



SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

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FINAL REPORT COOPERATIVE AGREEMENT (NA17NMF4410271) October 1, 2017 – September 30, 2020

During the period October 1, 2017, to September 30, 2020, the South Atlantic Fishery Management Council (SAFMC) continued work to ensure the mandates of the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) are met relative to the conservation and management of the South Atlantic coral and coral reef resources.

Project 1: Characterization of Benthic Habitat and Fauna of Oculina Experimental Closed Area and South Atlantic Deepwater Marine Protected Areas

Cruise Summary

See Harter et al. 2020 report for complete details. Below are excerpts from the Overview and Results sections. The results from a third dive delayed due to COVID-19 will be compiled in 2021 and appended to this report.

Overview

“The South Atlantic Fishery Management Council (SAFMC) and Department of Commerce through the Magnuson-Stevens Fishery Management Act have established eight deepwater Marine Protected Areas (MPAs), five deepwater Coral Habitat Areas of Particular Concern (CHAPCs), and the Oculina Coral HAPC along the outer continental shelf off the southeastern U.S. This project proposed to document and characterize the benthic habitat, benthic sessile biota, and fish populations within some of these protected areas and within the jurisdiction of the SAFMC.

*In February 2009, the SAFMC implemented eight Type II MPAs between Cape Hatteras, NC and the Florida Keys to protect seven species of the deepwater snapper-grouper complex. The closures, however, will provide ecosystem-level benefits to the entire complex as well as protect the shelfedge reef habitat they utilize. These consist of five species of grouper: snowy grouper (*Hyporthodus niveatus*), yellowedge grouper (*H. flavolimbatus*), warsaw grouper (*H. nigritus*), misty grouper (*H. mystacinus*) and speckled hind (*Epinephelus drummondhayi*), and two species of tilefish: golden tilefish (*Lopholatilus chamaeleonticeps*) and blueline tilefish (*Caulolatilus microps*). The shelf-edge MPAs are known to contain reef habitat exploited by these five species of grouper as well as deepwater soft bottom habitat used by the two tilefish species. These species are considered to be at risk due to currently low stock densities and to life history characteristics which subject them to substantial fishing mortality.*

Bottom-tending fishing gear has been shown to have deleterious effects upon reefs and is now prohibited in the MPAs. These sites were designated by the Council to protect spawning grounds of reef fish. As such, decisions to create future area closures will be based upon the efficacy of these areas and the lessons learned during their implementation. Additionally, the MPAs contain extensive areas infested with the invasive lionfish, whose population continues to rapidly expand. Monitoring will assist in evaluating the effects of this invasion on the ecosystem. Area closures constitute a politically charged issue that is unlikely to retain support without evidence indicating increases in the target species. This project benefits coral reef ecosystems directly by improving our understanding of the impact of fishing activities on both fish and invertebrate species. In addition, five Spawning Special Management Zones (SMZ) were established to identify and protect spawning sites/aggregations for snapper grouper species. We surveyed two of them (Devil's Hole SMZ and Cape Lookout SMZ) during these cruises.

This monitoring program for the MPAs will ensure the Council remains well informed of changes within reef fish populations and coral habitats associated with these MPAs. NOAA NMFS conducted preliminary examinations of five of these potential MPA sites in 2004, 2006, 2007 and 2008. Post-closure data were also collected in 2009, 2010, and 2012 – 2019. The MPAs afforded the opportunity to obviate the criticisms of comparing MPAs with adjacent open-to fishing areas by examining the MPAs for four years prior to the closures. Since monitoring began in 2004, this project has produced population density estimates of targeted reef fish species within the boundaries of five of the eight MPAs and adjacent control areas, before and after closure.”

Results

The project completed 62 ROV dives in 2018 and 2019 and results from a third dive will be added to this report once completed. The cruises sampled within six of the 8 Deepwater MPAs, two of the newly created Spawning Special Management Zones, and one Coral Habitat Area of Particular Concern. Comparison dives were made inside and outside of the managed areas to determine if restricting fishing had an impact on habitat, fish, or diversity. While on the cruise, 18 multibeam sonar surveys were completed covering 322 km². The maps developed from the sonar data were ground-truthed with ROV dives. Southeastern United States Deep-Sea Corals (SEADESC) Level II analyses were completed for each dive.

