GPS navigation programs, dive maps, and local dive shops can all be used to enhance local knowledge, but ultimately, the vessel operator/owner is responsible for preventing violations of the law.

TO VIEW THE UNITED STATES COAST GUARD'S FEDERAL REQUIREMENTS AND SAFETY TIPS FOR RECREATIONAL BOAT ANCHORING, PLEASE VISIT THEIR WEBSITE AT:

- http://www.uscgboating.org/safety/fedreqs/saf_anchor.htm

Appendix 5 – Mooring Buoy Brochure

MARTIN COUNTY



MARTIN COUNTY MOORING BUOYS

Site Name	# of Buoys	Latitude (N)	Longitude (W)
St. Lucie Inlet Preserve State Park	2	27°07.916'	80°08.040'
	2	27°07.257'	80°07.652'
	2	27°06.937'	80°07.794'

For more information or to report a problem concerning the buoys, please call (772) 219-1880. The St. Lucie Inlet Park Preserve assumes no liability from the use of any mooring buoy.

MIAMI-DADE COUNTY MOORING BUOYS

Site Name	# of Buoys	Latitude (N)	Longitude (W)
Graceland	6	25°56.128'	80°06.643'
North Canyon	3	25°55.805'	80°06.353'
South Canyon	3	25°51.627'	80°06.505'
Pillars	7	25°51.620'	80°05.978'
Jose Cuervo	2	25°46.134'	80°07.694'
Half Moon	2	25°43.654'	80°08.069'
RJ's Ledge	6	25°43.345'	80°05.952'
Rainbow Reef	6	25°41.519'	80°05.832'
Emerald Reef	7	25°40.486'	80°05.865'

For more information or to report a problem concerning the buoys, please call (305) 372-6864. Miami-Dade County assumes no liability from the use of any mooring buoy.

BROWARD COUNTY MOORING BUOYS

Site Name	# of Buoys	Latitude (N)	Longitude (W)
Pompano Drop Off	52	26°13.034'	80°05.280'
Hall of Fame	8	26°11.581'	80°05.060'
Anglin's Ledge	11	26°11.338'	80°05.246'
Oakland Ridges	15	26°09.276'	80°05.333'
The Caves	10	26°07.631'	80°05.503'
Barracuda Reef	25	26°04.575'	80°05.747'

For more information or to report a problem concerning the buoys, please call (954) 519-1270. Broward County assumes no liability from the use of any mooring buoy.

PALM BEACH COUNTY MOORING BUOYS

Site Name	# of Buoys	Latitude (N)	Longitude (W)
Diamondhead Radnor Reef	3	26°54.811'	80°03.521'
Singer Island Reef	3	26°47.153'	80°01.802'
Breaker's Reef	16	26°42.892'	80°01.815'
Mar-a-Lago Reef	6	26°41.309'	80°01.845'
Boca Raton Patch Reef	10	26°23.165' to 26°20.648'	80°03.684' to 80°03.914'

For more information or to report a problem concerning the buoys, please call (561) 233-2400. Palm Beach County and the FWC assume no liability from the use of any mooring buoy.

PROPER MOORING BUOY USE

1. Have your boat hook and bow line ready.
2. Carefully approach the buoy from down wind or current.
3. Inspect the buoy as you approach. Make sure the mooring is in good shape before you tie off.


photo: Miami-Dade County

4. Retrieve the pick-up line with your boat hook.
5. Pass your bow line through the eye of the pick-up line. Put out extra scope and cleat the bow line off securely.
6. It is important to put out extra scope in rough weather.
7. Never tie your boat directly to the mooring buoy pick-up line as you may damage your boat and place too much strain on the mooring.
8. Someone who knows how to operate the boat should always remain onboard. As the boat operator, you are responsible for the safety of your boat and passengers.
9. To leave the buoy, untie one end of your bow line and let it slip free of the pick-up line.
10. Retrieve your bow line and maneuver slowly until you are clear of the buoys and other boaters.

All southeast Florida mooring buoy programs are funded in part by the Florida Department of Environmental Protection Coral Reef Conservation Program (FDEP CRCP) with a grant from the National Oceanic and Atmospheric Administration Coral Reef Conservation Program (NOAA CRCP) (Award No. NA11NOS4820003).

Miami-Dade County mooring buoys are maintained by the Restoration and Enhancement Section in the Division of Environmental Resources Management. Funding was also provided by the County and the Florida Fish and Wildlife Conservation Commission's Florida Boater Improvement Program.

Broward County mooring buoys are maintained by the Natural Resources Planning and Management Division. Funding was also provided by the County.

