SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

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SEDAR (TBD)
South Atlantic Red Grouper
Terms of Reference

Council Approved: 09/15/2026

Stock Identification Terms of Reference

Workshop Goal: Review red grouper stock structure and unit stock definitions and consider whether changes are required.

1. Review information including genetic studies, growth patterns, movement and migration, existing stock definitions, otolith chemistry, oceanographic and habitat characteristics, prior SEDAR stock ID recommendations, and any other relevant information on stock structure.
    a. Evaluate the frequency and magnitude of recruitment coming from other regions such as the Gulf or areas to the south. Identify factors contributing to recent low recruitment.
    b. Update reproductive biology parameters and evaluate potential latitudinal variation in spawning characteristics.

2. Review regional stock structure differences considering the spatially separated fishery-dependent or fishery-independent catches. Compare CPUE trends spatially to determine if different spatial patterns are evident. Explore variation in exploitation and life-history characteristics at finer geographic scales where possible to inform data acquisition and assessment model and model configuration.

3. Make recommendations on biological stock structure and the assessment unit stock or stocks to be addressed and document the rationale behind the recommendations.

4. Discuss the strength of evidence in support of stock ID recommendations with particular attention on those that result in a mismatch of biological stock structure, assessment unit stock recommendations, and existing management unit boundaries.

5. Provide recommendations for future research on stock structure.

6. Prepare a report providing complete documentation of workshop recommendations and decisions.

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Data Workshop Terms of Reference

1. Review, discuss, and tabulate available life history information that is appropriate for use in a stock assessment model.
    a. Evaluate age, growth, natural mortality, and reproductive characteristics.
        i. Explore the validity of age data and methodology across fish age readers and facilities.
        ii. Explore evidence of changes in life history characteristics over time.
    b. Explore differences in growth parameters, spawning fractions, and fecundity data.
    c. Provide appropriate models and model parameters to describe population and stock specific (if warranted) growth, maturation, and fecundity by age, sex, or length as applicable.
    d. Evaluate and discuss the sources of uncertainty and error, and data limitations (such as temporal and spatial coverage, age error matrix) for each data source. Provide estimates or ranges of uncertainty for all life history information.
    e. Recommend the best measure of stock productivity (e.g. SSB vs total egg production) for use in the assessment stage.

2. Provide measures of population abundance that are appropriate for this stock assessment.
    a. Consider all available and relevant fishery-dependent and -independent data sources. Explore potential inclusion of new surveys and data sources to supplement SERFS that does not survey the southernmost extent of the red grouper range (e.g., Florida RVC surveys, South Atlantic Deepwater Longline, RELEASE, REEF diver survey, SMILE, Volunteer Fish Survey Project, etc.).
    b. Document all programs evaluated: address program objectives, methods, coverage, sampling intensity, and other relevant characteristics.
    c. Provide maps of fishery and independent survey coverage.
    d. Develop fishery and survey CPUE indices by appropriate strata (e.g., age, size, area, and fishery).
    e. Provide length and age composition data from fishery-independent surveys.
    f. Provide appropriate measures of uncertainty for the abundance indices to be used in stock assessment models.
    g. Document pros and cons of available indices regarding their ability to represent abundance.
    h. Categorize the available indices into one of three tiers: Suitable and Recommended, Suitable and Not Recommended, or Not Suitable.
    i. For recommended indices, document any known or suspected temporal patterns in catchability not accounted for by standardization.

3. Provide commercial catch statistics including both landings and discards in both pounds and number.

a. Evaluate and discuss the adequacy of available data for accurately characterizing landings and discards by fishery sector or gear.
b. Provide length and age distributions for both landings and discards if feasible.
c. Provide estimates of uncertainty around each set of landings and discard estimates.

4. Provide recreational catch statistics including both landings and discards in both pounds and number.
    a. Incorporate calibrated timeseries for recreational landings and discards using state surveys (e.g., FL-SRFS, etc.).
    b. Evaluate and discuss the adequacy of available data for accurately characterizing landings and discards by fishery sector or gear.
    c. Provide length and age distributions for both landings and discards if feasible.
    d. Provide estimates of uncertainty around each set of landings and discard estimates.

5. Recommend discard mortality rates for the fleets recommended by the panel.
    a. Review available research and published literature (e.g., RELEASE, NMFS Observer Program, Charter discard data).
    b. Provide estimates of discard mortality rate by fleet, depth, and other feasible or appropriate strata.
    c. Provide estimates of uncertainty around recommended discard mortality rates.
    d. Document the rationale for recommended rates and uncertainties.

6. Consider social and economic information for inclusion into the stock assessment as practicable.

7. Consider any known evidence regarding ecosystem, climate, species interactions (e.g., predation studies), habitat considerations, species range modifications (expansions or contractions), regime shifts, larval movement between stock boundaries, and/or episodic events (e.g., upwelling events, red tide) that would reasonably be expected to affect red grouper population dynamics and are appropriate for inclusion in the stock assessment (e.g., Larval Transport Modeling (*Karnauskas et al. 2022*)).

8. Provide recommendations for future research that will improve the stock assessment model.

9. Prepare a Data Workshop report providing complete documentation of workshop actions and decisions in accordance with project schedule deadlines.

Assessment Terms of Reference

1. Utilize the most appropriate assessment model and model configurations (based on Stock ID workshop), detailing the changes made between the SEDAR 53 assessment model and the proposed assessment model. Provide a model run using the SEDAR 53 assessment configuration including recent years data (following NMFS Procedure 01-101-11).

