South Atlantic Research and Monitoring Prioritization Plan for 2018-2022

This document provides summarized research needs identified by the South Atlantic Council. Additional details on items listed here are available in a separate document: "SAFMC Research and Monitoring Plan Source Document". Items noted with a * are candidates for Citizen Science efforts. See Section VI for additional details.

I. Short term research needs for stock assessments to be completed in 2018-2020

- 2018 Benchmark assessment for Cobia. The following items are needed by March 1, 2018:
  - Determine stock structure*
  - Age validation, reader comparison and calibration
  - Discard characterization information and mortality estimate*
  - Improved recreational catch information and methods to incorporate them in the assessment
  - Better characterization of reproductive parameters, including age at maturity, batch fecundity, spawning seasonality, and spawning frequency

- 2018 Standard process assessment for Greater Amberjack. The following items are needed by June 1, 2018:
  - Age validation, reader comparison and calibration
  - Discard mortality estimates

- 2018 Standard process assessment for Red Porgy. The following items are needed by June 1, 2018:
  - Work to resolve discrepancy between SC and NC aging;
  - Provide data on sex ratio at length;
  - Conduct research on assessment and population-projection methods that can make better use of existing and future sex-ratio data;
  - Quantify discard rates, especially in the commercial fishery.

- 2019 Research Track assessment for Scamp. The following items are needed by January 1, 2019:
  - Determine stock structure*
  - Age validation, reader comparison and calibration
  - Discard characterization information and mortality estimate*

- 2019 Standard process assessment for Snowy Grouper. The following items are needed by March 1, 2019:
  - More age samples should be collected from the general recreational sector and with more complete spatial coverage;
  - Stock structure identification
  - Investigate possible effects of hermaphroditism on the steepness parameter;
  - Investigate the sexual transition for temporal patterns, considering possible mechanistic explanations if any patterns are identified;
  - Investigate methods for incorporating the dynamics of sexual transition in assessment models.

- o   Spawning frequency and duration by age.

- 2019 Standard process assessment for Spanish Mackerel. The following items are needed by March 1, 2019:
  - o   Maturity data from both sexes of fish ~275mm FL and lower needs to be staged via histological methods

- 2020 Standard process assessment for Gag. The following items are needed by June 1, 2020:
  - o   Research on the use of otolith chemistry to evaluate the population structure of gag,
  - o   Compare genetics of spawning gag captured by commercial fishermen to juveniles collected in different areas in subsequent months to determine the source of recruits. Consider expanding research to include samples from Mexico to explore gene flow and connectivity.
  - o   Initiate long-term continuous monitoring of age structure in the South Atlantic
  - o   Explore larval transport and modeling efforts associated with development of an IOOS to gain insight into larval connectivity and transport.

- Develop annual abundance indices for all managed stocks adequately sampled by the expanded Southeast Reef Fish Survey (SERFS), including methods to merge indices encompassing new sampling with those based on pre-SERFS MARMAP efforts, by June 1, 2018 for use in stock assessment and management evaluations

II.   Short Term Needs for Spawning Special Management Zones to be completed in the next 5 years.

- Document spawning of priority species in the snapper grouper complex within the Spawning SMZs.*

- Collect baseline data for Spawning SMZs.*

III.   Short Term Needs for MPA monitoring to be completed within the next 5 years.

- Maintain annual monitoring to collect data inside and outside the MPAs to characterize MPAs and enable comparison to reference sites. Identify fish population demographics (e.g. size and age structure, sex ratio, species use of habitat by life stage, spawning activities, etc.) within and adjacent to the MPAs.*

- Characterize spawning areas for deepwater snapper and grouper species within the MPAs. Other priority species if identified to spawn within the MPA should also be characterized.

- Complete multibeam surveys of the MPAs.*

- Evaluate the sampling program of the SAFMC MPAs. The evaluation should review data on compliance, species abundance and diversity, and determine if current sampling targets are sufficient.

