Semi-Annual Report

South Atlantic Shelf-edge MPAs and Deep-water Coral HAPCs
Summary of Accomplishments to Date (April 1, 2014–September 30, 2014)

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

2013 *Pisces* FINAL Cruise Report:

The Final Cruise Report for the 2013 *Pisces* cruise (310 pages) was completed and submitted to the SAFMC in June 2014.

Reed, J.K., Stacey Harter, Stephanie Farrington, Andy David. 2014. South Atlantic MPAs and deepwater coral HAPCs: Characterization of Benthic Habitat and Biota; NOAA Ship *Pisces* 2013 cruise. NOAA CIOERT Report. 310 pp.

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.

2014 *Nancy Foster* MPA Cruise:

The MPA cruise was completed in June 2014. We were originally scheduled for 14 sea days on the R/V *Pisces*, but due to technical issues, we ended with 10 sea days on the R/V *Nancy Foster*. Despite the loss of working sea days, we were efficient with our time and accomplished a great deal.

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 Expert Working Group recommended for possible future MPAs to protect Warsaw grouper and speckled hind. Specific objectives included:

- Conduct remote operated vehicle (ROV) transect surveys of habitat and fish assemblages
- Conduct multibeam mapping using the Reson 7125 SV2 system on the *Foster* 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 United States.

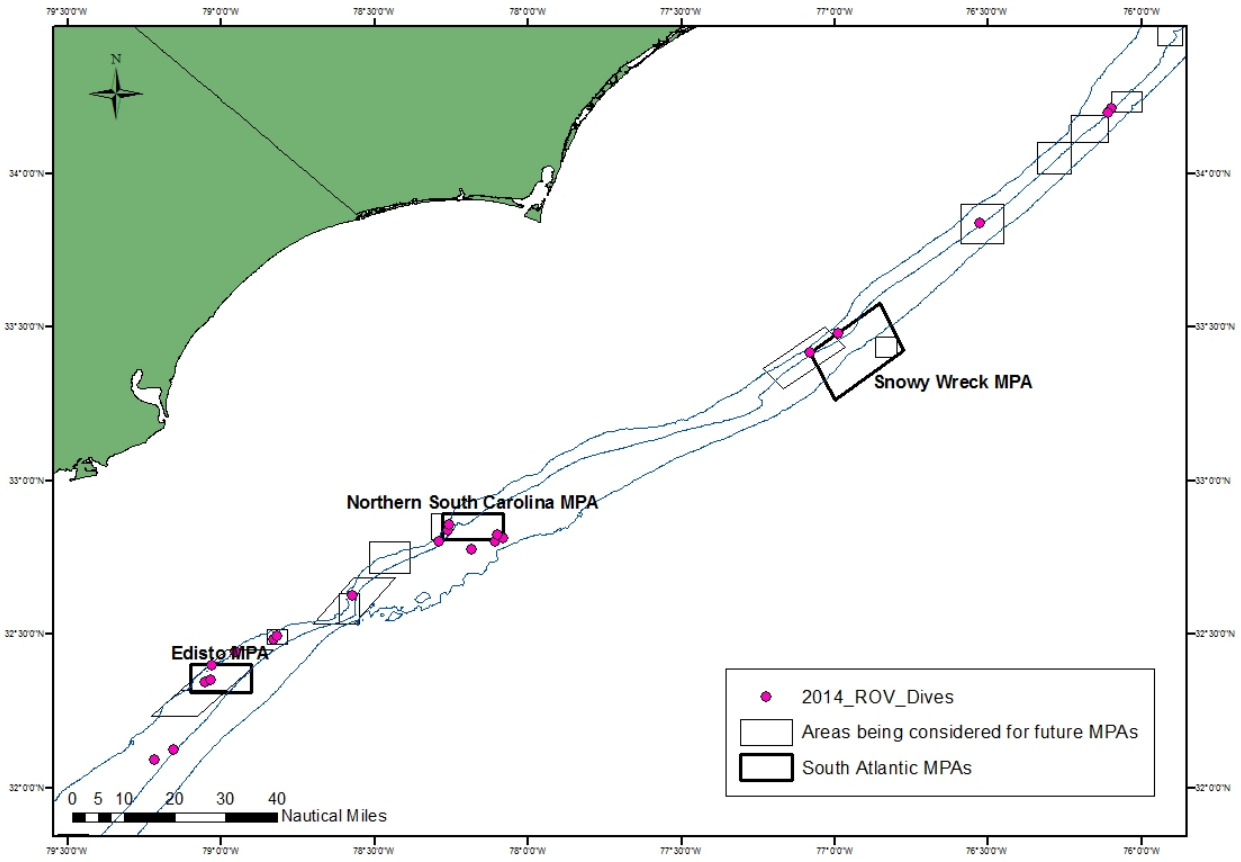
