

The Southeast Florida Marine Debris Reporting and Removal Program

Southeast Florida Coral Reef Initiative
Fishing, Diving and Other Uses
Local Action Strategy Projects 29, 30 and 32



Southeast
Florida
Coral Reef
Initiative

Acting above to protect what's below.

The Southeast Florida Marine Debris Reporting and Removal Program

Final Report

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INTRODUCTION

Coral reefs in southeast Florida lie adjacent to four of the most densely populated counties in Florida. These coral reefs comprise the northern portion of Florida's Reef Tract and extend approximately 105 miles from the northern boundary of Biscayne National Park in Miami-Dade County, through Broward and Palm Beach counties, to the St. Lucie Inlet in Martin County (Collier *et al.*, 2008). Both visitors to and residents of southeast Florida actively use coral reefs in the region, with primary activities including fishing, scuba diving, snorkeling, and boating. Recreational and commercial activities can leave behind marine debris that can cause indirect, unintended impacts on coral reefs and reef organisms. Abandoned anchors, lost dive equipment, and irretrievable fishing gear can cause tissue abrasion to sponges, hard corals, soft corals, and other sessile organisms, entrap mobile organisms such as fishes, crustaceans, and echinoderms, and often result in partial or complete mortality of the organism. With increasing population and the associated use of southeast Florida reefs on the rise, minimizing the impacts of marine debris is a priority.

The Marine Debris Reporting and Removal program was originally created in 2008 as a partnership between the Florida Department of Environmental Protection (DEP), the Florida Fish and Wildlife Conservation Commission (FWC) and Palm Beach County Reef Rescue (PBCRR). In 2009, the program was identified in the Southeast Florida Coral Reef Initiative (SEFCRI) Local Action Strategy (LAS) under Issue 3 - indirect impacts on habitat. The Marine Debris Reporting and Removal Program was identified within SEFCRI Fishing, Diving, and Other Uses (FDOU) Projects 29, 30 & 32, with the dual goals of (1) minimizing indirect impacts on the reef ecosystem and associated organisms from recreational and commercial use; and (2) increasing awareness and understanding among reef user groups of the causes and consequences of marine debris. More specifically, the projects sought to accomplish these goals by establishing a well organized beach cleanup data collection point for all counties (FDOU Project 29); developing a volunteer reef cleanup day with multi-county data collection (FDOU Project 30); and creating strategies to reduce the trash being generated (FDOU Project 32).

PROJECT OBJECTIVES

The primary objectives of The Marine Debris Reporting and Removal Program are to raise the level of consciousness about marine debris and engage local stakeholders in reporting, removing, and preventing marine debris in the southeast Florida region. Funding from FY09 was requested to begin a pilot project which 1) established the infrastructure for a marine debris program, and 2) held a pilot cleanup event in 1 of the 4 counties in the southeast Florida region.

In particular, FY09 funding supported four primary tasks within FDOU Projects 29, 30, & 32:

- Task 1: Establish and maintain a toll-free telephone hotline, an internet-based data entry form for stakeholders to report marine debris, and a database to store information on the reported marine debris.
- Task 2: Create advertisements for the Southeast Florida Marine Debris Program, containing information on the hotline and internet-based reporting mechanisms, the causes and consequences of marine debris, and strategies for reducing and preventing marine debris.
- Task 3: Organize one clean-up event in 1 of the 4 counties in the southeast Florida region. The clean-up should involve participation from FDEP CRCP as well as dive operators, dive clubs, and other agencies and NGOs. Clean-up dives will take place at previously reported marine debris locations. Clean-up supplies will be purchased for dive buddy teams to use during clean-up dives, and reused during subsequent clean-up events.
- Task 4: Produce a summary report containing an analysis of the reported and removed marine debris data, including classification of data into categories by type and by user group, calculation of volunteer hours and clean-up effort, illustration of the distribution of marine debris on southeast Florida reefs, and strategies for reducing and preventing marine debris.

