SEDAR

SouthEast Data, Assessment, and Review

4055 Faber Place Drive #201
North Charleston SC 29405

Phone (843) 571-4366
Fax (843) 769-4520
www.sefsc.noaa.gov/sedar/

SEDAR 41 Benchmark Assessment: South Atlantic Red Snapper and Gray Triggerfish

Terms of Reference

Terminal Year: 2013

Data Workshop Terms of Reference

1. Review stock structure and unit stock definitions and consider whether changes are required.
2. Review, discuss, and tabulate available life history information.
   - Evaluate age, growth, natural mortality, and reproductive characteristics.
   - Provide appropriate models to describe growth, maturation, and fecundity by age, sex, or length as applicable.
   - Evaluate the adequacy of available life-history information for conducting stock assessments and recommend life history information for use in population modeling.
   - Evaluate, discuss, and characterize the sources of uncertainty, and data limitations (such as temporal and spatial coverage) for each data source. Provide ranges and/or distributions of uncertainty for data sources used in the stock assessment models.
3. Recommend discard mortality rates.
   - Review available research and published literature.
   - Consider research directed at these species as well as similar species from the SE and other areas.
   - Provide estimates of discard mortality rate by fishery, gear type, depth, and other feasible or appropriate strata.
   - Include thorough rationale for recommended discard mortality rates.
   - Provide justification for any recommendations that deviate from the range of discard mortality provided in the last benchmark or other prior assessment.
   - Evaluate, discuss, and characterize the sources of uncertainty, and data limitations (such as temporal and spatial coverage) for each data source. Provide ranges and/or distributions of uncertainty for data sources used in the stock assessment models.
4. Provide measures of population abundance that are appropriate for stock assessment.
   - Consider and discuss all available and relevant fishery dependent and independent data sources.
   - Document all programs evaluated; address program objectives, methods, coverage, sampling intensity, and other relevant characteristics.
   - Provide maps of fishery and survey coverage.

- Develop fishery and survey CPUE indices by appropriate strata (e.g., age, size, area, and fishery) and include measures of precision and accuracy.
- Discuss the degree to which available indices adequately represent fishery and population conditions.
- Recommend which data sources adequately and reliably represent population abundance for use in assessment modeling.
- Evaluate, discuss, and characterize the sources of uncertainty, and data limitations (such as temporal and spatial coverage) for each data source. Provide ranges and/or distributions of uncertainty for data sources used in the stock assessment models.
- Complete the SEDAR index evaluation worksheet for each index considered.
- Rank the available indices with regard to their reliability and adequacy for use in assessment modeling.

5. Provide commercial catch statistics, including both landings and discards in both pounds and number.
   - Evaluate and discuss the adequacy of available data for accurately characterizing harvest and discard by species and fishery sector or gear.
   - Evaluate, discuss, and characterize the sources of uncertainty, and data limitations (such as temporal and spatial coverage) for each data source. Provide ranges and/or distributions of uncertainty for data sources used in the stock assessment models.
   - Provide length and age distributions for both landings and discards if feasible.
   - Provide maps of fishery effort and harvest by species and fishery sector or gear.
6. Provide recreational catch statistics, including both landings and discards in both pounds and number.
   - Evaluate and discuss the adequacy of available data for accurately characterizing harvest and discard by species and fishery sector or gear.
   - Evaluate, discuss, and characterize the sources of uncertainty, and data limitations (such as temporal and spatial coverage) for each data source. Provide ranges and/or distributions of uncertainty for data sources used in the stock assessment models.
   - Provide length and age distributions for both landings and discards if feasible.
   - Provide maps of fishery effort and harvest by species and fishery sector or gear.
7. Provide recommendations for future research in areas such as sampling, fishery monitoring, and stock assessment. Include specific guidance on sampling intensity (number of samples including age and length structures) and appropriate strata and coverage.
8. Prepare the Data Workshop report providing complete documentation of workshop actions and decisions in accordance with project schedule deadlines (Section II. of the SEDAR assessment report).