2. Consider new and updated information on life history, natural mortality, discard mortality, the stock-recruit relationship, commercial and recreational landings and discards from the data workshop. Document any changes or corrections made and provide updated input data tables.

    a. Provide commercial, recreational, and combined landings and discards in pounds and numbers.
    b. Incorporate calibrated timeseries for recreational landings and discards from revised MRIP-FES estimates. Consider MRIP recommended approaches for recreational catch data to reduce PSEs below 50%.
    c. Consider available and any updated methods for estimating natural mortality. Consider estimation of natural mortality within the stock assessment model.

3. Evaluate and document the following specific changes in input data or deviations from the previous assessment model:

    a. Incorporate recommended indices of abundance of Red Grouper including indices specific to the South Florida region, where SERFS does not sample.
    b. Evaluate the frequency and magnitude of recruitment coming from other regions such as the Gulf or areas to the south. Identify factors contributing to recent recruitment trends.
    c. Update reproductive biology parameters and evaluate total egg production vs spawning stock biomass. Examine potential latitudinal variation in spawning characteristics.
    d. Provide sensitivity analyses as needed to compare assessment results between new values in this assessment and values from SEDAR 53.

4. Update model parameter estimates and their variances, model uncertainties, estimates of stock status and management benchmarks, and provide the probability of overfishing occurring at specified future harvest and exploitation levels.

    a. Explore the use of recent recruitment trends with recruitment deviates instead of model-derived recruitment from the stock-recruit relationship. Determine an appropriate MSY proxy and timeseries for recruitment to be used in projections.
    b. Determine the best estimate to use as a management benchmark (e.g., direct estimate of MSY or a proxy). Include appropriate characterization of the uncertainty for the chosen management benchmark. If a proxy is chosen:
        i. Include sufficient justification for the decision to use a proxy.
        ii. Provide range of plausible proxy values and their associated uncertainties.
        iii. Provide run using the default proxy value or direct estimate of MSY (if available) as specified in the FMP.
    c. Provide F, yield, discards, biomass, SSB, and recruitment levels and associated uncertainty levels that correspond to MSY or its chosen proxy.

5. Compute short-term and long-term population projections as necessary to provide OFL estimates and ABC advice. Provide additional population projections as necessary to address overfishing or

overfished stock conditions (e.g. rebuilding). Address as many of the recommendations as possible of the South Atlantic SSC Catch Level Projections workgroup outlined on page 16 of the final workgroup report found here.

6. Recommend SEFSC reach out to SSC members, industry representatives, and outside technical experts, as needed, to review model development and provide guidance.

7. Schedule pre-decisional briefing (i.e. SSC "check-in") to review model development and discuss assessment uncertainties.

8. Develop a stock assessment report to address these TORs and fully document the input data, methods, and results. Discuss assessment outcomes, primary uncertainties, and any problems encountered during the assessment process, and address where possible the research recommendations and identified uncertainties from previous assessments and SSC review.

Review Workshop Terms of Reference

1. Evaluate the data used in the assessment, including a discussion of the strengths and weaknesses of data sources and decisions. Consider the following:
    a. Are data decisions made by the Data and Assessment processes justified?
    b. Are data uncertainties acknowledged, reported, and within normal or expected levels?
    c. Are data applied appropriately within the assessment model?
    d. Are input data series reliable and sufficient to support the assessment approach and findings?

2. Evaluate and discuss the strengths and weaknesses of the methods used to assess the stock, taking into account the available data. Consider the following:
    a. Are methods scientifically sound and robust? Do the methods follow accepted scientific practices?
    b. Are priority modeling issues clearly stated and addressed?
    c. Are assessment models configured appropriately and applied consistent with accepted scientific practices?
    d. Are the methods appropriate for the available data?

3. Evaluate the assessment findings with respect to the following:
    a. Are population estimates (model output – e.g. abundance, exploitation, biomass) reliable, consistent with input data and population biological characteristics, and useful to support status inferences?
    b. Is the stock overfished? What information helps you reach this conclusion?
    c. Is the stock undergoing overfishing? What information helps you reach this conclusion?
    d. Is there an informative stock recruitment relationship? Is the stock recruitment curve reliable and useful for evaluation of productivity and future stock conditions?
    e. Are the quantitative estimates of the status determination criteria for this stock appropriate for management use? If not, are there other indicators that may be used to inform managers about stock trends and conditions?

4. Evaluate the stock projections, addressing the following:
    a. Are the methods consistent with accepted practices and available data?
    b. Are the methods appropriate for the assessment model and outputs?
    c. Are the results informative and robust, and useful to support inferences of probably future conditions?
    d. Are key uncertainties acknowledged, discussed, and reflected in projection results?

5. Consider how uncertainties in the assessment, and their potential consequences, are addressed.
    a. Comment on the degree to which methods used to evaluate uncertainty reflect and capture all sources of uncertainty in the population, data sources, and assessment methods.
    b. Are the implications of uncertainty in technical conclusions clearly stated?

6. Consider the research recommendations provided by the Data and Assessment workshops and make any additional recommendations or prioritizations warranted.
    a. Clearly denote research and monitoring that could improve the reliability of, and information provided by, future assessments.
    b. Provide recommendations on possible ways to improve the SEDAR process.

7. Provide suggestions on improvements in data or modeling approaches which should be considered when scheduling the next assessment.

8. Prepare a Peer Review Summary of the Panel's evaluation of the stock assessment, addressing each Term of Reference. Develop a list of tasks to be completed following the workshop. Complete and submit the Peer Review Summary Report in accordance with project guidelines.