

Semi-Annual Report

South Atlantic Shelf-edge MPAs and Deep-water Coral HAPCs Summary of Accomplishments to Date (October 1, 2012 – March 31, 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 NOAA Ship *Pisces* Cruise- Results and Products:

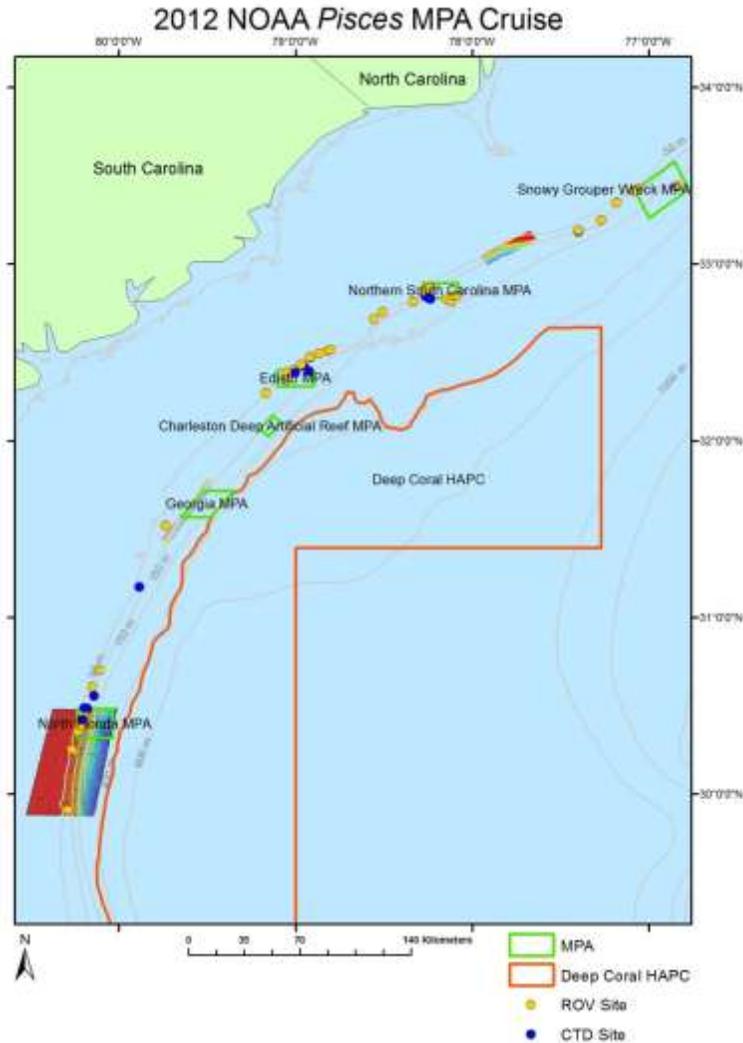
This cruise was conducted from July 6 to 19, 2012 in the previous reporting period, and a 731 page preliminary cruise report was submitted to the SAFMC on August 8, 2012 (Harter, Reed, David, and Farrington, 2012). This report consisted of the following cruise data:

1. Figure of map of ROV dive sites and CTD casts.
2. ROV and CTD station summary report.
3. ROV and CTD site summary report.
4. List of benthic samples collected.
5. Site and sample detailed report- Summary for each site (CTD and ROV): details of target site, habitat description, physical data, and sample data
6. ROV dive annotation report- Complete and continuous typed annotations of ROV video including: time/date stamp for each log, event log, coordinates, depth, hard bottom/soft bottom characterization, habitat characterization, and observations of benthic biota and fish.
7. SEADESC I Report- Summary for each ROV dive including: multibeam map (if available) or NOAA Regional Bathymetric Chart with ROV dive track overlay, site location (start and end- coordinates, depth), physical parameters, ROV setup, images characteristic of the site and biota, dive objectives and events, habitat description, dominant benthic biota and fish observations.