Assessment Workshop Terms of Reference

1. Review any changes in data following the data workshop and any analyses suggested by the data workshop. Summarize data as used in each assessment model. Provide justification for any deviations from Data Workshop recommendations.
2. Develop population assessment models that are compatible and appropriate with available data. Document input data, model assumptions and configuration, and equations for each model considered.
3. Provide estimates of stock population parameters, including:
   - Fishing mortality, abundance, biomass, selectivity, stock-recruitment relationship, and other parameters as necessary to describe the population.
   - Appropriate measures of precision for parameter estimates.
4. Characterize uncertainty in the assessment and estimated values
   - Consider uncertainty in input data, modeling approach, and model configuration.
   - Provide a continuity model consistent with the prior assessment configuration, if one exists, updated to include the most recent observations. Alternative approaches to a strict continuity run that distinguish between model, population, and input data influences on findings, may be considered.
   - Consider and include other sources of uncertainty as appropriate for this assessment
   - Provide appropriate statistical measures of model performance, reliability, and 'goodness of fit'
   - Provide measures of uncertainty for estimated parameters
5. Provide estimates of yield and productivity.
   - Include yield-per-recruit, spawner-per-recruit, and stock-recruitment models.
6. Provide estimates of population benchmarks or management criteria consistent with the available data, applicable FMPs, proposed FMPs and Amendments, other ongoing or proposed management programs, and National Standards.
   - Evaluate existing or proposed management criteria as specified in the management summary
   - Recommend proxy values when necessary
7. Provide declarations of stock status relative to management benchmarks, or alternative data poor approaches if necessary.
8. Provide uncertainty distributions of proposed reference points and stock status metrics that provides the values indicated in the management specifications. Include probability density functions for biological reference point estimates and population metrics (e.g., biomass and exploitation) used to evaluate stock status.
9. Project future stock conditions (biomass, abundance, and exploitation; including probability density functions) and develop rebuilding schedules if warranted; include estimated generation time. Stock projections shall be developed in accordance with the following:

   A) If stock is overfished:

   F=0, F=current, F=Fmsy, Ftarget

F=Frebuild (max exploitation that rebuilds in greatest allowed time)

B) If stock is overfishing

F=Fcurrent, F=Fmsy, F= Ftarget

C) If stock is neither overfished nor overfishing

F=Fcurrent, F=Fmsy, F=Ftarget

D) If data-limitations preclude classic projections (i.e. A, B, C above), explore alternate models to provide management advice.

10. Provide recommendations for future research and data collection.
    - Be as specific as practicable in describing sampling design and sampling intensity.
    - Emphasize items which will improve future assessment capabilities and reliability.
    - Consider data, monitoring, and assessment needs.
11. Complete the Assessment Workshop Report in accordance with project schedule deadlines (Section III of the SEDAR Stock Assessment Report).

Review Workshop Terms of Reference

1. Evaluate the data used in the assessment, including discussion of the strengths and weaknesses by addressing the following:
   a) Are data decisions made by the DW and AW sound and robust?
   b) Are data uncertainties acknowledged, reported, and within normal or expected levels?
   c) Are data applied properly 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 and addressing the following comments.
   a) Are methods scientifically sound and robust?
   b) Are assessment models configured properly and used consistent with standard practices?
   c) Are the methods appropriate for the available data?
3. Evaluate the assessment findings with respect to the following:
   a) Are abundance, exploitation, and biomass estimates 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 reliable? If not, are there other indicators that may be used to inform managers about stock trends and conditions?
4. Evaluate the stock projections, including discussing strengths and weaknesses and 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 probable future conditions?
   d) Are key uncertainties acknowledged, discussed, and reflected in the projection results?
5. Consider how uncertainties in the assessment, and their potential consequences, are addressed.
   - Comment on the degree to which methods used to evaluate uncertainty reflect and capture the significant sources of uncertainty in the population, data sources, and assessment methods.
   - Ensure that the implications of uncertainty in technical conclusions are clearly stated.

6. Consider the research recommendations provided by the Data and Assessment workshops and make any additional recommendations or prioritizations warranted.
   - Clearly denote research and monitoring that could improve the reliability of, and information provided by, future assessments.
   - Provide recommendations on possible ways to improve the SEDAR process.
7. Provide guidance on key improvements in data or modeling approaches which should be considered when scheduling the next assessment.
8. Prepare a Peer Review Summary summarizing the Panel's evaluation of the stock assessment and 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 the project guidelines.