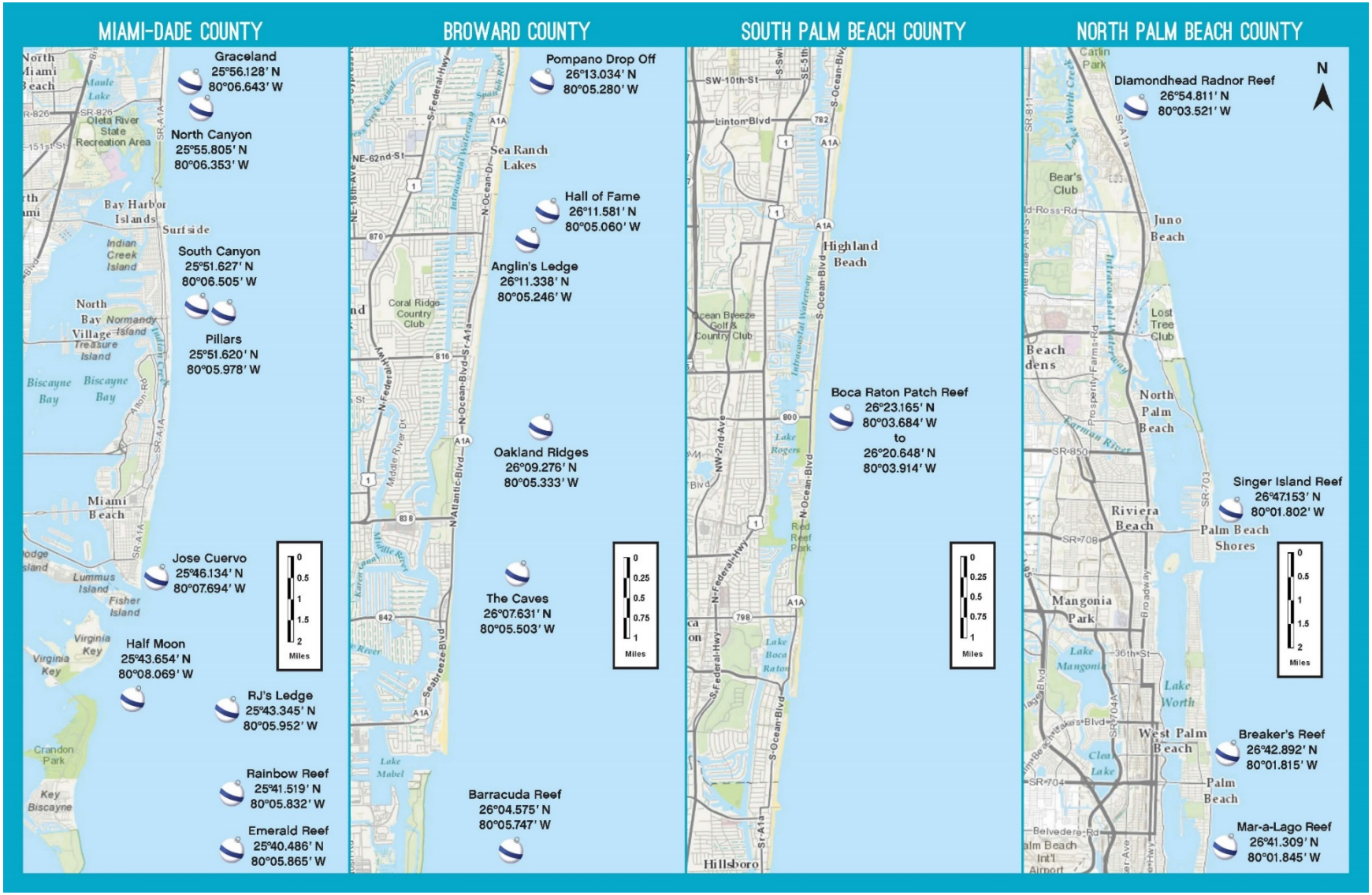
The Palm Beach County mooring buoy program is a partnership between Palm Beach County Department of Environmental Resources Management and the Florida Fish and Wildlife Conservation Commission.

The St. Lucie Inlet Park Preserve Mooring Buoys are maintained by the Florida Park Service.

Cover photo credit: Broward County (upper); Mary Brooks (lower).

SOUTHEAST FLORIDA MOORING BUOYS

Published April 2014


MIAMI-DADE COUNTY
Graceland
25°56.128' N
80°06.643' W
North Canyon
25°55.805' N
80°06.353' W
South Canyon
25°51.627' N
80°06.505' W
Pillars
25°51.620' N
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Jose Cuervo
25°46.134' N
80°07.694' W
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SOUTH PALM BEACH COUNTY
Boca Raton Patch Reef
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to
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80°01.802' W
Breaker's Reef
26°42.892' N
80°01.815' W
Mar-a-Lago Reef
26°41.309' N
80°01.845' W
N
Miles

Appendix 6 – MICCI Project 2 Recommendations

1. Regulatory agencies issuing permits for activities that may affect reef resources should re-examine and improve permitting, compliance, enforcement, and penalty assessment processes to ensure that permit conditions provide the maximum protection for, and the least impact to, reef resources. Permit conditions should also ensure that compensatory mitigation adequately compensates the Trustees for the loss of biological services, the monitoring of restoration actions, permit condition compliance and enforcement, and the assessment of penalties for permit violations. *Responsible Agencies: Florida Department of Environmental Protection (DEP), Water Management Districts, U.S. Army Corps of Engineers (ACOE), Local Governments*

2. A single 24-hour coral reef injury hotline should be established, or coordinated with other available hotlines, to receive reports of coral reef injuries and to facilitate a timely and effective agency response to such reports. The 24-hour coral reef injury hotline should be modeled after, and if possible integrated with, DEP's Bureau of Emergency Response (BER) State Warning Point (SWP) hotline, which accepts calls statewide on a 24-hour basis regarding reports of environmental incidents.

   When the hotline receives calls, basic information regarding the incident should be taken by the individual receiving the call. Federal, state, and/or local responders should be notified of the incident and, if necessary, agency personnel dispatched to the scene. If the RP is reporting the incident, they should be notified of their responsibilities and provided a list of qualified contractors from which to choose. Ideally, the 24-hour coral reef injury hotline would be integrated with the SWP, and its operators would be trained to receive such calls. This would alleviate the need to purchase, develop, and maintain the infrastructure and employees associated with an independent coral reef hotline. SWP employees could be provided a set of appropriate questions to ask the individual reporting the coral reef injury. The employee would then contact agency personnel responsible for responding to coral reef incidents. However, if it is not possible to integrate with the SWP, a separate and independent coral reef hotline should be established. *Responsible Agency: DEP*

3. A public education campaign should be undertaken to inform the public of the necessity of, and correct protocol for, reporting reef injuries. Federal, state, and local employees should also be made aware of their responsibility to report coral reef incidents through the normal course of business and other standard operating procedures such as interoffice/agency memoranda and email. *Responsible Agencies: Lead – DEP; Support – Florida Fish and Wildlife Conservation Commission (FWC)*

4. To facilitate the coordination of agencies having established environmental response procedures, protocols, and responsibilities, operators of the proposed 24-hour hotline should notify the following agencies of an incident:

   - U.S. Coast Guard (USCG), Marine Safety Office, Miami;

- FWC, Division of Law Enforcement (which would subsequently contact FWC Technical Staff);
- DEP, BER (which would subsequently contact the Coral Reef Conservation Program and DEP Office of General Counsel);
- National Marine Fisheries Service (NMFS), Damage Assessment and Restoration Program; and
- County environmental and law enforcement officials.

