

U. S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
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Pascagoula, MS 39567

Cruise Report

Date Submitted:

Platform:

Cruise Number:

Project Title:

Cruise Dates: -

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CRUISE REPORT

6-19 July 2012

Coral and Fish Assemblage Survey of
Marine Protected Areas in the South Atlantic Bight

NOAA Ship PISCES, cruise PC-12-03

U.S. Department of Commerce
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Southeast Fisheries Science Center
Panama City Laboratory
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SURVEY PERIOD:

6-19 July 2012

AREA OF OPERATION:

The primary operational areas were five shelf-edge Marine Protected Areas (MPAs) off the east coast of Florida, Georgia, South Carolina and North Carolina between 29° 53.866' N, 80° 17.290' W and 33° 25.638' N, 77° 03.668' W, depths between 50 and 250 m. Please see Figure 1 for a chart of the areas of operations.

OBJECTIVES:

The primary objectives of the cruise were to gather additional data on habitat and fish assemblages in 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 fishing restrictions are implemented. Efficacy testing of this management tool will aid fishery managers in future use of area restrictions for the protection of valuable habitat and fishery resources. Specific objectives included:

- ✧ Conduct remote operated vehicle (ROV) transect surveys of habitat and fish assemblages
- ✧ Conduct multibeam mapping to find areas to dive on with the ROV the following day using the ME70 multibeam mapping system on the ship
- ✧ Conduct total water column Conductivity-Temperature-Depth (CTD) profiles

ITINERARY:

ROV and science crew mobilization took place on 5 July at the Mayport Naval Station with a departure at approximately 1400 on 6 July. The ship transited to the first MPA to be surveyed, the North Florida MPA, and commenced nighttime mapping and daytime ROV and CTD ops. Four ROV dives were made in this area before having to leave early due to strong currents. On 8 July 2012 we transited to the Georgia MPA and attempted 1 dive there. Currents were again strong, so we continued north to the Edisto MPA off South Carolina. Ten ROV dives were made at this MPA before we made an overnight transit to the North Carolina MPA between 11 and 12 July 2012. Seven dives were made off North Carolina including one at the Snowy Wreck and then an overnight transit was made to the Northern South Carolina MPA between 13 and 14 July 2012. Eleven dives were made in this area before making another overnight transit back down to the Florida MPA between 16 and 17 July. Currents had subsided off Florida at this point so we were able to conduct four more ROV dives before heading back into port. The MPA science party and ROV team disembarked on 19 July at Mayport Naval Station.

MATERIALS AND METHODS:

ROV operations: As the ROV was tethered to the ship by an umbilical (which went over the side at the starboard amidships winch station) and moderate currents were encountered in some operational areas, the ROV pilot consulted with the ship's officers as to the heading and speed least likely to result in fouling of the umbilical in the ship's running gear. In general, the ship headed

into the current and made turns to achieve a speed over ground which allowed collection of useful imagery from the ROV cameras, usually 0.5 – 1.0 kt. After the ROV pilot and bridge officers agreed upon the dive profile, the ROV was deployed via a quick-release hook attached to the A-frame crane. The pilot drove the vehicle ~25 m away from the ship and the downweight was put into the water via the crane. The umbilical was married to the downweight line at ~15 m intervals and the assembly was lowered to within 15 m of the bottom. The ROV pilot was in continuous contact with the bridge and deck crew via VHF radio and called for adjustments in ship speed and course and the depth of the downweight as needed. Retrieval was the opposite of deployment; the downweight was hauled up and the umbilical detached as it surfaced. When the weight was recovered, the ROV was powered down, retrieved by hand to the side of the ship and a lifting line was attached with a pole. The ROV was then recovered to the deck with the crane. A transponder used to track the ROV was deployed on a pole which was made fast to the side of the ship. This pole extended ~3 m below the water surface however this pole was not long enough to be below the keel of the ship and on occasion tracking was lost due to an acoustic shadow from the hull if the ROV went to the port side of the ship. The transponder was deployed prior to ROV launch and recovered after ROV retrieval. Imagery from the ROV was recorded in real time on both DVD and external hard drives.

Environmental: CTD casts were made prior to the first and after the last ROV dive each day. The instrument collected salinity, temperature, and depth. A smaller unit measuring only depth and temperature was attached to the ROV during dives.

Multibeam Mapping: Multibeam mapping was conducted each night. For all areas mapped, we collected both bathymetry from the ME70 multibeam system and fisheries data from the EK60 split-beam system.

