Center for Independent Experts Independent Peer Reviewer Report of the South Atlantic Gray Triggerfish Research Track Stock Assessment

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Executive Summary

1. This report provides an independent peer review of the 2024 South Atlantic Gray Triggerfish Research Track Stock Assessment. The review workshop was held in person 12th March to 14th March and was attended by three CIE reviewers and two reviewers from the South Atlantic Fishery Management Council Scientific and Statistical Committee (SAFMC SSC).
2. The review panel supported the decisions made by the data workshop (DW) and assessment workshop (AW). Available data comprised landings and discard time series from commercial and recreational fleets, relative abundance indices from commercial CPUE and an independent trap (and video) survey as well as age compositions and length compositions. These data are sufficient to support the assessment method utilized.
3. The assessment used the Beaufort Assessment Model (BAM), a statistical age-structured population model which is appropriate for the data available because it can integrate a range of different data types. Fits to age and length frequency data were reasonable and retrospective analyses gave no cause for concern.
4. Fits to the single fishery-independent abundance index used, a combined index of the Southeast Reef Fish Survey (SERFS) chevron traps survey and related chevron trap video survey, were also reasonable. Fisheries-dependent indices were also available but not used. The reasons for their exclusion were sound but need to be explained in an addendum to the AW report.
5. Spawning potential was modelled as numbers of eggs spawned rather than the more conventional spawning stock biomass (SSB), although the shorthand 'SSB' was retained. The approach allows the effect of age structure on reproductive output to be reflected in setting SSB reference points and stock status and was approved by the review panel.
6. A comprehensive set of sensitivity runs were completed. These showed trends in summary quantities such as F and SSB to be robust to changes in parameter settings and model configurations. An exception was removal of the effect of age structure on reproductive output. This emphasized the importance of both the estimates of batch fecundity and number of batches per year and the age frequencies supplied to the model.
7. It was not possible to estimate steepness in the Beverton-Holt stock recruitment function. It was fixed at the mean recruitment at unfished equilibrium and year class strengths relative to the mean estimated. This required reference points to be based on a MSY proxy. The panel agreed with the use of mean recruitment and the MSY proxy chosen ($F_{40\%}$).
8. Changes in the value of natural mortality (*M*) scaled the values of SSB and F (a common feature of assessments), including with respect to reference points. M was based on a meta-analysis and the oldest recorded age, therefore making assessment outcomes sensitive to the oldest recorded age. The panel questioned why the oldest recorded age submitted to the DW had not been used. The explanation was accepted and therefore the oldest age used by the assessment accepted. The panel noted dorsal spines used for aging are to be re-read using a technique introduced since 2015 and perceptions of oldest age may change as a result.
9. A large number of recommendations for future work had been made by the DW and added to by the AW with no apparent prioritization. The review panel attempted to prioritize the existing recommendations and also to group them into work that could be achieved relatively quickly or that would need to be conducted over a longer term.

10. New recommendations from the review panel and this reviewer are

- Further investigate the geographical limits of the unit stock.
- Examine current fishery independent surveys north of the North Carolina – Virginia border for potential useful information on Gray Triggerfish.
- Conduct studies to refine knowledge on age-varying batch fecundity, spawning frequency, and timing (length) of the spawning season.
- Conduct studies of fish behavior in and around the traps used in the SERFS chevron traps survey to investigate processes affecting trap catch rates and any potential non-linear relationship with Gray Triggerfish abundance.
- Include production of short-term projections into the terms of reference of research track assessments.
- Test for recent trends in recruitment (from the model results). If a trend is detected, investigate basing the deterministic recruitment value used in the intermediate years of projections on means from a period close to the terminal year.
- Perform short-term projections from each terminal year of retrospective analysis runs, to see if projections are like the eventual model estimates based on data in later years, i.e., conduct hindcasting.
- Complement the retrospective analysis results with figures using the Mohn's ρ statistic.
- Consider projections based on assumptions about future removals.

11. The Review Panel noted that the availability of Data Workshop Lead(s) at the RW would have been helpful in conducting the review. They are the best placed to present the data, clarify data issues, and answer data input related questions. With only the lead assessor presenting, there is a natural focus on decisions made regarding assessment model configuration and a danger the veracity of the input data receives insufficient attention.