Long-term coordination among all parties involved in the incident should be facilitated through the development and maintenance of a password-protected website containing the following information:

- Information provided during the initial incident report to the 24-hour coral reef hotline;
- The Responsible Party (RP) contact information, including legal and technical contacts (if known);
- Contact information for each agency involved in any aspect of the response; and
- All contractor and subcontractor contact information.

Each agency should be responsible for entering and maintaining its contact information after 24-hour hotline personnel implement the initial coordination. The website should be operated and maintained by DEP's Coral Reef Conservation Program. *Responsible Agency: DEP*

5. DEP should explore the various avenues of potential enforcement authority and develop the one identified as producing the best results. *Responsible Agency: DEP*

6. The Trustees should develop criteria for evidence collection associated with reef injury incidents, based on their anticipated future litigation needs. Law enforcement officers and/or scientific divers should then adopt these criteria as standard practice each time that data are collected for use as evidence in future litigation. The National Oceanic and Atmospheric Administration's (NOAA) Damage Assessment, Remediation and Restoration Program (DAARP) provides a model for the development of Trustee criteria. *Responsible Agencies: Lead – DEP; Support – Local Governments and FWC*

7. All divers collecting evidence, including scientific divers collecting scientific data that may be used in a court of law, should be trained in an accredited evidence collection policy or procedure. *Responsible Agency: FWC*

8. To ensure that adequate safety standards are followed, only divers operating under standards set forth in 29 CFR § 1910 should collect evidence or scientific data that may be used as evidence in subsequent litigation. *Responsible Agencies: FWC, DEP, and Local Governments*

9. A tiered contractor certification or qualification process should be established, based on criteria such as past performance (documented success); the ability to work effectively with federal, state, and local governments; and the possession of necessary skills, certifications, or degrees verifying ability and equipment capability to conduct specific activities. A certification or qualification process would ensure that contractors are qualified, in advance, to conduct restoration work and would shorten the length of time needed to obtain the necessary authorizations for conducting restoration activities. The recommended tiers and qualifications are as follows:

   A. SCIENTIFIC SUPPORT—Activities consist of environmental project management, site assessment, surveying, mapping, monitoring, and reporting. Qualifications to conduct these activities should consist of:
   - **a.** Demonstrated skill and experience in successful project management and scientific report writing;
   - **b.** An understanding of the specific local habitat and the ecological processes governing that habitat; and
   - **c.** Demonstrated experience and knowledge of the current technology for surveying, mapping, assessing, restoring, and monitoring coral reef habitats.

   B. BIOLOGICAL TRIAGE—Activities consist of righting, marking, and caching biological resources in preparation for restoration. Qualifications to conduct these activities should consist of:
   - **a.** An understanding of the specific local habitat and the ecological processes governing that habitat;
   - **b.** Specific local knowledge of the function and values of the reef habitat;
   - **c.** Specific knowledge of the biological/ecological requirements and limitations of the organisms being cached.

   C. ORGANISM REATTACHMENT—Activities consist of reattaching biological resources—including, but not limited to, the use of cements, epoxies, wires, cable ties, nails, and bolts. Qualifications to conduct these activities should consist of:
   - **a.** An understanding of the specific local habitat and the ecological processes governing that habitat;
   - **b.** Specific knowledge of techniques for handling and attaching the specific types of organisms involved in the triage;
   - **c.** Specific knowledge of best management practices (BMPs) to minimize the impact of reattachment on surrounding organisms; and
   - **d.** Demonstrated experience and long-term success in organism reattachment.

   D. DEBRIS AND RUBBLE MANAGEMENT—Activities consist of debris removal and disposal, paint removal and disposal, rubble stabilization, and rubble removal and disposal. Qualifications to conduct these activities should consist of:

a. Specific knowledge of environmentally sound techniques for safely removing and disposing of debris and bottom paint;
b. Specific knowledge of environmentally sound techniques and a methodology for stabilizing rubble in a coral reef environment;
c. Specific knowledge of the permitting requirements for rubble and debris disposal; and
d. Specific knowledge of BMPs for removing and transporting coral rubble and debris to minimize injury to the surrounding environment and organisms.

E. REEF FRAMEWORK REPAIR—Activities consist of structural stabilization and reconstruction. Qualifications to conduct these activities consist of:
a. An understanding of the specific local habitat and the ecological processes governing that habitat;
b. Specific local knowledge of currents and water flow patterns that may affect the successful stabilization and reconstruction of the reef framework;
c. Specific knowledge of BMPs for the use of cements, epoxies, or other suitable stabilizing agents in the marine environment to minimize injury to the surrounding environment and organisms. *Responsible Agency: FWC*

10. DEP should develop a joint proprietary/regulatory authorization process or employ an existing process (i.e., Environmental Resource Permitting) that incorporates the conditions requiring Trustees' approval for the authorization and regulation of primary restoration, compensatory restoration, and monitoring activities associated with reef injuries. An efficient authorization process is needed to facilitate a rapid response. This approach should provide guidance to an RP on how to properly conduct such activities and provide legal recourse for the Trustees if the RP does not comply with the conditions of the authorization. *Responsible Agency: DEP*

11. DEP and FWC should develop a Memorandum of Understanding establishing delegation of authority in order to streamline authorization processes necessary for the oversight of primary restoration, compensatory restoration, and monitoring activities associated with reef injuries. If organisms are not being relocated, DEP authorization should be sufficient to authorize and regulate these activities. If organisms are being relocated to or from an area other than a reef injury site, the FWC SAL should be used, as it addresses potential genetic and health issues. In turn, the SAL may be used in lieu of DEP authorization to provide oversight for restoration and mitigation activities when no RP is identified for a reef injury. *Responsible Agencies: DEP and FWC*

12. A streamlined process for issuing authorizations for the installation of temporary moorings at reef injury sites should be adopted by the FWC, DEP, USCG, and NMFS to facilitate rapid restoration activities for reef injuries. *Responsible Agencies: Lead – USCG; Support – FWC, DEP, ACOE, and NMFS*