This survey utilized the Mohawk ROV owned and operated by the University of North Carolina at Wilmington/Underwater Vehicles Program. ROV dive locations were selected from either existing multibeam or new multibeam data collected on this cruise. Total dive lengths averaged 1.5 km in length and oriented 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 twenty nine ROV dives were completed including areas both inside and outside six of the MPAs. This includes one dive at each of the recently sunken barges off South Carolina that comprise the Deep Artificial Reef MPA. Two dives had to be aborted after ROV deployment due to strong currents which leaves a total of twenty seven dives to be analyzed. The breakdown of dives is as follows: three associated with the north Florida MPA, four associated with the Georgia MPA, eight associated with the northern South Carolina MPA, six associated with the North Carolina MPA, six associated with the Edisto MPA, and two dives on the barges in the artificial reef MPA. Dives were made in 11 of the 29 areas that were recommended by the SAFMC Expert Working Group for possible future MPAs. Three of the seven targeted reef fish species were observed during the mission including snowy grouper (*Hyporthodus niveatus*), speckled hind (*Epinephelus drummondhayi*), and blueline tilefish (*Caulolatilus microps*). Lionfish were observed on 21 of the 27 dives. The only dives they were not seen on were the deep dives we did in the Northern South Carolina MPA (>150m) and on the two barge dives as they had been very recently sunk (within the past two months). While lionfish were frequently observed, at first glance, it appears that their densities may be lower than last year. The highest abundances were observed inside the Edisto MPA.