SURVEY DESIGN:

Some ROV transect locations were selected based upon the limited multibeam bathymetric and acoustic backscatter maps produced within the preceding decade and reef locations provided by colleagues or found during previous years of this survey. Other ROV transect locations were selected from multibeam mapping conducted the previous night. Transect lengths averaged 1.5 km in length and oriented to allow coverage of the inshore, offshore and top of each suspected target area. 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 downlooking still imagery incorporated paired lasers to allow measurements of targets.

RESULTS:

Thirty seven ROV dives were completed including areas both inside and outside the MPAs. The breakdown of dives is as follows: 8 at the north Florida MPA, 1 outside the Georgia MPA, 11 at the northern South Carolina MPA, 7 at the North Carolina MPA including 1 dive made on the Snowy Wreck, and 10 at the Edisto MPA. Several of the targeted reef fish species were seen in several of the MPAs including snowy grouper, speckled hind, blueline tilefish, and warsaw grouper. Lionfish were seen in all MPAs with particularly high numbers in the 2 South Carolina MPAs. Overnight mapping resulted in the collection of both bathymetry and fisheries data for approximately 76 square miles. Detailed analysis of the video imagery and multibeam data will require several months and results will be presented to the Southeast Fisheries Science Center (SEFSC) and the

South Atlantic Fishery Management Council (SAFMC) at that time. CTD casts were made at 13 stations. Station locations for the ROV dives are listed in Table 1. CTD casts were made at the beginning of the first ROV dive of each day and at the end of the last ROV dive of each day.

SURVEY PARTICIPANTS:

MPA component

Stacey Harter	FPC	NMFS/PC Lab
Andrew David	Biologist	NMFS/PC Lab
Steven Matthews	Biologist	NMFS/PC Lab
LTjg Leigh Hedgepeth	Biologist	NMFS/PC Lab
Lance Horn	ROV Pilot	NURC/UNCW
Glenn Taylor	ROV Pilot	NURC/UNCW
John Reed	Biologist	HBOI/FAU
Stephanie Farrington	Biologist	HBOI/FAU
Laura Kracker	Biologist	NOS/NCCOS
Marsha Skoczek	TAS	Olathe, KS