13. The Legislature should allow ready access to, and provide flexible spending authority for, Ecosystem Management and Restoration Trust Fund (EMRTF) funds for rapid response to reef injuries; otherwise the potential for the resource to return to its original function and value may be greatly diminished. DEP should pursue amending Sections 380.0558 or 403.1651, F.S., to include flexible spending authority to facilitate rapid response to reef injuries. *Responsible Agency: DEP*

14. A database should be developed to track injured areas and their restoration status so that areas where no action is taken due to monetary constraints may be identified and prioritized for restoration efforts at a later time. *Responsible Agency: FWC*

15. The use of HEA is recommended for determining compensation for reef resource injuries. If appropriate scoring assessment parameters are developed, UMAM application to reef resource injuries may also be suitable. *Responsible Agency: DEP*

16. A publication on Guidelines to Restoration Monitoring should be initiated as a follow-up to this document. *Responsible Agencies: Lead – DEP; Support – FWC*

17. DEP should (1) develop a penalty assessment schedule by rule, including explicit authority for law enforcement officers to enforce the provisions in the rule, or (2) request that the legislature amend statutory language in Section 253.04, F.S., to establish a penalty assessment schedule to be used for assessing civil penalties associated with injury to coral reefs in state waters. Amended statutory language should include penalties for repeat offenders and explicit authority for any law enforcement officer to enforce the provisions in the statute. *Responsible Agency: DEP*

18. DEP should amend the statutory language in Section 253.04, F.S., to require restoration to the maximum extent possible of sovereign submerged lands and associated biological resources to their original function and value. Oversight for restoration activities would be provided by a regulatory authorization process (as previously recommended), or by reimbursing the Trustees for restoration costs. It should be considered whether or not the restoration of an injury site would serve in lieu of assessing civil penalties as an incentive for the restoration of larger vessel grounding sites. *Responsible Agency: DEP*

Trustees should jointly support congressional legislation to protect the state's right to collect appropriate monetary penalties and require that restoration efforts be completed in total, regardless of vessel and cargo value. The Oil Pollution Act, Exemption from Limitation and Exoneration of Liability, provides an example of applicable existing legislation that protects state rights to collect monetary penalties. *Responsible Agencies: Lead – DEP; Support – FWC, Local Governments*

Appendix 7 - SED and CRCP Warning Letter

Florida Department of Environmental Protection

Southeast District Office
400 N. Congress Avenue, Suite 200
West Palm Beach, FL 33401
561-681-6600

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T.
Vinyard Jr.
Secretary

Name
Address

Warning Letter No: #WLxx-xxxxCR50SED

RE: Vessel anchored on a coral reef located at xxxx Reef, xx° xx' xx.xx" N, xx° xx' xx.xx" W on **Date**.

Dear Mr. and Ms.:

The purpose of this letter is to advise you of alleged violations of law for which you may be responsible, and to seek your cooperation in preventing future violations. The Florida Department of Environmental Protection (FDEP) received a report of violations of law on **Date**, from divers and dive boat captains who observed and documented the vessel anchored over coral reef on **Date**, at the above referenced site. The complaint provided to the FDEP indicates that the alleged violations of Chapters 253, 373 and/or 403, Florida Statutes (F.S.), and the rules promulgated thereunder, occurred on **Date** in approximate position referenced above.

The anchoring complaint, which occurred in the Atlantic Ocean, Class III Waters of the State, is summarized below:

> *"Florida registered vessel FL xxxx xx was observed with an anchor overboard in an area known to inhabit coral."*

In recognition of Florida's unique coral reef systems and their importance to the economy, the Florida Legislature enacted Section 403.9335, F.S. entitled the *Florida Coral Reef Protection Act* (CRPA), effective July 1, 2009, to increase protection of coral reef resources on sovereign submerged lands off the coasts of Martin, Palm Beach, Broward, Miami-Dade, and Monroe counties. Under this law, the FDEP may assess civil penalties for anchoring a vessel on a coral reef or any other damage to a coral reef totaling: a) less than or equal to 1 square meter (m^2), $150; b) more than 1 m^2, but less than or equal to 10 m^2, $300 per m^2; and c) more than 10 m^2, $1000 per m^2. These penalties may be increased with aggravating circumstances, for incidents occurring within a state park or aquatic preserve, and/or for repeat violations up to $250,000

www.dep.state.fl.us

Name FL xxxx xx
Site # xxxxxx, Project # xxxxxx
Page 2 of 2

per occurrence. For more information on the CRPA, please see the enclosed fact sheets and visit: http://www.dep.state.fl.us/coastal/programs/coral/ripr.htm.

Chapter 253, F.S. provides that state lands shall be managed to serve the public interest by protecting and conserving land, air, water, and the state's natural resources, which contribute to the public health, welfare, and economy of the state. These lands shall be managed to provide for areas of natural resource based recreation, and to ensure the survival of plant and animal species and the conservation of finite and renewable natural resources. Damages to these lands are violations of Chapters 253, 373 and/or 403, F.S., and the rules promulgated thereunder and may result in the judicial imposition of civil penalties up to $10,000.00 per violation per day in addition to damages and restoration.

Pursuant to Chapter 403.93345, F.S., a responsible party who anchors a recreational vessel on a coral reef or causes damage to a coral reef less than or equal to one square meter, will be issued at least one warning letter in lieu of financial penalties. Please be advised, future incidents by you or your vessel involving damages to coral reefs, may result in enforcement actions and civil penalties.

Please share this information with your fellow recreational boaters and fishermen. The FDEP will continue its mission of protecting and educating the public about Florida's precious natural resources. We look forward to your cooperation in this matter. Should you have questions, please contact Jennifer Báez at (561) 681-6620 or electronically at: Jennifer.Baez@dep.state.fl.us.

Si require asistencia en español por favor cominíquese con Melissa Gil al siguiente número de teléfono: (561) 681-6626 o por correo electrónico: Melissa.Gil@dep.state.fl.us.