PROJECT OUTCOMES

Overall, by raising the level of consciousness about the causes and consequences of marine debris, establishing mechanisms for marine debris to be reported and removed, collecting data on the extent to which marine debris affects reef resources, and encouraging local stakeholders to participate in co-management of reef resources, the Marine Debris Reporting and Removal Program has helped to reduce one of the indirect impacts on coral reefs and, therefore, improve management of coral reef resources in southeast Florida.

Task 1

The NOAA CRCP FY09 Grant allowed for the maintenance and continuous operation of marine debris reporting mechanisms and a database containing information about marine debris on coral reefs in the southeast Florida region. Two reporting mechanisms were initially established in 2008 and maintained through the duration of the grant: (1) a toll-free telephone number where reef users can submit marine debris reports via a voicemail message, and (2) a webpage containing a pre-formatted data entry sheet. The hotline was managed by FDEP CRCP, while the online report form was generated in Survey Monkey and maintained by FWC. Data collected from both reporting mechanisms included information about the location, type, and size or quantity of debris. All reports were tracked in an excel spreadsheet. Reef users can report marine

debris sightings by calling the toll-free hotline at 866-770-SEFL (7335) or filling out the report form at www.SEAFFAN.net.

In 2012, FDEP CRCP began the process of incorporating the Marine Debris Program and its reporting mechanisms into an umbrella program known as the Southeast Florida Action Network (SEAFAN), which also encompasses two other FDEP CRCP programs: the Southeast Florida Marine Event Response Program (SEMERP) and the Reef Injury Prevention and Response Program (RIPR). The operation of these programs is similar to the Marine Debris Program in that they encourage reef users to report incidents that have the potential to impact the coral reef ecosystem - SEMERP collects reports of potentially harmful biological incidents such as fish kills, algal blooms, and invasive species, while RIPR requests reports of vessel grounds, anchoring on coral, or other reef damage. As part of this incorporation, the reporting mechanisms initially established for the Marine Debris Program were expanded to allow reef users to also report incidents to SEMERP and RIPR. The hotline phone number remains the same, but separate mailboxes were established for each program. Responsibility for the online report form was transferred from FWC to FDEP CRCP, and updated in a program called SurveyGizmo to allow reporters to also submit information regarding potential biological incidents and vessel impacts to the reef.

Task 2

Maximizing awareness of marine debris, its causes and consequences, and the reporting mechanisms required the creation and distribution of advertisements about the program. During the first two years of the grant, articles about the Marine Debris Reporting and Removal Program appeared in publications such as South Florida Adventures Magazine, DiverWire Online, and InDEPth. Information about the reporting system has also been included in presentations given to stakeholders, including the South Florida Spearfishing Club, Lighthouse Point Saltwater Sportsman Association, and other dive groups.

Following the expansion of the Marine Debris Program's reporting mechanisms to include RIPR and SEMERP reports within SEAFAN (see Task 1, above), advertisement of the program was also incorporated into SEAFAN. A logo and slogan - *We're All Connected, Keep It Protected* - were designed to create an identity for the SEAFAN program that shows connectivity between humans and the natural world and communicates the message that everyone has a stake in the marine environment and can contribute to its protection. Advertisements created for this program revolve around the central goal of making the reporting mechanisms readily available to divers and others who spend time on the ocean and are more likely to notice marine debris or other incidents. Specifically, the reporting mechanisms have been advertised through the creation of promotional products tailored to these stakeholders' needs, including mask straps, emergency whistles, adhesive fishing rulers, and general use waterproof

information stickers. An educational flyer with a perforated wallet card, magazine and newspaper ads, email design, and certificate of appreciation were also created help advertise the program and keep the public engaged.