12. The assessment represents a thorough and high-quality analysis and is suitable for carrying forward to an operational assessment.

Introduction

The SouthEast Data, Assessment, and Review (SEDAR) is the cooperative process by which stock assessment projects are conducted in the NMFS Southeast Region. SEDAR was initiated to improve planning and coordination of stock assessment activities and to improve the quality and reliability of assessments. SEDAR 82 is a CIE research track assessment review conducted for Atlantic Gray Triggerfish.

The previous stock assessment for Atlantic Gray Triggerfish (*Balistes Capriscus*) in the south Atlantic (SEDAR 41) used the Beaufort Assessment Model (BAM) as primary assessment model. This statistical age-structured population model fit to landings and discard time series from commercial and recreational fleets, relative abundance indices from commercial CPUE and an independent trap (and video) survey as well as age compositions, and length compositions. At the review workshop for SEDAR 41 an error in the age composition data input was identified and, although revised models were run, there was insufficient time to address apparent difficulties in fitting to the survey and associated estimates of abundance in the first year of the assessment series. The assessment was therefore not accepted for the basis for advice, however model specification appeared basically sound. The assessment model presented at SEDAR 82 was a development of the previous model.

Prior to the review workshop (RW) for SEDAR 82 meeting the draft Assessment Workshop (AW) and Data Workshop (DW) reports were received and reviewed. A list of additional documents was also received and reviewed as appropriate (Appendix 1).

The Research Track Stock Assessment Peer Review Panel met in person at Atlantic Beach, North Carolina March 11 – March 14, 2024. The Panel was composed of three scientists selected by the Center for Independent Experts (CIE): Mark Dickey-Collas (Independent contractor, London, UK), Steven Holmes (National Institute of Water and Atmospheric Research, New Zealand), and Larry Jacobson (Independent contractor, NC) and two South Atlantic Fishery Management Council Scientific and Statistical Committee (SAFMC SSC) members: Anna Markwith and Alexei Sharov. The Panel was chaired by Marcel Reichert of the Gulf of Mexico Fishery Management Council SSC (GMFMC SSC).

The list of materials provided for review is given in Appendix 1. The Performance Work Statement for CIE reviewers is provided in Appendix 2 and the list of attendees in Appendix 3.

Comments by ToR

The review workshop (RW) was well organized with material available in advance of the meeting. It was conducted in a positive and constructive manner and the analytical team were very cooperative and responsive to requests.

The assessment represents a thorough and high-quality analysis and, notwithstanding recommendations under ToR 4b, is suitable for carrying forward to an operational assessment.

TOR 1. Evaluate the data used in the assessment. Consider the following:

a) Are data decisions made by the DW and AW justified?

b) Are data uncertainties acknowledged, reported, and properly characterized?

c) For model derived data and parameter inputs (e.g., indices of abundance, life history quantities) are the methods appropriate?

TOR 1. a)

The data available for this assessment consisted of reported landings from the commercial handline fisheries, estimates of catch derived from surveys for the recreational fleets, length and age compositions covering some years from the commercial and recreational catches and also from a fisheries-independent survey and both fisheries-independent and fisheries-dependent indices. Information on growth were obtained external to the model and a natural mortality estimate (*M*) derived from standard methods based on life history characteristics and meta-analyses. Discard mortality rate was also available.

The data workshop (DW) had recommended four indices of abundance for potential use in the assessment. These consisted of two fishery-independent indices, the Southeast Reef Fish Survey (SERFS) chevron traps survey and related chevron trap video survey, and two fishery-dependent indices. The SERFS trap and video indices were combined into a single index using an averaging approach, which is reasonable given the indices are paired (the video cameras are mounted on the traps used for the trap index). The fishery-dependent indices were not used. The assessment analysts explained how the fishery-dependent indices 'overlapped' the SERFS index in terms of age range of fish and geographic range and were therefore not providing information missing from the SERFS index. Given this and concerns over potential difficulty to quantify changes in catchability over time and a desire not to increase uncertainty in the status of the resource, the decision was taken to concentrate on the single index. I consider this decision is sound.