Sincerely,

Jason Andreotta Date
Environmental Manager
Environmental Resources Program
Southeast District

Enclosure:
Coral Reef Protection Act Fact Sheet

cc:
Jena Sansgaard, Reef Injury Prevention & Response Coordinator,
Jena.Sansgaard@dep.state.fl.us

JRA/MK/jb

Appendix 8 - SED and CRCP Commercial Vessel Educational

Florida Department of Environmental Protection

Southeast District Office
400 N. Congress Avenue, Suite 200
West Palm Beach, FL 33401
561-681-6600

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T.
Vinyard Jr.
Secretary

FED EX: _____

[INSERT NAME AND ADDRESS OF RP]

Educational Letter

RE: Vessel allegedly anchored on a coral reef located at **[INSERT INCIDENT LOCATION, DATE, etc.]**

Dear **[INSERT NAME OF RP]**:

On **[INSERT REPORT DATE]** the Florida Department of Environmental Protection (FDEP) received a report that vessel with International Maritime Organization number **[INSERT NUMBER],** and Maritime Mobile Service Identity number **[INSERT NUMBER],** registered in company name , was anchored outside of an established anchorage area as defined and established under Title 33 Code of Federal Regulation. 33 C.F.R. part 110.185-190, and allegedly anchored on a coral reef at the above referenced location. The following information regarding pertinent Florida Statues governing sovereign submerged lands and the products thereof, including coral reefs is being provided to you to prevent violations of Florida law.

Chapter 253, Florida Statutes (F.S.) provides that state lands shall be managed to serve the public interest by protecting and conserving land, air, water, and the state's natural resources, which contribute to the public health, welfare, and economy of the state. These lands shall be managed to provide for areas of natural resource based recreation, and to ensure the survival of plant and animal species and the conservation of finite and renewable natural resources. Damages to these lands are violations of Chapters 253, 373 and/or 403, F.S., and the rules promulgated thereunder and may result in the judicial imposition of civil penalties up to $10,000.00 per violation per day in addition to damages and restoration.

In recognition of Florida's unique coral reef systems and their importance to the economy, the Florida Legislature enacted Section 403.9335, F.S. entitled the *Florida Coral*

[INSERT NAME OF RP]
Page 2 of 2

Reef Protection Act (CRPA), effective July 1, 2009, to increase protection of coral reef resources on sovereign submerged lands off the coasts of Martin, Palm Beach, Broward, Miami-Dade, and Monroe counties. Under this law, the FDEP may assess civil penalties for anchoring a vessel on a coral reef or any other damage to a coral reef totaling: a) less than or equal to 1 square meter (m^2), $150; b) more than 1 m^2, but less than or equal to 10 m^2, $300 per m^2; and c) more than 10 m^2, $1000 per m^2. These penalties may be increased with aggravating circumstances, for incidents occurring within a state park or aquatic preserve, and/or for repeat violations up to $250,000 per occurrence. For more information on the CRPA, please see the enclosed fact sheets and visit: http://www.dep.state.fl.us/coastal/programs/coral/ripr.htm .

Commercial vessels in the Atlantic Ocean 1) near Lake Worth Inlet awaiting berthing space at the Port of Palm Beach; 2) awaiting berthing space in the vicinity of Port Everglades; and 3) in the entrances to the approach channels leading to Miami, Miami Beach, Key West, Garden Key, Bush Key, Bird Key Harbor, **shall only anchor within the anchorage areas defined and established under Title 33 Code of Federal Regulation**. 33 C.F.R. part 110.185-190 (emphasis added).

Please share this information with all vessel captains and associated employees. The FDEP will continue its mission of protecting and educating the public about Florida's precious natural resources. We look forward to your cooperation in this matter. Should you have questions, please contact Jennifer Báez at (561) 681-6620 or electronically at: Jennifer.Baez@dep.state.fl.us.

Si require asistencia en español por favor cominíquese con Melissa Gil al siguiente número de teléfono: (561) 681-6626 o por correo electrónico: Melissa.Gil@dep.state.fl.us.

Sincerely,

Jason Andreotta Date
Environmental Manager
Environmental Resources Program
Southeast District

cc: FDEP CAMA, Jena Sansgaard: Jena.Sansgaard@dep.state.fl.us
USCG Sector Miami Commander, Captain Christopher Scraba: Christopher.P.Scraba@uscg.mil
USCG Sector Miami, Lt. Jennifer Makowski: Jennifer.S.Makowski@uscg.mil
Blind cc to complainant

Appendix 9 - SED and CRCP Generic Consent Order

Florida Department of Environmental Protection
Southeast District Office
400 N. Congress Avenue, Suite 200
West Palm Beach, FL 33401
561-681-6600

Rick Scott
Governor

Jennifer Carroll
Lt. Governor

Herschel T. Vinyard Jr.
Secretary

Name
Address

SUBJECT: Department of Environmental Protection v. Name
OGC File No.: xx-xxxx
Case Name

Dear:

The State of Florida Department of Environmental Protection ("Department") finds that "Respondent" damaged coral reef on March 23, 2012, offshore of xxxxx, xxxxx County, in violation of Sections 403.161 and 403.93345, Florida Statutes. Although there are no actions required to correct the violation, the Respondent remains subject to civil penalties as a result of the violation. The Respondent is also responsible for costs incurred by the Department during the investigation of this matter.

The Department's Offer

Based on the violation described above, the Department is seeking $xxxx.xx for xxx square meters of coral damage pursuant to Sections 403.93345(8)(b) and 403.93345(8)(d), Florida Statutes, and $xxx.xx for costs and expenses the Department incurred in investigating this matter, which amounts to a total of $xxxx.xx. Additionally, a separate payment in the amount of $xxxx.xx, representing xxxx County's costs and expenses, shall also be made.

Respondent's Acceptance

If you wish to accept this offer and fully resolve the enforcement matter pending against the Respondent, please sign this letter and return it to the Department at 400 N Congress Ave., Suite 200, West Palm Beach, FL 33401, ATTN: Jason Andreotta by _____. The Department will then countersign it and file it with a designated clerk of the Department. Once the document is filed with the designated clerk, it will constitute a final order of the Department pursuant to Section 120.52(7), F.S.