- Develop methods for incorporating the impacts of MPA on management actions and stock status.

IV.   Long Term Needs to be developed within the next 5 years.

- Conduct stock identification studies for white grunt.* Results required by January 2021 for use in a benchmark stock assessment tentatively scheduled for 2021.

- Address age determination issues for Gray Triggerfish by January 2020 so age structures can be evaluated for a benchmark assessment tentatively scheduled for 2021

- Obtain life history traits for all managed species, including von Bertalanffy growth parameters and maturity and reproductive rates.*

- Conduct studies to determine effects of climate change on species' distribution, movements, and reproductive patterns.

- Evaluate the cumulative economic and social impacts of existing regulations on the multi-species snapper-grouper fishery in the South Atlantic.

- Evaluate management strategies to reduce discard mortality in the multi-species snapper-grouper fishery.*

- Provide validated ages for deepwater and shallow water snapper grouper species.

- Provide an evaluation of the independent survey and biological sampling information available for all SAFMC managed stocks that are currently unassessed. This evaluation should document past sampling intensity and current sampling targets and provide guidance on the type of stock assessments feasible given currently available data.

- Conduct tagging studies of snapper-grouper complex species, including the Mid-Atlantic, Gulf, and SA regions, to evaluate movements between regions.*

- Update reproductive biology work on red grouper, and other shallow water groupers, to determine latitudinal variation in spawning periodicity and habits.*

- Develop models to predict changes to shrimp and shallow-water and deep-water coral due to climate change.

- Evaluate assessment projection performance, considering their ability to estimate landings, recruitment, and biomass levels.

- Investigate juvenile habitat and abundance of shallow water groupers (such as Gag and Red Grouper), to evaluate the effectiveness of current regulations in protecting these species, by looking at changes in abundance and frequency of occurrence. *

V.   Habitat Research and Monitoring Needs

- Map shallow-water and deep-water coral distribution in the South Atlantic region.

- Monitor health of known coral reef systems.

VI.   Specific Monitoring Priorities*

- Increase funding for fisheries independent monitoring in the South Atlantic. Specific needs include:
  - Restoring MARMAP funding to a minimum of $850,000 annually.

- o Funding MARMAP sufficiently to support reinitiating long bottom longline sampling that provides the only abundance information for deepwater stocks such as Tilefish.
- o Maintaining funding for SEAMAP at levels sufficient to support long-term fishery independent survey operations.
- o Maintaining funding for SEFIS to support video survey work.
- o Providing funding for the MPA/SMZ monitoring needs noted above.
- Monitor the mixing rates of Gulf and South Atlantic King Mackerel. Mixing rates may change over time and should therefore be regularly evaluated, although annual monitoring may not be necessary.*
- Implement a monitoring and research program to address issues relevant to ecosystem management. Topics include trophic interactions, food preferences, predator-prey relationships, and ecosystem connectivity.
- Develop monitoring programs for Cobia, Dolphin, Golden Crab that can support future quantitative stock assessments for these stocks.
- Develop and implement enhancements to the MRIP survey to increase sampling and decrease uncertainty of estimates for federally managed offshore species.
- Maintain/improve the ability to document commercial and recreational landings and discards.
- Develop and implement a hook-and-line survey that monitors stocks, or portions of stocks, not sufficiently sampled by the current Chevron trap survey gear.

VII. Citizen Science priorities.

As noted in the introduction, items indicated with * are research priorities that have the potential to be addressed using a citizen science approach. Some priorities may have a portion that would be suitable using a citizen science approach and some priorities may be suitable for using a citizen science approach to address the entire research goal. Items listed below are collective priorities identified as suitable for using a citizen science approach.