For the commercial and recreational landings and discards data, a very low CV was assumed which effectively treated these data as constants. It was the review panel's understanding the model was configured this way to ensure convergence. Data providers provided CVs associated with landings which were used to generate bootstrap data sets during the uncertainty analysis. The work to characterize uncertainty showed model results to be robust in estimates of the trend in summary population quantities such as SSB and fishing mortality. Given these results it may be possible to configure the model with more realistic input CVs for the landings and/or discards.

Extracting and aging Gray Triggerfish otoliths is slow and difficult. To age sufficient fish for representative age distributions, ageing based on the first dorsal spine is used. The initial spine ageing technique was only considered reliable up to age 5, but a revised technique allows reliable ageing up to age 8. In the presented assessment, ages 1 to 5+ were used between 1982 and 2014 and ages 1 to 8+ from 2015. A contribution from Walt Rogers explained how spines collected before 2015 and aged 5+ will be re-read using the revised technique. The review panel supported this initiative. Bar plots showing numbers at age in successive years from the post 2015 data showed that large year classes were tracked by the age distribution data to a reasonable degree. Increasing the age range to 1 to 8+ for earlier years should provide enhanced information for model

fitting. The review panel report lists parameters that will need to be re-examined because of the new age data, including maximum age.

The Review Panel noted that a maximum age of 16 years was chosen rather than the 21 years reported in Shervette & Hernandez (2022). The choice of maximum age is important because natural mortality (*M*) is derived using maximum age. Also, the assessment model results for both biomass and fishing mortality, including their ratio to reference point values, are sensitive to the value of *M*. It was explained that the 21-year-old fish had been aged using an otolith but cross verification using the first dorsal spine had not been possible, also that no other fish had been aged older than 16. Given concerns that the 21-year-old fish might be an outlier (or incorrectly aged), the choice of maximum age seemed reasonable.

All data decisions were justified but the panel identified cases where explanations for the decisions were lacking.

- The decision to not use the two fishery-dependent indices was not explained in the DW or AW reports or RW presentations. The reasoning was explained during the review and accepted. The panel requested text be added as an addendum to the SEDAR 82 report.
- The first data point in the fishery-independent index had been dropped. The reasons were explained to the panel (an abundance value believed to be uncharacteristically low because of the effects of Hurricane Hugo) but not in the DW or AW reports.
- The panel noted that the DW report mentioned dimorphic growth but the assessment used a single, combined sex growth curve. Limitations in the data for forming growth curves for individual sexes is covered in the DW report but a clear explanation for use of a joint sex growth curve was lacking from the AW report and the RW presentation.

TOR 1. b)

Data uncertainties were reported within the DW report and characterised well through use of the Monte Carlo/Bootstrap Ensemble (MCBE) approach (see under ToR 3a). Consideration of data uncertainties were possibly underrepresented in the RW because only the analytical team responsible for the assessment model were present at the meeting (see under ToR 5).

TOR 1. c)

The assessment was sensitive to estimates of natural mortality (*M*), which is common. An age-dependent but time-invariant estimate of *M* was determined applying the results from a published meta-analysis approach using growth parameters and maximum observed age. As noted above, the review panel asked why the maximum age observed (21 years) had not been used but rather the next oldest age (16 years). The explanation that the 21-year-old had only been aged by one aging method (otolith) and that no fish had been aged 17 to 20 seemed reasonable. The meta-analysis assumed the 'oldest age' is an age attained by 1.5% of the population, but the assessment analyst explained that, in practise, the oldest observed age tends to be used.

Spawning potential was modelled in terms of the numbers of eggs rather than spawning stock biomass (SSB). Egg production was defined as the fraction mature females at age multiplied by batch fecundity (number of eggs), multiplied by the number of spawning events per year.

Sufficient data seems to be available to estimate these components. Batch fecundity was computed as a linear function of fork length. There was some surprise in the review panel that the relationship was linear with rather than a power function, however reference to the original study by Lang and Fitzhugh (2014; SEDAR41-RD33), shows that a linear fit to the data is reasonable.

Recruitment was incorporated using a mean recruitment model. The AW report explains how the steepness parameter for the Beverton–Holt spawner–recruit model could not be estimated. Therefore, although the assumption for the mean recruitment model that recruitment is independent of spawning biomass must be invalid for extremely low values of spawning biomass, this modelling assumption is reasonable. A consequence is an inability to estimate a maximum sustainable yield fishing mortality F_{MSY}, but it seems better to acknowledge this and make use of an F_{MSY} proxy than to resort to an assumed recruitment steepness.

