

Proposed Additions to South Atlantic Research and Monitoring Prioritization Plan for 2015-2019

The following items are proposed for addition to the “South Atlantic Research and Monitoring Prioritization Plan for 2015-2019” included as **SEDAR Attachment A3** in the Council’s September 2015 briefing book. For Spawning Special Management Zone (SMA) items, Action Item 1 addresses the need to document spawning within each proposed Spawning SMZ within 10 years to address the sunset provision. Action Item 2 is suggested as the second highest Spawning SMZ priority. The MPA items were adapted from the MPA Draft System Management Plan (SMP) (in **SG Attachment 8b folder**); the high priority Research & Monitoring items were pulled for consideration.

Add a new II. and III. and renumber remaining items in the South Atlantic Research and Monitoring Prioritization Plan for 2015-2019:

II. Short-term, time dependent research needs for Spawning Special Management Zone monitoring to be conducted in 2015-2019. The South Atlantic Council’s System Management Plan (SMP) for Spawning SMZs is still being developed and will draw heavily from the Amendment 36 Cooperative Research and Monitoring Protocol. The highest priority items that will be included are shown below:

1. **Action Item 1:** *Document spawning of priority species in the snapper and grouper complex within the proposed Spawning SMZs.*

Justification: Spawning areas are valuable sources of recruits to populations. Protecting these habitats and sources of larvae is important for sustaining fisheries and building resilience. To maintain fish stocks at proper levels for a healthy, profitable fishery, spawning sites need to be protected from exploitation.

Deliverables: Presence or absence of priority species in the snapper grouper complex spawning within each Spawning SMZ site.

Priority: High

Schedule: Ongoing

Potential Partners: NOAA, States, NOAA Fisheries, MARMAP, SEAMAP, Independent and University Researchers, and the SAFMC Fishery Citizen Science Program

Potential Methods: A variety of gear types could be used to document spawning including manned submersibles, ROVs, and drop cameras. Unless gamete release is observed, spawning condition of the fish needs to be verified via histology. Citizen Science sampling will follow the draft Amendment 36 Cooperative Research and Monitoring Protocol.

2. **Action Item 2:** *Complete multi-beam surveys of the Spawning SMZs.*

Justification: Comprehensive, high-resolution bathymetry surveys of the Spawning SMZs are a priority to determine the extent of biological and geological habitat and emergent features that serve as essential fish habitat (EFH) for managed species.

Deliverables: High resolution GeoTIFFs and associated backscatter data.

Priority: High

Schedule: Ongoing

Potential Partners: NOAA, States, NOAA Fisheries, MARMAP, SEAMAP, Independent and University Researchers, and the SAFMC Fishery Citizen Science Program

III. Short-term, time dependent research needs for Marine Protected Area monitoring to be conducted in 2015-2019. The following items are from the South Atlantic Council's System Management Plan (SMP) for MPAs:

1. **Action Item 2:** *Maintain annual monitoring to collect data inside and outside the MPAs. Data collected should include: distribution, abundance, size and age structure, and sex ratios of dominant harvested species in and outside the MPAs.*

Justification: Ensuring annual monitoring continues to be funded will ensure the data necessary to assess the effectiveness of the MPAs is collected. The deepwater grouper, snapper, and tilefish that are protected by these MPAs are long-lived species with a late onset of maturity. Couple that with many of the species being uncommon to rare means that it may take a long time to see changes.

Projects Completed or Underway:

- NOAA Fisheries, Southeast Fisheries Science Center, Panama City Lab has been collecting data on distribution and abundance of all fish species from ROV surveys inside and outside several of the MPAs including: Snowy Wreck, Northern South Carolina, Edisto, Georgia, North Florida, and East Hump.
- Southeast Reef Fish Survey (SERFS), which is a collaboration of SEFIS/MARMAP and SEAMAP, have been collecting distribution, abundance, size and age structure, and sex ratio data from trap and stationary camera surveys inside and outside several of the MPAs including: Snowy Wreck, Northern South Carolina, Edisto, Georgia, North Florida, and St. Lucie Hump.

Deliverables: Distribution, abundance, and demographic data on key fishery species with which spatial and temporal changes inside and outside the MPAs can be determined.

