

Semi-Annual Report

South Atlantic Shelf-edge MPAs and Deep-water Coral HAPCs Summary of Accomplishments to Date (April 1, 2013–September 30, 2013)

Project ID#:	NA11NMF4410061
Title:	South Atlantic MPAs and Deepwater Coral HAPCs: Characterization of Benthic Habitat and Fauna
PIs and co-PIs:	Stacey Harter, Andrew David, John Reed
Duration of Project:	3 years

Shelf-edge MPAs

2012 *Pisces* FINAL Cruise Report:

The Final Cruise Report for the 2012 *Pisces* cruise (410 pages) was completed and submitted to the SAFMC in August 2013. For each dive site, the following data is provided:

1. Cruise and ROV dive metadata
2. Figures showing each ROV dive track and habitat zone overlaid on multibeam sonar maps
3. Dive track data (start and end latitude, longitude, depth)
4. Site objectives
5. General description of the habitat and biota
6. Images of the biota and habitat that characterize the dive site.
7. CPCe 4.1[©] Coral Point Count analysis of percent cover of benthic biota and substrate type
8. Density analysis of fish populations.

In addition, Primer statistical analysis compares dive sites within the MPAs and adjacent sites outside the MPAs.

2013 *Pisces* MPA Cruise:

The MPA cruise was completed in July 2013. Originally set for July 1-14, we came in two days early (on July 12) because of Tropical Storm Chantal. Unfortunately, this precluded any ROV work at the Georgia MPA, however the cruise was successful overall.

Objectives: The primary objectives of the cruise were to gather additional data on habitat and fish assemblages within and adjacent to five of the South Atlantic Grouper/Tilefish MPAs as part of a long term sampling program to document changes in these areas before and after implementation of fishing restrictions. Additionally, we collected baseline fish and habitat information in several new areas the SAFMC is considering as future MPAs. Specific objectives included:

- Conduct remote operated vehicle (ROV) transect surveys of habitat and fish assemblages

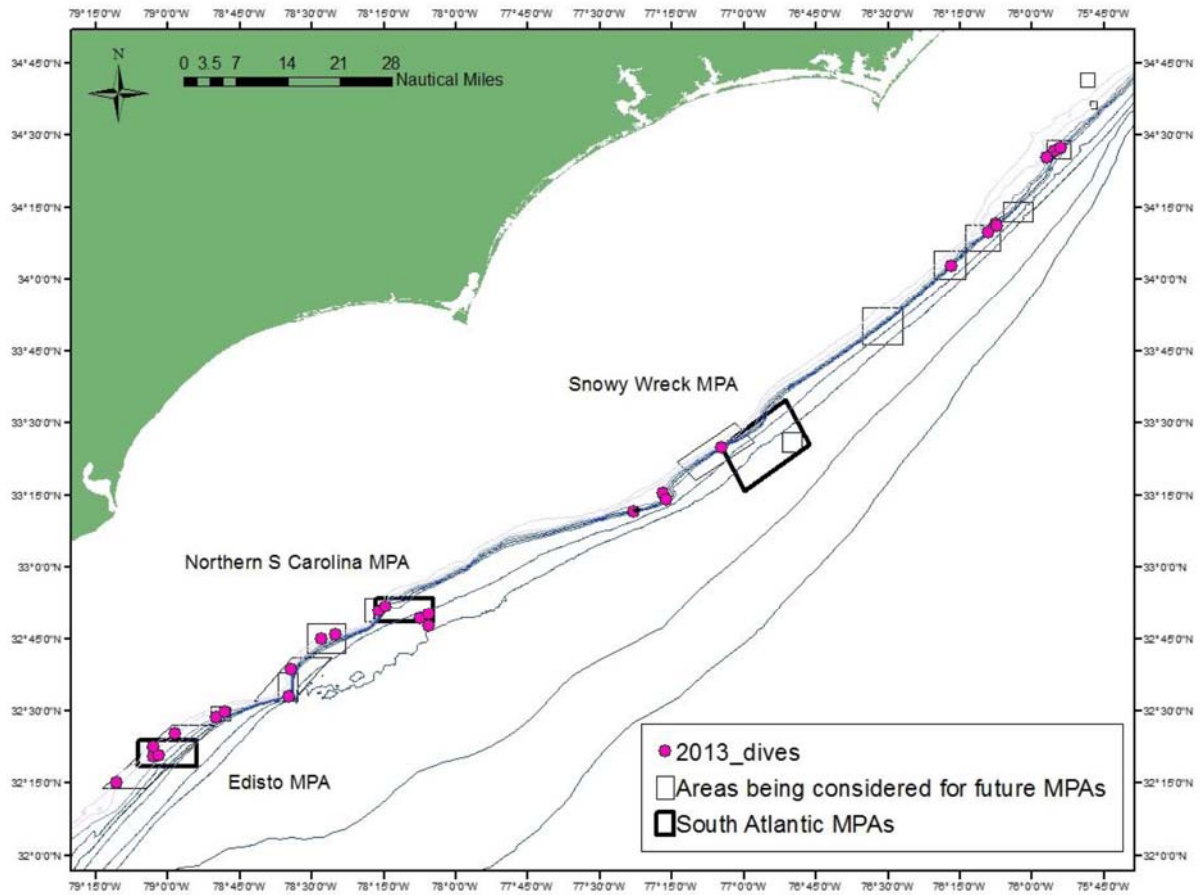
- Conduct multibeam mapping with *Pisces'* ME70 system of existing and proposed MPA to locate potential ROV survey sites as well as to continue assembly of a comprehensive bathymetric map of the entire outer continental shelf margin of the southeastern US
- Conduct total water column Conductivity-Temperature-Depth (CTD) profiles