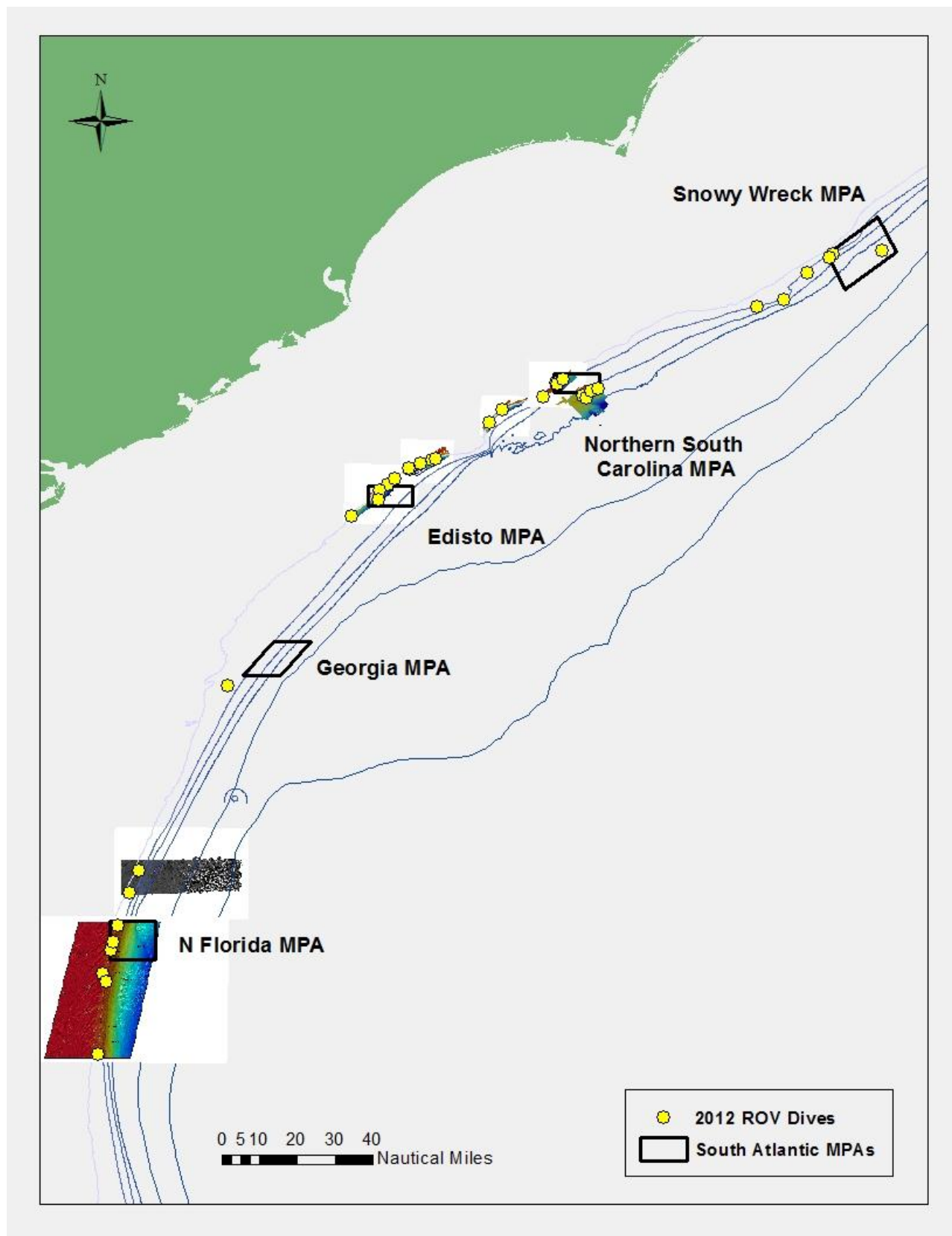


Figure 1 South Atlantic Bight MPA operational area.

Table 1. ROV Stations.

Dive	Date	Latitude	Longitude	Depth (m)	MPA
2012-1	7/7/2012	30.462	-80.199	55	N Florida
2012-2	7/7/2012	30.35613	-80.2301	58	N Florida
2012-3	7/7/2012	30.39222	-80.21878	58	N Florida
2012-4	7/8/2012	30.25238	-80.26718	56	N Florida
2012-5	7/8/2012	31.5167	-79.7167	65	Georgia
2012-6	7/9/2012	32.40173	-79.01055	50	Edisto
2012-7	7/9/2012	32.37812	-79.04878	49	Edisto
2012-8	7/9/2012	32.43155	-78.98173	51	Edisto
2012-9	7/10/2012	32.33577	-79.0528	53	Edisto
2012-10	7/10/2012	32.2666	-79.16888	54	Edisto
2012-11	7/10/2012	32.47183	-78.9138	48	Edisto
2012-12	7/11/2012	32.4769	-78.9169	47	Edisto
2012-13	7/11/2012	32.49687	-78.86623	46	Edisto
2012-14	7/11/2012	32.51073	-78.81615	60	Edisto
2012-15	7/11/2012	32.51398	-78.79868	50	Edisto
2012-16	7/12/2012	33.1833	-77.3833	70	N Carolina
2012-17	7/12/2012	33.2167	-77.2667	85	N Carolina
2012-18	7/12/2012	33.3333	-77.1667	85	N Carolina
2012-19	7/13/2012	33.4333	-76.8333	250	N Carolina
2012-20	7/13/2012	33.4000	-77.0667	75	N Carolina
2012-21	7/13/2012	33.4167	-77.0500	65	N Carolina
2012-22	7/13/2012	33.4000	-77.0667	88	N Carolina
2012-23	7/14/2012	32.85092	-78.27102	48	S Carolina
2012-24	7/14/2012	32.84297	-78.26292	52	S Carolina
2012-25	7/14/2012	32.84478	-78.26728	49	S Carolina
2012-26	7/14/2012	32.86695	-78.24115	65	S Carolina
2012-27	7/15/2012	32.793	-78.1507	165	S Carolina
2012-28	7/15/2012	32.7857	-78.1378	162	S Carolina
2012-29	7/15/2012	32.8129	-78.1151	162	S Carolina
2012-30	7/15/2012	32.8238	-78.0861	163	S Carolina
2012-31	7/16/2012	32.78883	-78.32768	52	S Carolina
2012-32	7/16/2012	32.73087	-78.506	46	S Carolina
2012-33	7/16/2012	32.67544	-78.5618	45	S Carolina
2012-34	7/17/2012	30.70403	-80.10707	50	N Florida
2012-35	7/17/2012	30.60828	-80.14835	52	N Florida
2012-36	7/18/2012	30.2167	-80.2500	58	N Florida
2012-37	7/18/2012	29.89774	-80.28818	56	N Florida