- Comparison among the different managed areas indicated each site was more closely related to a nearby sampling site than to sites with similar protection status. This indicates it is important to protect multiple habitat types and locations along the coast as habitat assemblages change latitudinally.
- Snapper Grouper Complex species tended to have higher densities inside managed areas compared to nearby locations outside the managed area.
- Total number of all species was higher, and diversity was lower for sampling locations inside managed areas compared to nearby locations outside of managed areas.
- Aggregations (not necessarily spawning aggregations) were observed for blackfin snapper, blueline tilefish, grey snapper, red snapper, snowy grouper, and yellowedge grouper.

- Lionfish densities in 2018 and 2019 were similar to lionfish densities observed in 2015 to 2017.
- Artificial reefs created by South Carolina Department of Natural Resources were observed with over 30 species on them including blueline tilefish, snowy grouper, and warsaw grouper.
- Depth, habitat type, and rugosity were the most influential factors determining fish assemblage.
- 145 taxa of benthic macrobiota were identified including 7 Scleractinia hard corals, 18 Alcyonacea, 5 Antipathidae, and 45 taxa of Porifera.
- The highest coral cover occurred in Devil's Hole SSMZ, and highest percent hard coral occurred off South Carolina.
- *Oculina varicose* was the dominant in the *Oculina* Bank Habitat Area of Particular Concern and *Madracis myriaster* was dominant coral in the Devil's Hole SSMZ.
- Four general benthic biota groups were observed: Barges (Charleston Deep Artificial Reef), Georgia, Northern SC scar site, and remaining sites.
- Human debris was observed at most sites. Highest percent cover at debris occurred at the Charleston Deep Artificial Reef MPA and Northern South Carolina MPA.

The data collected from these dives are important for developing the baseline for potential changes in abundance or assemblage due to management measures recommended by the SAFMC. Without this data, it would be impossible to evaluate the effectiveness of protecting deepwater marine habitats.

Project 2: Support Fisheries Scientist to provide Additional Technical Support for Council Coral Conservation and Management Activities.

The South Atlantic Fishery Management Council (SAFMC) is mandated to conserve and manage fishery resources and protect essential fish habitat including coral, coral reefs and live/hardbottom habitat. Essential fish habitat protection is accomplished through two avenues: (1) direct regulation of fisheries to protect coral habitat from the direct or indirect impacts of fishing, and (2) collaborating on essential fish habitat consultations with NOAA Fisheries' Southeast Regional Office Habitat Conservation Division on non-fishing projects or policies that may affect essential fish habitat, including coral.

The SAFMC's network of marine protected areas (Spawning Special Management Zones (SSMZ), Deepwater Marine Protected Areas (MPA), and *Oculina* Experimental Closed Areas (OECA)), Trap Closed Areas, and Coral Habitat Areas of Particular Concern (CHAPC) have established areas where coral can grow undisturbed by bottom tending fishing gear and anchoring from fishing vessels. Regulations have been established to prevent impacts to coral in the Coral, Coral Reef, and Live/Hardbottom; Snapper Grouper; and Spiny Lobster Fishery Management Plans (FMP) and Shrimp and Golden Crab fisheries have regulations established to restrict interactions with coral. The grant biologist reviewed fishery management plan amendments in the associated fisheries for potential impacts to coral as part of the interdisciplinary plan team (IPT) or lead of the plan. Over the grant period, the biologist reviewed 17 Snapper Grouper and two Spiny Lobster amendments. The biologist was lead for one Coral (ongoing) and one Shrimp amendment. The ongoing coral amendment began at looking into developing new golden crab areas and shrimp access areas in CHAPCs and

modifying the boundaries of the CHAPCs. The biologist worked with NOAA staff to include data from the 2017 NOAA mapping cruising requested by the Council to gather information on the eastern edge of the Oculina Bank Extension to inform the boundary placement. Additionally, the biologist worked with NOAA staff to include the latest coral habitat probability models. Previous CHAPC boundaries were developed based on expert judgement, observation of coral, and known fishing locations. The new models could be used to modify boundaries for larger portions of the CHAPCs or include additional areas based on improved statistical modelling procedures and more thoroughly developed coral database. The Scientific and Statistic Committee (SSC) reviewed an early presentation in 2019 to aid in the development of the probability models. The final models were expected to be completed in 2020. Due to delays in the modelling, the results will be reviewed by the SSC in 2021. Due to delay in the model development, the Council separated Coral Amendment 10, CHAPC boundaries, from Shrimp Amendment 10, cold-weather transit provisions in 2018. Work on Coral Amendment 10 resumed in 2020 and is ongoing.