TOR 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 the methods appropriate for the available data?
b) Are assessment models configured properly and used in a manner consistent with standard practices?
c) Were modeling issues clearly identified and addressed? If not, recommend potential methods for addressing these issues.

TOR 2. a)

The assessment was based on the Beaufort Assessment Model (BAM), which is an integrated statistical catch at age model that has been used by the SEFSC for stock assessment of a variety of stocks in the South Atlantic and which has been published in peer reviewed literature. The model is appropriate when age structure information is available. The review panel asked to see age frequency histograms to have a better appreciation of the quality of the age data. It was seen that the age composition data showed some year-class signals.

The model allows the inclusion of information on size structure of catches and surveys, fishery dependent and independent indices of abundance, and life history parameters (growth, natural mortality, maturity, fecundity). For the Gray Triggerfish assessment the model was configured following standard practice with high precision given to catch data, Dirichlet-Multinomial weighting given to composition data, and reweighting applied to the abundance index. I agree with the rest of the Review Panel that the modeling struck a good balance between parsimony and realism and did not estimate parameters for which there is too little information in the data.

Rather than SSB, the assessment uses numbers of eggs as the measure of reproductive potential. Egg production was defined as the fraction of mature females multiplied by batch size multiplied by the number of spawning events per year summed over all females in the population. I consider there are sufficient data to estimate the maturity ogive, and the relationship between age and batch fecundity and number of batches per year.

In addition to the BAM model, an Age Structured Production Model (ASPM) was used for supplementary analyses to compare with the primary statistical catch-at-age model. The ASPM used was a direct modification of the full BAM, where age-structure is still represented but age-dependent processes and dynamics are fixed, i.e., the ASPM does not fit age and length composition data and deviations from the mean recruitment are not estimated. Running the ASPM proved useful because results highlighted the importance of age and length composition in BAM based estimates.

TOR 2. b)

The assessment model was configured and used in an appropriate manner.

The start year of the model (1982) was appropriate. Although removals of Gray Triggerfish occurred before 1982, the volume of removals was small and the data from these earlier years is considered less reliable. In addition, the sensitivity run altering the initial fishing mortality value, F_{init}, showed this parameter had almost no effect on model trajectories after the initial 10 years of the time series.

It was appropriate to use a constant recruitment assumption. Figure 36 of the assessment report clearly showed a lack of discernable stock-recruit relationship over the range of spawning stock values observed to date.

The functional forms used for selectivity for landings and discards seemed reasonable. Only a single time block was used in all cases. It was explained in the AW report that multiple time blocks associated with management measures (size limits) had been tried in the base model development but had not led to worthwhile model improvement. It would have been good to have seen this illustrated at the RW. Where length compositions of discards were available, landings and discards were modelled separately. In a previous SEDAR review (SEDAR 68) it was found assessment results were comparable whether discards were modelled separately or combined with landings. It may be valuable to test this option in future Gray Triggerfish assessments as it allows for a more parsimonious model.

For biological reference points the assessment used $F_{40\%}$ (the fishing mortality that reduces reproduction per recruit to 40% of the unfished level) as a proxy for F_{msy}. $F_{40\%}$ is a well-known proxy for F_{msy} and the justification for using $F_{40\%}$ rather than $F_{30\%}$ was well made. That being said, the simulation work that supports $F_{40\%}$ as a suitable reference point used spawning biomass instead of egg production in calculations. For Gray Triggerfish, reproductive output per unit weight increases with age, i.e. the relationship between spawning biomass and reproductive potential is not constant with age. This potentially implies a lower stock biomass at the target fishing mortality using egg production in place of spawning biomass for spawning potential.

TOR 2. c)

Conducting short term projections was not required under the AW terms of reference but the assessment analysts conducted short term projections to allow a review of the methodology. The review panel was grateful for this initiative and I believe short term projections should be required under research track assessments for the purpose of reviewing the approach applied. The projections assumed no long-term trend in recruitment. Future work could include a test for a trend or regime shift in modelled recruitment from the historic assessment. If a trend (or regime shift) were identified, this would imply using only more recent recruitment estimates for projections.

As part of the assessment, sensitivity runs were conducted, altering one parameter value or aspect of model configuration at a time. The coverage of the sensitivity runs was comprehensive, and they were very useful.