For this reporting period (Oct-March 2013), the following was completed for the 2012 *Pisces* cruise:

- 1) Access database – Revision and update of the Access at-sea database for analyzing cruise data. Currently, all data have been entered into the database and proofed.
- 2) Completed review of all dive annotations.
- 3) Established a protocol for characterization of benthic habitat type from ROV and multibeam surveys (see attached document).
- 4) Completed review of all multibeam data for transect and habitat characterization.

- 5) Fish population analysis of the ROV video is almost complete. 32 of 37 dives have been completed to date. For each dive, all fish have been identified to the lowest discernible taxonomic level and counted and the habitat type they reside on has been noted.
- 6) Analysis of ROV benthic surveys- Quantified analysis of transect digital still images using CPCe 4.1[®] Coral Point Count for percent cover of habitat substrate and benthic biota. A total of 37 ROV dive sites were analyzed at the following sites both inside the MPAs and sites outside but near the MPAs. Some of the MPA sites had multiple dives ground-truthing various geological features visible from the multibeam maps:
 - North Florida MPA site
 - Georgia MPA site
 - Edisto MPA site
 - Northern South Carolina MPA site
 - North Carolina Snowy Wreck MPA site
- 7) PI, Stacey Harter, is a member of the SAFMC MPA Expert Working Group and attended the meeting in February 2013 presenting preliminary results from our 2012 *Pisces* cruise. It was well received by the group and they are placing high emphasis on our 2012 as well as our upcoming 2013 cruise to provide valuable information that will aid in establishing protected areas in the south Atlantic for Speckled Hind and Warsaw grouper.



Project Timeline for the 2012 *Pisces* Cruise Report:

The Final Cruise Report for the 2012 *Pisces* cruise will be completed within the next reporting period and will provide the following data for each dive site: cruise and ROV dive metadata, figures showing each ROV dive track and habitat zone overlaid on multibeam sonar maps, dive track data (start and end latitude, longitude, depth), objectives, general description of the habitat and biota, and images of the biota and habitat that characterize the dive site. This Final Report will provide quantitative analyses of each dive site including: 1) CPCe 4.1[©] Coral Point Count analysis of percent cover of benthic biota and substrate type, and 2) density analysis of fish populations. In addition, Primer statistical analysis will compare dive sites within the MPAs and adjacent sites outside the MPAs.

Deep Coral HAPCs

Pourtales Terrace CHAPC Data Analysis:

In 2011 the NOAA Ship *Nancy Foster* (NOAA CIOERT, NOAA DSCRTP; PIs- J. Reed, A. David, S. Harter) conducted ROV dives and multibeam sonar surveys within the deep-water Coral HAPC and the Humps MPA site on Pourtales Terrace to characterize and map deep-sea coral/sponge habitat and fish populations within and adjacent to the managed sites. We are submitting these data and Final Cruise Report to the SAFMC and NOAA CRCP as deliverables for our MPA/HAPC grant (see attached). These data and report comply with the Scope of Work of the grant by providing detailed analysis of shelf-edge MPA and HAPC sites on Pourtales Terrace and adjacent areas. The sites were selected specifically by the PIs to be complimentary to the objectives of our SAFMC grant. Archived data of deep-water, hard-bottom sites in the Pourtales Terrace region were compiled by the author (JR) to be specifically used to select sites for the 2011 *Nancy Foster* cruise (Fig. 2).