Priority: High

Schedule: Ongoing

Potential Partners: MARMAP, SEAMAP, NMFS SEFIS, and the SAFMC Fishery Citizen Science Program

2. **Action Item 3:** *Identify fish population demographics (e.g. size and age structure, sex ratio, species use of habitat by life stage, etc.) within and adjacent to the MPAs.*

Justification: A major objective of the MPAs is to provide areas where fish population demographics can recover to levels that are capable of providing a reproductive haven and contribute to recruitment outside the protected areas. Evaluation of size and age structure of fishery species inside vs. outside the MPAs provides an indication of whether or not the MPA is protecting reproductively active individuals, particularly larger and older fish that are the most productive spawners.

Projects Completed or Underway:

- Marine Resources Monitoring, Assessment, and Prediction (MARMAP) since 1987 and the Southeast Area Monitoring and Assessment Program (SEAMAP) since 2008 have

been collecting size, age and reproductive data from trap surveys inside and outside several of the MPAs including: Snowy Wreck, Northern South Carolina, Edisto, Georgia, North Florida, and St. Lucie Hump.

• NOAA Southeast Fishery-Independent Survey (SEFIS) has been collecting size, age and reproductive data from trap surveys inside and outside several of the MPAs since 2010 including: Snowy Wreck, Northern South Carolina, Edisto, Georgia, and North Florida.

Deliverables: Demographic data on fishery species.

Priority: High

Schedule: Ongoing

Potential Partners: MARMAP, SEAMAP, NMFS SEFIS, and the SAFMC Fishery Citizen Science Program

Potential Methods: Fish size can be measured underwater with stereo cameras or lasers attached to submersibles and ROVs. Age must be determined from captured fish using either otoliths or spines and rays. Sex ratios can be determined from gonad biopsies unless the species has sexually dimorphic characteristics.

3. **Action Item 4:** *Characterize spawning areas for deepwater snapper and grouper species within the MPAs. Other priority species if identified to spawn within the MPA will also be characterized.*

Justification: Spawning areas are valuable sources of recruits to populations. Protecting these sources of larvae is important for sustaining fisheries and building resilience. In order to maintain fish stocks at proper levels for a healthy, profitable fishery, spawning areas need to be protected from exploitation.

Deliverables: Locations of target fishery species spawning aggregations *within the MPAs.*

Priority: High

Schedule: Ongoing for NMFS SEFIS, MARMAP and SEAMAP

Potential Partners: MARMAP, SEAMAP and NMFS/SEFIS, NOAA, University Researchers, and the SAFMC Fishery Citizen Science Program

Potential Methods: A variety of gear types could be used to locate spawning areas including manned submersibles, AUVs, ROVs, and drop cameras. Unless gamete release is observed, spawning condition of the fish needs to be verified via histology.

4. **Action Item 7:** *Characterize deepwater snapper grouper species within the MPAs compared to reference sites. This includes: distribution and abundance patterns, size and age distribution, spawning presence, and sex ratios. Other priority species if identified to spawn in the MPA will also be characterized.*

Justification: Comparison of these parameters for deepwater snapper grouper species inside vs. outside the MPAs provides a means to evaluate the efficacy of the protected areas. Ideally, a higher abundance of key fishery species would be observed inside the MPAs given enough time following implementation of fishing restrictions. Evaluation of size and age structure of fishery species inside vs. outside the MPAs provides an indication of whether or not the MPA is protecting reproductively active individuals, particularly larger and older fish that are the most productive spawners. The size/age structure of fished populations should remain fairly constant over time, whereas it should

increase within the MPAs if fishing mortality is eliminated (or significantly reduced) and the MPAs are large enough to encompass the home range of the fish.

Deliverables: Comparison of variables such as distribution, densities, size and age distribution, and sex ratios for snapper grouper species inside the MPAs vs. reference areas outside the MPAs.

Priority: High

Schedule: Ongoing

Potential Partners: MARMAP, SEAMAP, NMFS/SEFIS, and the SAFMC Fishery Citizen Science Program

Potential Methods: Since there have been surveys conducted prior to implementation of the MPAs, a BACI (before/after, control/impact) sampling design should be used when examining MPA effectiveness.

5. **Action Item 9:** *Complete multibeam surveys of the MPAs.*

Justification: Comprehensive, high-resolution bathymetry surveys are a priority to determine the extent of biological and geological habitat and emergent features which may serve as essential fish habitat inside the MPAs.

Deliverables: High resolution GeoTIFFs. Associated backscatter data will be collected and provided for validation and potential future habitat characterization.

Priority: High

Schedule: Ongoing

Potential Partners: NOAA, MARMAP, SEAMAP and NMFS/SEFIS, the SAFMC Fishery Citizen Science Program, University Researchers, and other Regional Research Partners