- **Discard Characterization:** provide sampling of discarded fish and increased sample sizes
- **Discard reduction and management**: info on fishing practices, testing of new methods and technology.
- **Stock Structure:** increased samples sizes and improved coverage for genetics projects
- **Short –term MPA and spawning SMZ monitoring needs**: provide video/photo data and biological samples to document spawning of priority species in the snapper grouper complex inside and outside these managed areas; provide spatial data (bottom mapping) to characterize habitat within these managed areas.
- **Long-term monitoring needs:** provide data on environmental conditions as it relates to climate change (sea surface and bottom temperature, etc.); provide tagging data on snapper-grouper complex species, including the Gulf and SA regions, to evaluate movements between regions; provide biological samples on key shallow-water grouper species to address latitudinal variation in spawning and periodicity.*
- **Social and Economic data needs:** provide baseline survey data on fishing-related infrastructure (recreational/commercial facilities, retail, etc.) for social and economic analysis.

VIII. <u>SPECIFIC ANNUAL REPORTING REQUESTS</u>

- SAFE reports that provide stock status including OFL and MSY, an evaluation of the management program including whether ACLs were met or AMs triggered and addressing reasons for such, results of independent fisheries monitoring, complete landings and discard losses in weight and numbers of fish, fishery dependent monitoring statistics, and measures of effort and economic value for all managed stocks by June 1 of each year using data from the prior year.
- Report on the SEFIS program addressing sampling effort and findings for assessed species, by October 1 of each year using data from the previous year.
- Progress report, at the June Council meeting, detailing efforts to implement the research recommendations noted in annual Council Research and Monitoring Reports.
- Direct appropriate SEFSC staff to meet with the SSC at its Spring meeting each year when SAFMC research priorities are reviewed, to increase interaction and communication between the SSC and agency scientists.

Table 1. SAFMC Assessment Priorities

Stock	Level**	Assessment Status. Scheduled assessment in **Bold**.
Black Grouper	1	2009 Benchmark
Black Sea Bass	1	**2017 Standard**
Blueline Tilefish	1	**2017 Benchmark**
Cobia	1	**2018 Benchmark**
Dolphin	1/3	Needs international cooperation & approach
FLK/EFL Hogfish	1	2013 Benchmark, 2018 Update
Gag	1	**2020 Standard**
GA-NC Hogfish	1	2013 Benchmark, Data issues limit future assessment
golden Tilefish	1	2020 update
Gray Triggerfish	1	2016 attempt, 2021 Benchmark candidate; ageing issues
Greater Amberjack	1	**2018 Standard**
King Mackerel	1	**2018 Benchmark**
Mutton Snapper	1	2020 Update
Red Grouper	1	2017 Standard
Red Porgy	1	**2018 Standard**
Red Snapper	1/3	2016 Benchmark; data issues limit future assessment
Scamp	1	2019 Research Track
Snowy Grouper	1	**2019 Standard**
Spanish Mackerel	1	**2019 Standard**
Spiny Lobster	1/3	2010 update,
Vermilion Snapper	1	**2017 Standard**
White Grunt	1	2021 Benchmark candidate; stock ID concern
Yellowtail Snapper	1	**2019 Benchmark**
Almaco Jack	2	not scheduled at this time
Atlantic Spadefish	2	not scheduled at this time
Banded Rudderfish	2	not scheduled at this time
Bar Jack	2	not scheduled at this time
Knobbed Porgy	2	not scheduled at this time
Lane Snapper	2	not scheduled at this time
Red Hind	2	not scheduled at this time
Silk Snapper	2	not scheduled at this time
Tomtate	2	not scheduled at this time
Wahoo	2	not scheduled at this time
Penaeid Shrimp	2	not scheduled at this time
Golden Crab	3	not scheduled at this time
Goliath Grouper	3	2015 attempt, multiple data issues
Nassau Grouper	3	not scheduled at this time
Speckled Hind	3	not scheduled at this time
Warsaw Grouper	3	not scheduled at this time
Wreckfish	3	2014 Benchmark

Level 1: High data collection priority, age-based assessment goal
Level 2: High data collection priority, data limited or non age-based assessment goal
Level 3: Management actions or biological traits impede typical assessment approaches