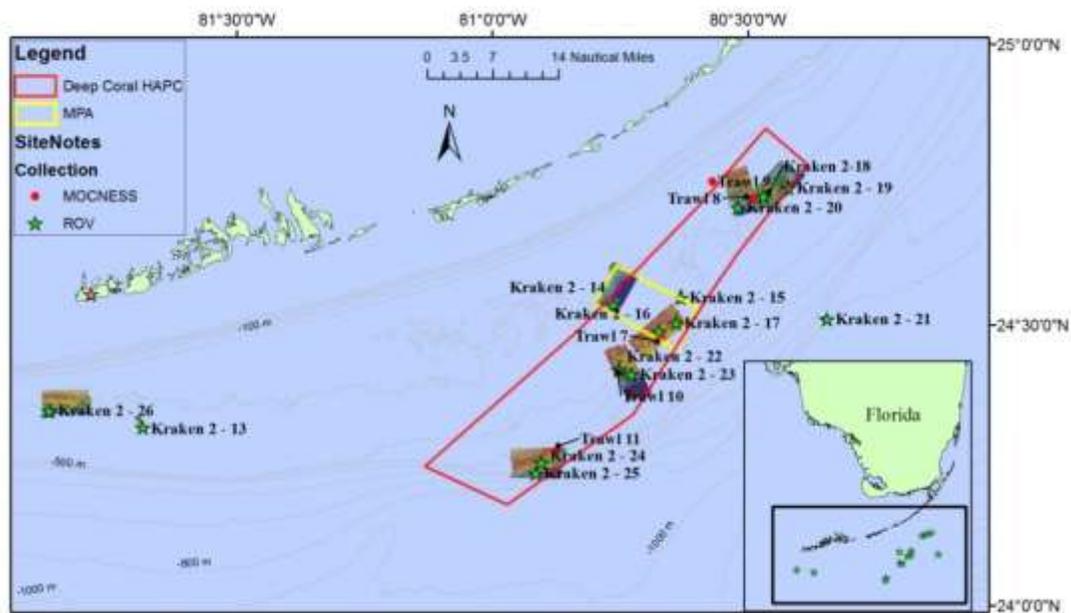


Figure 2. Map of Pourtales Terrace showing all *Kraken* ROV dive sites (star), MOCNESS trawls (red dots), and 2011 *Nancy Foster* multibeam sonar surveys (color boxes) during Leg 2 of the CIOERT FLoSEE II Cruise on the NOAA Ship *Nancy Foster*, September 23-30, 2011. Yellow polygon= 'East Hump' MPA Site; red polygon= Deepwater Coral Habitat Areas of Particular Concern.

2011 Nancy Foster Cruise to Pourtales Terrace- Deliverables and Products:

The Final Cruise Report for the 2011 *Nancy Foster* Cruise to Pourtales Terrace provides the following data for each dive site:

- 1) CPCe 4.1[®] Coral Point Count analysis of percent cover of benthic biota and substrate types.

- 2) Density analysis of fish populations (# individuals/km for each species).
- 3) Cruise and ROV dive metadata, figures showing each ROV dive track and habitat zone overlaid on multibeam sonar maps, dive track data (start and end latitude, longitude, depth), objectives, general description of the habitat and biota, and images of the biota and habitat that characterize the dive site.

Future Work and Conclusions:

These data from the 2011 *Nancy Foster* Cruise and the 2012 *Pisces* cruise ground-truth the new multibeam maps of these sites and provide documentation regarding the current state of habitat and fauna at these sites which have only recently been designated MPAs and HAPCs. The new multibeam maps provide a wealth of information of potential sites for future ROV dives especially in areas that have not been previously dived. These data will be important for managers and scientists with the South Atlantic Fishery Management Council, The Florida Keys National Marine Sanctuary, NOAA Fisheries, NOAA DSCRTP, NOAA CRCP, and NOAA Mesophotic Reef Ecosystem Program. These data may then be compared to previous and future research cruises and to areas adjacent to the protected areas to better understand the long-term health and status of these important deepwater coral/sponge ecosystems and fisheries.

The 2013 research cruise to the Shelf-edge MPAs has been scheduled on the NOAA Ship *Pisces*. The dates of the cruise are 01-14 July 2013 and it will begin and end in Mayport, FL. A contract has been awarded to UNCW for ROV services with Lance Horn and Glenn Taylor serving as pilots. In addition to the PIs, we anticipate participation of geologists, mapping, and GIS experts from NOS-Charleston, the College of Charleston and Boston University. We also expect a NOAA Teacher at Sea to accompany us on the cruise. Many potential survey sites were provided at the February 2013 SAFMC MPA Expert Working Group meeting to assist with siting new protected areas and we will endeavor to visit as many of these sites as possible.