Coral, coral reef, and live/hardbottom habitats are essential fish habitat and habitat areas of particular concern for species in the Coral, Coral Reef, Live/Hardbottom, Snapper Grouper, and Spiny Lobster FMPs. The Fishery Ecosystem Plan was revised in 2017 with an implementation plan adopted in 2018 to review the essential fish habitat designations. The revised implementation plan included items to aid in the conservation of coral and other habitats in the South Atlantic region. Up to date essential fish habitat designations included in the FEP are necessary to ensure appropriate habitats are designated so that biologist with NOAA's Habitat Conservation Division and state commenting agencies can comment appropriately on coastal and marine development projects.

The coral biologist also worked on activities related to evaluation and outreach for the MPA, OECA, and SSMZ. This included updating SAFMC website with the most up to date information for CHAPCs and Snapper Grouper Amendment 36, which modified the boundary for the Charleston Deep Artificial Reef and created SSMZs in 2017. The biologist also worked with the newly created System Management Plan Workgroup to develop outreach materials for the SSMZs. This workgroup included scientists, fishermen, law enforcement officers, and outreach specialists to analyze, describe, and publish outreach material for the SSMZ. The workgroup worked over a series of meetings to review materials developed by SAFMC staff for the areas. During the in-person meeting, the workgroup finalized the material for the SSMZ and started working on the OECA evaluation. The workgroup recommended developing a format that was readable on smartphones and computers, which required adjusting the software and information content for the outreach products. Although the change in software resulted in significant delays in the SSMZ material, the resulting product was much improved. The workgroup also recommended developing the material so that users could more easily access the material of interest, which included developing actions buttons for the regulations, coordinates, target species, and general information (https://safmc.net/SpawningSMZs/story_html5.html). This webpage also provides user an opportunity to report on non-compliance in the protected areas in the South Atlantic Region. The report will be helpful in describing areas or timing of non-compliance to improve efficiency of offshore patrols by law enforcement.

Additional webpages have been created for the SSMZ (<https://storymaps.arcgis.com/stories/e8ae5d03dbd546678fa9900f4d0e439f>) and SAFMC managed areas (<https://storymaps.arcgis.com/stories/74f471a916b242cda8f9a51ce82efaff>). These outreach materials should help users locate the managed areas and improve compliance.

Staff worked with NOAA Ocean Exploration and Research staff to identify high target areas for mapping and ROV dives. The work discovered large reefs outside of CHAPCs as well as confirmed the presence of large coral mounds with the ROV within the CHAPCs. Coral was documented on over 90% of the dives in the South Atlantic region and resulted in significant media coverage from 2018 to 2020.

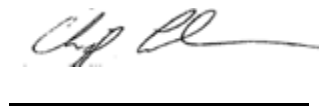
Staff also worked with Maps Unique to get managed areas placed on their maps. This is important because NOAA has indicated that managed areas recommended by the SAFMC will not be added to their maps. Therefore, secondary mapping companies like Maps Unique, which are designed for fishermen, will be the only maps with the managed areas plotted on them. The managed areas were also added to MyFishCount, an electronic reporting app for recreational fishermen, and Fish Rules, an electronic regulations app for recreational fishermen. Staff biologists have been working with Garmin and Navionics since 2017 to get the managed areas added to their digital maps but have only had limited success.

Pew invited staff from the SAFMC to collect baseline data in Warsaw Hole, a SSMZ, in 2018. This was the first research trip to the SSMZ after it was protected. The area was recommended by fishermen as a potential warsaw grouper spawning location although the grouper had been fished out in the early 1980s. On the research trip, two warsaw grouper were captured with one in spawning condition, an exciting result. Several other species were captured on the trip including red snapper, silk snapper, snowy grouper, scamp, and greater amberjack; all species considered in designating SSMZs. This information will be used in future evaluations of the Warsaw Hole SSMZ.

In addition to the work described above, staff worked on and continues to work on evaluations of managed areas in the South Atlantic region, Coral Amendment 10, comments for development projects with the NOAA Habitat Conservation Division, staffing for the Council Coordinating Committee's Habitat Subcommittee, and prioritizing mapping targets in the South Atlantic region for NOAA OER.

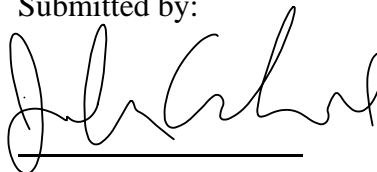
Final Coral Report (NA17NMF4410271)

Prepared by:



Deputy Director for Science

Submitted by:



Executive Director

December 20, 2020

Date