Multibeam mapping was conducted each night and processed. We collected both bathymetry from the Reson 7125 SV2 multibeam system and fisheries data from the EK60 split-beam system. Results were normally completed by the following morning so that the day's dives could be selected. A total of 158 km^2 was mapped on this cruise.

The SAFMC is now focused on Spawning Special Management Zones (SMZs) to protect species in the snapper grouper management complex including speckled hind and Warsaw grouper. As such, the data collected on the 2013 and 2014 cruises in potential MPA sites that were recommended by the SAFMC Expert Working Group will provide important information on fish and habitat and can be used for comparison to areas inside the existing MPAs.

Analysis of data collected on the 2014 cruise is currently underway. All ROV dives have been analyzed for characterizing benthic habitat and biota using CPCe and 6 of 27 ROV dives have been analyzed thus far for fish data. Work is on track to complete all analyses by spring 2015 and subsequently submit a final cruise report to the SAFMC.



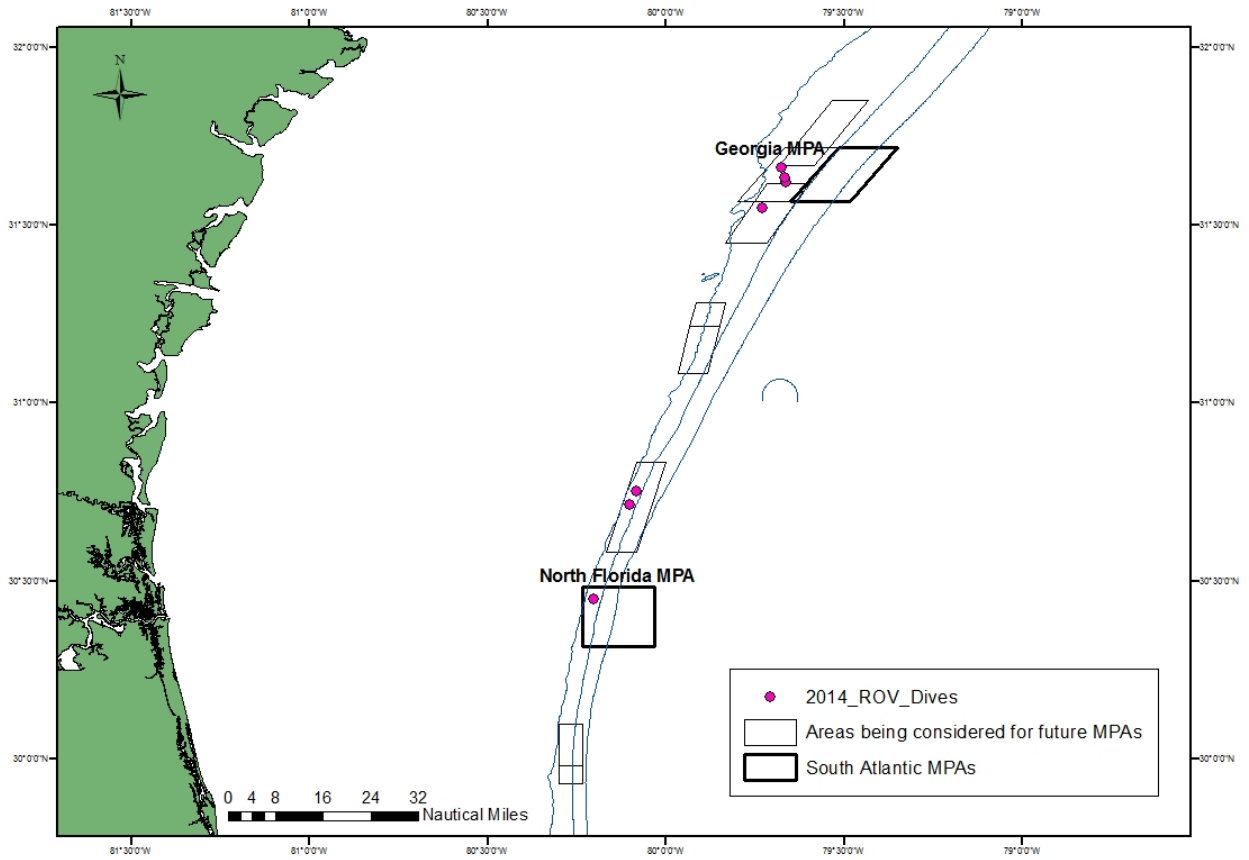


Figure 1. Dives Sites from 2014 MPA Cruise.

Meetings/Presentations:

Reed, J. and S. Farrington. 2014. Proposed HAPCs/MPAs for mesophotic and deepwater coral/sponge habitat and essential fish habitat in the eastern Gulf of Mexico and South Florida. A proposal to the Gulf of Mexico Fishery Management Council and Florida Keys National Marine Sanctuary. GOMFMC Webinar, September 22, 2014. 38 pp.

Stacey Harter was invited to give several presentations to the SAFMC Snapper Grouper Advisory Panel in April 2014. The presentations were a summary of what has been accomplished thus far on the Amendment 14 south Atlantic MPAs and what information is known about possible future MPAs under Amendment 17.

Reports/Publications:

Reed, J.K., Stacey Harter, Stephanie Farrington, Andy David. 2014. South Atlantic MPAs and deepwater coral HAPCs: Characterization of Benthic Habitat and Biota; NOAA Ship *Pisces* 2013 cruise. NOAA CIOERT Report. 310 pp.

Reed, J.K., Stacey Harter, Stephanie Farrington, Andy David. 2014. Characterization and interrelationships of deepwater coral/sponge habitats and fish communities off Florida, USA. Chapter 5 in “Coral Habitat and Fish Interrelationships”, CRC Press, p. 49-80.

Reed, J. S. Farrington, S. Harter, and A. David. 2014. Photo album and taxonomy of benthic macrobiota and fish from 2011-2013 ROV dives on shelf-edge MPAs off southeastern U.S. 215 pp. Harbor Branch Oceanographic Technical Report Number 151.