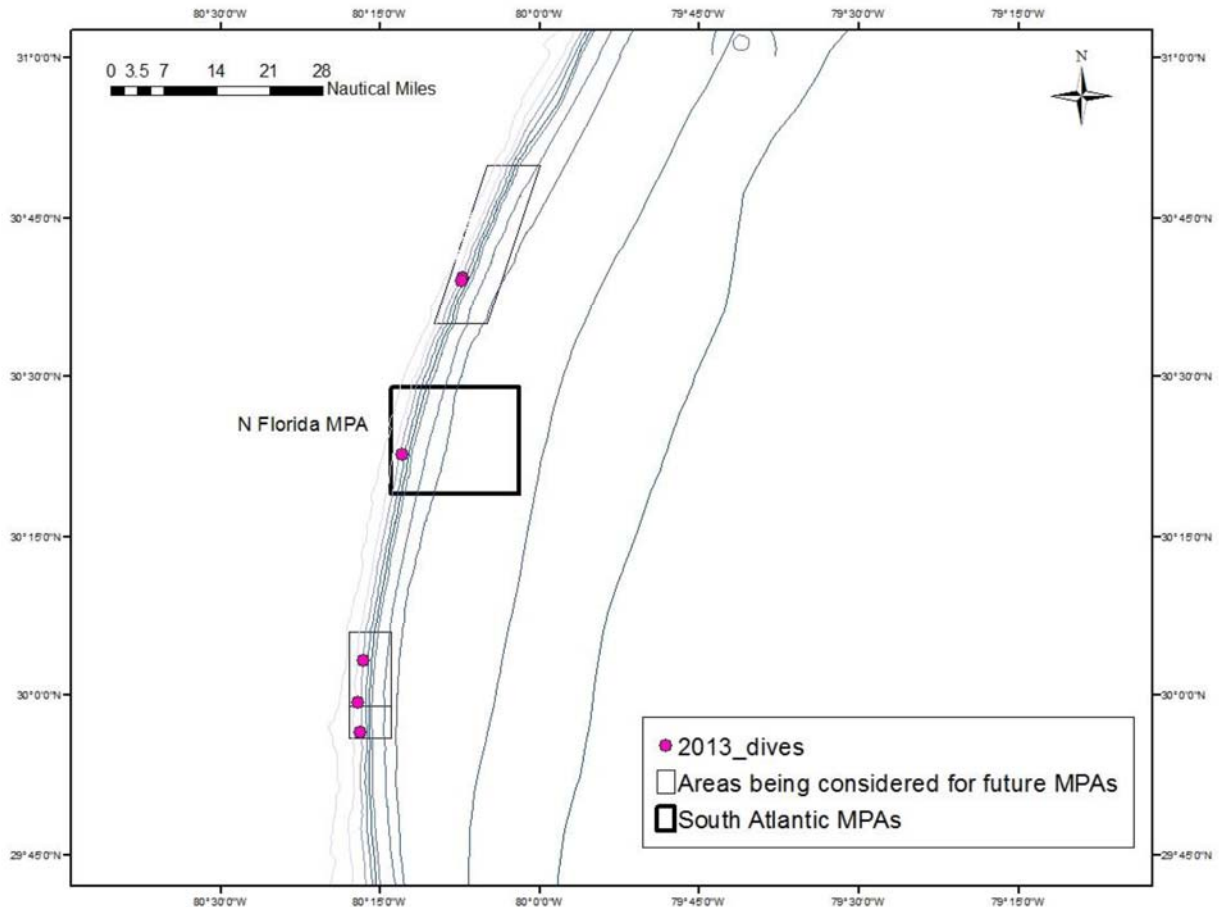
This survey utilized the Phantom S2 ROV owned and operated by the University of North Carolina at Wilmington/Underwater Vehicles Program. ROV dive locations were selected from either existing multibeam or new multibeam data collected on this cruise. Total dive lengths averaged 1.5 km in length and oriented to allow coverage of the inshore, offshore and top of each suspected target area. Each dive consisted of numerous transects which were delineated by similar habitat types. Downward looking still images were taken at regularly timed intervals to provide a randomized dataset of percent cover by habitat type. Both forward looking video and forward and down looking still imagery incorporated paired lasers to allow measurements of targets. A total of thirty three ROV dives were completed including areas both inside and outside four of the five MPAs. The breakdown of dives is as follows: 6 associated with the north Florida MPA, 0 associated with the Georgia MPA, 9 associated with the northern South Carolina MPA, 11 associated with the North Carolina MPA, and 7 associated with the Edisto MPA. Five of the seven targeted reef fish species were observed during the mission including snowy grouper, speckled hind, blueline tilefish, warsaw grouper, and yellowedge grouper. Lionfish were seen in nearly all areas with particularly high numbers in the two South Carolina MPAs.