DEP vs. xxx.
OGC No. xx-xxxx
Page 2 of 5

and will be effective unless a request for an administrative hearing is filed by a third party in accordance with Chapter 120, F.S. and the attached Notice of Rights.

By accepting this offer you, xxxx, as Insurance Manager of xxxx:

(1) certify that you are authorized and empowered to negotiate, enter into, and accept the terms of this offer in the name and on behalf of Respondent;

(2) acknowledge and waive Respondent's right to an administrative hearing pursuant to Sections 120.569 and 120.57, F.S., on the terms of this offer, once final;

(3) acknowledge and waive Respondent's right to an appeal pursuant to Section 120.68, F.S.; and

(4) acknowledge that payment of the above amount does not constitute a waiver of the Department's right, if any, to recover emergency response related costs and expenses for this matter.

The Department acknowledges that the Respondent's acceptance of this offer does not constitute an admission of liability for the violation referenced above.

Respondent's Performance

After signing and returning this document to the Department,

(1) Respondent shall pay $xxxx.xx in full within 30 days of execution of this order. The payment must: (a) be in the form of a cashier's check or money order; (b) be payable to the "Department of Environmental Protection"; (c) include the OGC Number assigned above and the notation "Ecosystem Management and Restoration Trust Fund- Coral Reef Protection"; and (d) be sent to 400 N Congress Ave., Suite 200, West Palm Beach, FL 33401, ATTN: Jason Andreotta.

(2) Respondent shall make a separate payment of $xxxx.xx in full within 30 days of execution of this order. The payment must: (a) be in the form of a cashier's check or money order; (b) be payable to the "xxxx County Board of County Commissioners"; (c) include the OGC Number assigned above; and (d) be sent to 400 N Congress Ave., Suite 200, West Palm Beach, FL 33401, ATTN: Jason Andreotta.

The Department may enforce the terms of this document, once final, and seek to collect monies owed pursuant to Sections 120.69 and 403.121, F.S.

Until clerked by the Department, this letter is only a settlement offer and not a final agency action. Consequently, neither the Respondent nor any other party may request

DEP vs. xxx.
OGC No. xx-xxxx
Page 3 of 5

an administrative hearing to contest this letter pursuant to Chapter 120, F.S. Once this letter is clerked and becomes a final order of the Department, as explained above, the attached Notice of Rights will apply to parties, other than the Respondent, whose interests will be substantially affected.

Please be aware that if the Respondent declines to respond to the Department's offer, the Department will assume that the Respondent is not interested in resolving the matter and will proceed accordingly.

If you have any questions, please contact Jason Andreotta at 561-681-6639 or at Jason.Andreotta@dep.state.fl.us.

Sincerely,

_____
Jill S. Creech, P.E.
District Director
Southeast District

FOR THE RESPONDENT:

I, _____ [Type or Print Name], **HEREBY ACCEPT THE TERMS OF THE SETTLEMENT OFFER IDENTIFIED ABOVE.**

By: _____ Date: _____
[Signature]

Title: _____
[Type or Print]

FOR DEPARTMENT USE ONLY

DONE AND ORDERED this _____ day of _____, 20_____, in Palm Beach County, Florida.

DEP vs. xxx.
OGC No. xx-xxxx
Page 4 of 5

STATE OF FLORIDA DEPARTMENT
OF ENVIRONMENTAL PROTECTION:

_____
Jill S. Creech, P.E.
District Director
Southeast District

Filed, on this date, pursuant to section 120.52, F.S., with the designated Department Clerk, receipt of which is hereby acknowledged.

_____ _____
Clerk Date

Attachments: Notice of Rights

Final clerked copy furnished to:
Lea Crandall, Agency Clerk (lea.crandall@dep.state.fl.us)

DEP vs. xxx.
OGC No. xx-xxxx
Page 5 of 5

NOTICE OF RIGHTS

Persons who are not parties to this Order, but whose substantial interests are affected by it, have a right to petition for an administrative hearing under Sections 120.569 and 120.57, Florida Statutes. Because the administrative hearing process is designed to formulate final agency action, the filing of a petition concerning this Order means that the Department's final action may be different from the position it has taken in the Order.

The petition for administrative hearing must contain all of the following information:

a) The OGC Number assigned to this Order;

b) The name, address, and telephone number of each petitioner; the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding;

c) An explanation of how the petitioner's substantial interests will be affected by the Order;

d) A statement of when and how the petitioner received notice of the Order;

e) Either a statement of all material facts disputed by the petitioner or a statement that the petitioner does not dispute any material facts;

f) A statement of the specific facts the petitioner contends warrant reversal or modification of the Order;

g) A statement of the rules or statutes the petitioner contends require reversal or modification of the Order; and

h) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the Department to take with respect to the Order.

The petition must be filed (received) at the Department's Office of General Counsel, 3900 Commonwealth Boulevard, MS# 35, Tallahassee, Florida 32399-3000 within 21 days of receipt of this notice. A copy of the petition must also be mailed at the time of filing to the District Office at the address indicated above. Failure to file a petition within the 21-day period constitutes a person's waiver of the right to request an administrative hearing and to participate as a party to this proceeding under Sections 120.569 and 120.57, Florida Statutes. Mediation under Section 120.573, Florida Statutes, is not available in this proceeding.

Appendix 10 – Reef Injury Event Stabilization & Restoration BMPs

Florida Department of Environmental Protection's
Coral Reef Conservation Program

Reef Injury Event Stabilization & Restoration Best Management Practices

Summary

After a reef injury event, the Florida Department of Environmental Protection's (FDEP's) Coral Reef Conservation Program (CRCP) and/or partners and their contractors may need to act to prevent further damage and to begin the restoration process. Best management practices for activities that avoid and minimize any additional impacts to reef resources are listed below.