Task 3

On April 16th, 2011, 15 volunteers along with two staff from FDEP participated in the 1st Annual Southeast Florida Marine Debris Cleanup to remove man-made debris from Miami-Dade County coral reefs. Event partners included the Florida Department of Environmental Protection, the Florida Fish and Wildlife Conservation Commission, Palm Beach County Reef Rescue, and R.J. Diving Ventures. Although the Marine Debris Program includes a reporting mechanism (Task 1), minimal reports had been received at the time of the pilot reef cleanup event, due to insufficient advertisement of the program. As a result, dive sites were targeted for debris removal based on the recommendation of local dive operators. Over the course of two dives targeting marine debris at two sites, 17 divers cleaned up an estimated 3.24 linear miles of coral reef,



cumulatively spending over 18 hours underwater, and removing 110 pounds, or 30 gallons, of debris (Fig 1). Cleanup gear was purchased and loaned to volunteers during the cleanup event, including catch bags, cutting shears, marker buoys, a clip to secure gear to BCDs, and protective gloves.

Figure 1. Volunteer diver Jordan Harvell removing marine debris (plastic chair) from Emerald Reef. Photo credit: Lisa Mongy.

Task 4

The analysis of marine debris data as detailed in Task 4 is based on the information collected during the 2011 pilot reef cleanup event in Miami-Dade.

During the 2011 reef cleanup, sixty pieces of debris were removed and categorized into five main groups: 1) Fishing debris (e.g., monofilament, leader, lure); 2) Trash (e.g., bottles, cans, plastic bags); 3) Household debris (e.g., plastic chair, bungee cord, ceramic tile); 4) Boating debris (e.g., lines, zincs), and 5) Scuba/Snorkeling debris (e.g., snorkel, weight belt, mesh bag). Household debris and trash may have come from upland users, or may have been associated with boating activities. Fishing debris was most prevalent (31.67%), followed closely by trash (30%), then household debris (16.67%), boating debris (15%), and finally SCUBA/snorkel debris (6.67%) (Fig. 2). One stony coral was found entangled in fishing line, however, no other direct impacts to marine life were

observed. Perhaps the most damaging piece of debris collected was an illegal fish trap. Abandoned fish traps have the capacity to continue effectively trapping fish for many months or even years. It is estimated that the 60 pieces of marine debris would have taken over 13 million years to degrade had they been left in the ocean.

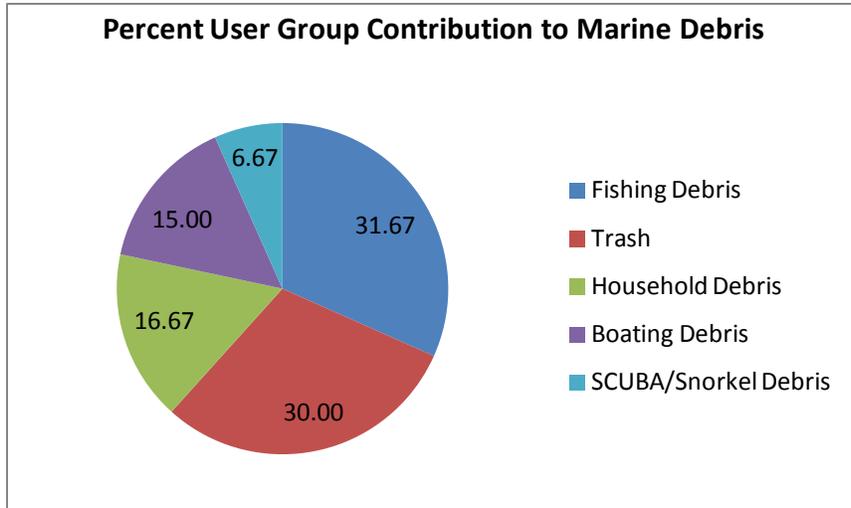


Figure 2. Percent of debris removed during the 2011 Southeast Florida Reef Cleanup, categorized into five main groups.