Multibeam mapping was conducted each night by researchers from NOS-Charleston, the College of Charleston and Boston University. For all areas mapped, bathymetry from the ME70 multibeam system and fisheries data from the EK60 split-beam system were both collected. Multibeam data were processed during the evenings and results were normally completed by the following morning so that the day's dives could be selected. A total of 218 mi² was mapped on this cruise.

CTD casts were made prior to the first and normally after the last ROV dive each day. The instrument collected salinity, temperature, depth, dissolved oxygen and transmissivity. A smaller unit measuring only depth and temperature was attached to the ROV during dives. CTD casts were made at 13 stations.

At the last MPA Expert Working Group meeting (February 2013), 29 areas were suggested for future closure to protect speckled hind and warsaw grouper. We conducted ROV dives in 13 of these areas on this cruise and a short summary report of important fishery species observed in each area was submitted to the Working Group and the general Council at their last meeting (September 2013) where these MPAs were discussed.





[Deep Coral HAPCs](#)

In the spring of 2013, PI Reed attended a workshop on Interrelationships between Coral Reefs and Fisheries. An edited book volume is being produced as a result of the workshop. We have submitted the following manuscript for publication:

Characterization and interrelationships of deepwater coral/sponge habitats and fish assemblages on Pourtales Terrace, Florida.

J.K. Reed, S.L. Harter, S. Farrington, and A.W. David

Abstract:

Recently, the South Atlantic Fishery Management Council and NOAA established eight deepwater Marine Protected Areas (MPAs) and the Deepwater Coral Habitat Areas of Particular Concern (CHAPCs) along the outer continental shelf off the southeastern U.S. This network of protected areas was implemented to sustain and restore reef fish populations and to protect deepwater coral/sponge ecosystems (DSCEs). This study characterizes the DSCEs and associated

fish populations and analyzes the interrelationships of the fish assemblages and benthic habitats within the newly designated CHAPC and the 'East Hump' MPA on Pourtales Terrace off the Florida Keys. Quantitative video and photographic ROV transects were made at 14 sites during the 2011 NOAA Ship *Nancy Foster* cruise both inside and outside of the protected areas to ground-truth multibeam sonar maps, quantify and characterize the benthic habitats, benthic macro-fauna, fish populations, and coral/sponge cover. This is the first quantitative analysis of deepwater fish/reef habitat associations in the southern Straits of Florida. New multibeam sonar maps and ROV dives enabled discoveries of the southern-most known deepwater *Lophelia* coral reef in U.S. waters and deepwater sinkholes. The primary goal of this research is to gather data on habitat and fish assemblages in the South Atlantic MPAs and HAPCs as part of a long-term sampling program to document changes in these areas before and after fishing restrictions and to better understand the long-term health and status of these important deepwater coral/sponge ecosystems.

Current status of this manuscript: We have received one round of edits from the reviewers. The reviews were mostly positive with only minor changes, so we see no reason why the manuscript wouldn't be accepted for publication which is expected by summer of 2014.