Biological Triage & Stabilization

Biological impacts may consist of dislodged and overturned organisms. Biological triage will include up-righting dislodged and overturned stony corals, gorgonians, and sponges followed by stabilization (i.e., reattaching). A special activities license (SAL) from the Florida Fish and Wildlife Conservation Commission (FWC) is required for all coral, gorgonian and sponge transplantation efforts. An emergency stabilization plan must be submitted (either standalone or as part of a larger restoration plan) and approved by the resource trustees prior to work commencing. All work will be conducted by qualified individuals who have provided documentation of proven experience on reef restoration projects.

- Stony coral fragments created by the injury will be collected (i.e., picking up loose fragments from the sea floor by hand). Fragments without the presence of disease or boring sponges (e.g., *Cliona sp.*) will be cached and may subsequently be reattached during restoration or managed in a nursery. Cache locations will be located in an area where the stony corals are least likely to be moved or damaged during high wave energy events. The fragments will be cached in a weighted basket (i.e., laundry basket) in order to keep them contained but still allow adequate water flow over them. When no appropriate onsite cache locations can be found, fragments will be transported to offsite cache locations. Offsite cache locations will vary depending on the specifics of each event, but will be chosen based on proximity and accessibility for re-attachment efforts. All fragments will then be wrapped in wet bubble wrap and placed in a cooler that will be closed at all times. If fragments are too large or otherwise outside of the cooler for any amount of time, wet towels will be used to cover them. An area of bare substrate, preferably within the same injury area or habitat, will be chosen for reattachment. The site and fragment undersides (i.e., area free of living tissue) will be scraped free of algae using a wire brush and/or paint scraper. Portland Type II cement

or underwater epoxy will then be placed on the cleaned reattachment site. The type and amount used will depend on the fragment species, size, and shape. The cement will either be pre-mixed on the vessel in a bucket or transported to the reattachment site in zip-lock bags that are mixed by slightly opening the bag to let water in. The cement is then removed from the bucket or bag and placed on the reattachment site. The stony coral will then be placed skeleton side down (live tissue side up) into the cement or epoxy. The cement or epoxy will then be smoothed around the fragment to establish a solid foundation. Any excess cement will be removed and live coral tissue will be fanned by hand to remove any cement particles that may haves settled during the process. Once the stony coral fragments are in place, numbered plastic tags, nails, flagging tape or other identifying markers may be secured to the substrate (free of biota) immediately adjacent to the reattached fragment. The plastic tags or markers will be secured with a masonry nail adjacent to the northeast side of the colony and be used for identification and monitoring purposes (Collier et al., 2007) (Monty et al., 2006).

- Gorgonian colonies and fragments dislodged by the injury will be collected and cached in the same manner as described above for stony corals. Reattachment methods will vary depending on the species, size, and condition of the colony as well as the local environment (e.g., current or surge). For all methods bare substrate is chosen as a reattachment site. The site is cleaned with a wire brush and/or paint scraper. A nail can be driven through the holdfast and cement or epoxy placed over the holdfast and nail for support. Clippings from damaged whole colonies may be taken and re-attached if it is believed that re-attachment of the whole colony may not be successful. For colonies without a holdfast, clippings or fragments, the tissue at the base can be stripped and then attached using nails, cable ties and epoxy. To strip the tissue, a small circular incision is made 10 cm from the base of the clipping. The tissue is then sheared off using a downward motion with a knife, while any remaining tissue around the axis can be peeled off by hand. A hole can also be drilled into the substrate where the colony's striped tissue base can be placed and cement or epoxy used to secure it. Once secured, gorgonians may be assigned an identification number and tagged in the same manner as described above for stony corals (Collier et al., 2007) (V. Brinkhuis Master's Thesis, 2009).

- Dislodged sponges and fragments created by the injury will be collected and cached in the same manner described above for stony corals. As with gorgonians, reattachment methods will vary depending on the species, size, and condition of the colony as well as the local environment (e.g., current or surge). Sheared Barrel sponges (*Xestospongia muta*) can be secured using 3 inch mesh scallop netting draped over the fragment and secured to the cleaned, bare substrate with nails and cable ties. Once secured, sponges may be assigned an identification number and tagged in the same manner as described above for stony corals (Collier et al., 2007) (S. Bush Master's Thesis, 2012).

Rubble Stabilization

Physical impacts may consist of fragmentation of substrate, dislodging or overturning of large pieces of substrate, or pulverization. These impacts may create large amounts of various sized rubble or boulders. Rubble can be easily moved during storm events and injure or destroy nearby biota, therefore rubble stabilization is critical in reducing potential injury to surrounding resources and promoting natural recovery of the habitat. Stabilization techniques include the use of cement, rebar, and concrete nails. Stabilization and restoration activities conducted in response to physical impacts shall be conducted using field-tested methods and in a manner that results in only beneficial impacts to the habitat. Rubble may also be removed from the site and disposed of on land if this method proves more feasible. A rubble stabilization plan must be submitted (either standalone or as part of a larger restoration plan) and approved by the resource trustees prior to work commencing.

- Depending on the severity of the injury, rubble can either be stabilized on site, or must be removed and disposed of appropriately (e.g., offshore ODMDS). Pieces of rubble may be stabilized using cement in a similar manner as used for biological triage or incorporated into reef framework gouges and fractures. If rubble is incorporated into the existing framework, it will be done in a manner that is consistent with the naturally existing relief (i.e., no rubble berms will be capped in place). Rubble reattachment sites will first be scraped free of algae using a wire brush and/or paint scraper. Portland Type II cement or underwater epoxy will then be placed on the clean reattachment site. The cement will either be pre-mixed on the vessel in a bucket or transported to the reattachment site in zip-lock bags that are mixed by slightly opening the bag to let water in. The cement is then removed from the bucket or bag and placed on the reattachment site. The rubble pieces will then be placed onto the cement or epoxy.

Temporary Submerged Buoy Installation

Temporary submerged buoys may be installed to mark the boundaries of the injury area to aid in restoration activities.

- Cement cinder blocks with polypropylene line (~1-3 ft. long) and buoy (either can shaped or trap buoys, ~6 inches in diameter) attached will be used as a temporary buoy to delineate the injury area underwater. Buoy height from the cinder block will be minimal depending on the relief of the habitat. The buoy should be high enough to visually see in the landscape, but not extend so high that it causes a navigation safety hazard. Cement cinder blocks will be hand placed by divers and will only be placed in areas void of biota. All blocks and buoys will be removed after work is complete.