Debris was removed from two separate locations: a mooring buoy site on Emerald Reef and a non-mooring buoy location on Rainbow Reef where boats would have to anchor. Divers removed 23 pieces (41.5 lbs) of debris from Emerald Reef and 37 pieces (68.5 lbs) from Rainbow Reef. This was accomplished by fewer divers (13 compared to 16) cleaning a smaller area of reef (1.51 miles compared to 1.73) in less cumulative time (8.3 hours compared to 9.86). The amount of debris that can be attributed to different groups varied slightly between sites as well, with fishing debris being more prevalent at the mooring buoy site (34.78% compared to 29.73%), and trash more common at the non-buoy site (32.43% compared to 26.09%) (Fig. 3).

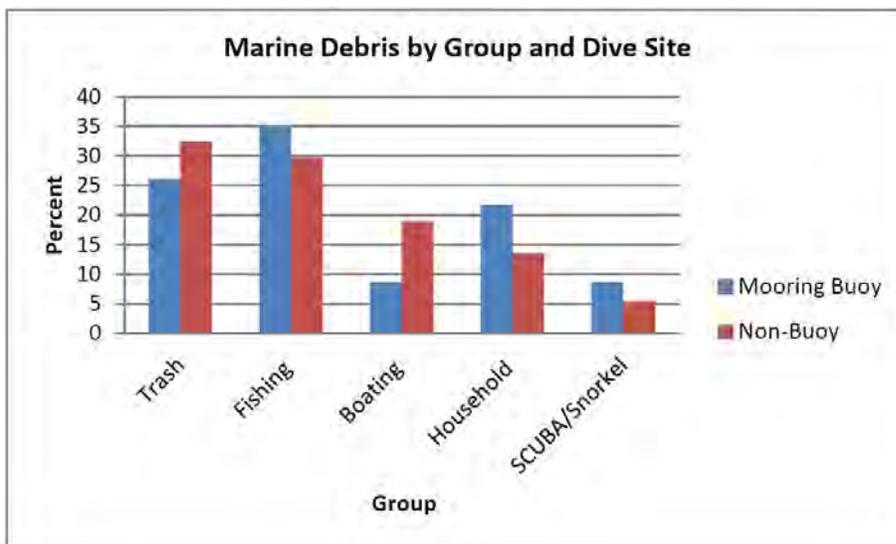


Figure 3. Percent of debris removed from each dive site (mooring buoy and non-buoy sites), that can be attributed to five main groups.

This trend of finding less debris at a mooring buoy site compared to a non-buoy site is counter to what has been reported in scientific literature, and may be an artifact of the relatively new (implemented in 2009) mooring buoy program in Miami-Dade County. Although it is generally considered that mooring buoy fields reduce the physical damage to coral reefs from boat anchoring, these buoy fields are typically areas of concentrated marine debris.

While the current data is insufficient to fully inform the development of strategies to reduce and prevent marine debris in the southeast Florida region, it is a start. As the Marine Debris Program continues to develop, FDEP CRCP will be better able to determine the impacts of marine debris on southeast Florida coral reefs, raise awareness of the problem that marine debris causes, and develop strategies to reduce the debris being generated.

THE FUTURE OF THE MARINE DEBRIS PROGRAM

In the coming year, FDEP CRCP will continue to improve the Marine Debris Program. Task 1 objectives, the telephone hotline and internet based reporting systems, will be maintained under the SEAFAN program. The database will be upgraded from Excel to Access, to better track incoming reports for all three of SEAFAN's component parts. Task 2 will be enhanced as information about SEAFAN will be distributed widely throughout the region in the form of promotional products, informational flyers, presentations and advertisements at dive shops, marinas, boat ramps, and tackle shops, and among stakeholder groups such as divers, fishermen, boaters, law enforcement personnel, environmental personnel, and anyone else who spends time on the ocean. Finally, following the successful pilot cleanup event in 2011, in 2012 Task 3 will be expanded to include cleanup events in each of the four counties in the southeast Florida region. Overall, an increase in outreach activities and program visibility will improve marine debris reporting, data collection and removal efforts on southeast Florida's coral reefs.

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