Temporary Mooring Buoy Installation

Temporary mooring buoys may be installed if a large amount of triage or restoration needs to be completed at an injury area that will take several weeks or months. Temporary mooring buoys can be installed using a Helix Anchor or by using the Halas® System.

- A Helix Anchor (Figure 1) can be installed and used in sand and rock rubble bottom. All buoy components will be removed after work is complete.
- The Halas® Mooring Buoy System can be used with concrete core anchors in areas with hard substrate. This system includes an anchor mounted into the seafloor, a shackle, mooring lines (downline, buoy through line, and pickup line), and an 18' diameter buoy (Figure 2). The portion of the eye that breaks the substrate surface can be cut off when the project is complete.

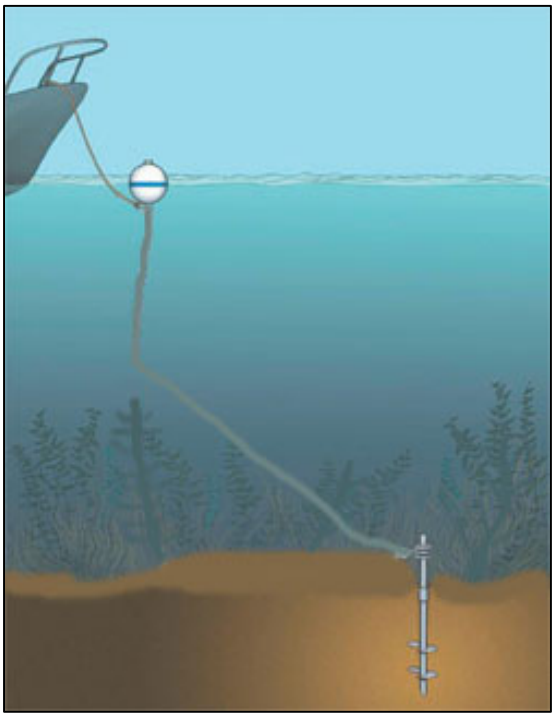

Figure 1. Helix Anchor

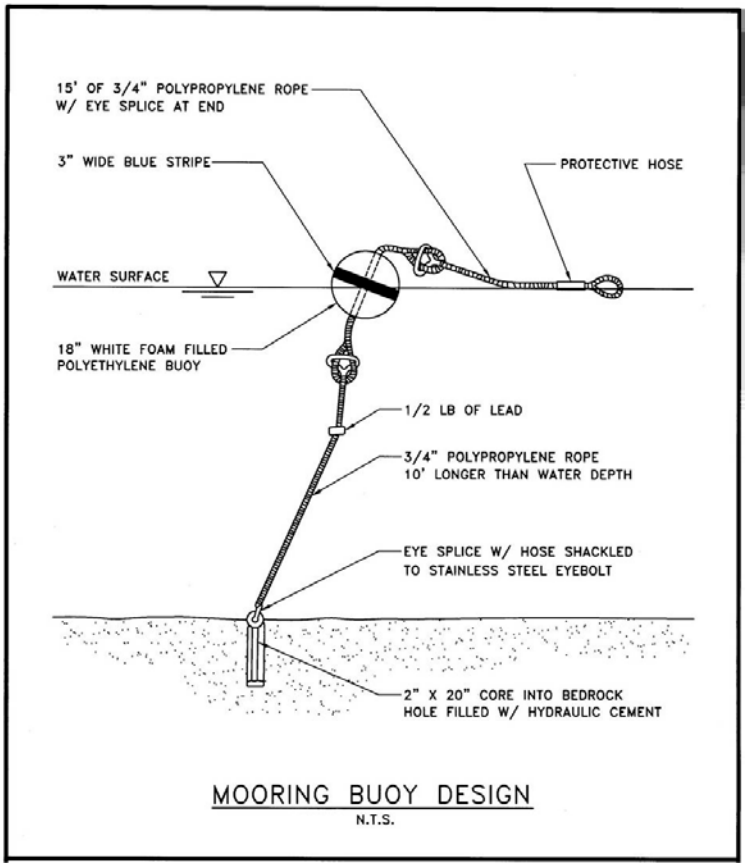

Figure 2. Mooring Buoy Design using the Halas® System.

Monitoring Plan and Site Maintenance

- A detailed biological monitoring plan specific to the organisms to be reattachmented will need to be submitted and approved by the resource trustees and associated agency personel. The plan should include a survival survey of the reattached corals at the injury site, and a number of colonies at a predefined reference site. Colonies should be monitored for survivorship, disease, and stability. All colonies should be mapped from a reference marker and photographed. The survey should be performed every 2 years for 10 years. Coral relocation success shall be defined as all parameters (tissue loss, mortality and presence of *Cliona sp)* of the relocated colonies being at least 90% similar to the reference colonies based upon a Bray Curtis Similarity Index. If the coral relocation is deemed a failure as per these stipulations, the Respondent shall submit a Compensation Contingency Plan for Department review and approval.
- Any equipment installed (temporary submergered buoys, mooring bouys etc.) will be checked throughout the course of the project for presence and stability.

References

Brinkhuis, V. Assessment of gorgonian transplantation techniques offshore southeast Florida. Master's Thesis, Nova Southeastern University, 2009.

Bush, S. Post-Injury recovery, reattachment, survival, and growth of the Giant Barrel Sponge, *Xestospongia muta*, offshore southeast Florida. Master's Thesis, Nova Southeastern University, 2012.

Collier, C. et al. Rapid Response and Restoration for Coral Reef Injuries in Southeast Florida: Guidelines and Recommendations. 57 (Southeast Florida Coral Reef Initiative 2007).

Monty JA, Gilliam DS, Banks KW, Stout DK, and Dodge RE (2006) Coral of opportunity survivorship and the use of coral nurseries in coral reef restoration. Proc. 10th ICRS: 1665-1673.