The assessment included retrospective analyses. The review panel considered that results showed no concerning patterns. For the next assessment I would recommend also presenting the results using Mohn's ρ statistic, which measures the relative difference between an estimated quantity from the reduced time-series and full time-series. An example figure using Mohn's ρ is Figure 4.GB6 from the 2023 Research Track Assessment of Atlantic Cod.

As a review panel we recommended that it would be useful to include short term projections as part of the retrospective analyses to see to what extent projected estimates are similar to eventual model estimates based on data in later years (hindcasting).

The review panel noted the fishery-independent abundance index had a flatter trajectory than the biomass time series from the assessment model, which showed a declining trend. The results from the Age Structured Production Model (ASPM) indicated the difference was from signals in the age composition data. This raised concerns of a possible conflict between the fishery-independent abundance index and the age compositions, and the review panel requested additional analyses, altering the relative weighting of the abundance index and age compositions. The additional analyses illustrated that peaks in estimated recruitment could be in different years in the earlier part of the time series depending on whether index or age distributions were upweighted, but the peaks aligned well in later years. Time series of SSB and SSB/SSB_{F40}, as well as the fit to the abundance index, were also shown to not change significantly with changes in these relative weightings. In conclusion, the two data sources were considered not in conflict, but the exercise highlighted the significance of using egg production as the indicator of reproductive potential.

The base model was also demonstrated estimates of strong recruitment for cohorts that showed higher abundance in the age frequency data.

TOR 3. Consider how uncertainties in the assessment are addressed.

a) Comment on the degree to which methods used to evaluate uncertainty reflect and capture the significant sources of uncertainty in the input data.
b) Comment on sources of uncertainty not accounted for and possible approaches for incorporating these sources into future assessments (e.g. ecosystem, management policies).

TOR 3. A)

The use of the Monte Carlo/Bootstrap Ensemble (MCBE) analysis appears a robust means of quantifying uncertainty in input data. In addition, the assessment analysts had employed the Age Structured Production Model (ASPM). The ASPM model tested the significance of estimating year class strengths to the results of the model.

Fits to the composition data were mostly good, although the highest proportions at length were underestimated (AW report Figures 6 and 14). The fit to the SERFS index was also reasonable, passing through the confidence interval of most data points. Interestingly the fitted data included the 1990 year, even though the observed data point had been excluded from the fitting process.

Uncertainty in the conditioning assumptions of the model were tested through sensitivity runs, altering one parameter value or aspect of the model configuration at a time. Although the number of possible permutations make it almost impossible to explore fully the range of uncertainty, the coverage of the sensitivity runs was comprehensive, and they were very useful. Of the tests conducted, the model was shown to be most sensitive to assuming batch fecundity and/or number of batches was not age dependent. This suggests that correctly identifying the age dependency of both factors to be highly important.

The effect of uncertainty in natural mortality (*M*) was tested using the sensitivity runs and found to be significant. The AW recommended investigating approaches to estimate *M* directly. One idea mentioned during the RW was the use of tagging studies concentrated on a sample of reefs. It was proposed this approach could be successful given the fact that adult Gray Triggerfish are believed to be sedentary as adults. The review panel supported the idea of direct estimation of *M*.

TOR 3. b)

Climate change is affecting various stocks in USA waters. Commercial catches of Gray Triggerfish north of the North Carolina, Virginia border have been at a very low level, but it is possible that an effect of climate change is rising water temperatures along the east USA coast and northern range expansion of southern species. The DW reported how Gray Triggerfish have been landed as far north as Massachusetts (albeit reported as unclassified Triggerfish), but the potential expansion of 'core' species range implies the need for fisheries-independent indices from further north than is used currently. The AW recommended the expansion of the SERFS trap survey (see ToR 4a).

There was discussion in the RW on whether the SERFS trap survey fully surveyed suitable Gray Triggerfish habitat. The current trap survey does not sample north of Cape Hatteras and south of the St. Lucie area and, especially to the south, this likely misses Gray Triggerfish habitat within the current management unit. Incomplete coverage of the full population area is less significant if the population density is essentially uniform across the species' range. If, however, any population

declines are first observed in the outer margins of a species' range, that decline will be missed if a survey is only conducted in the core area. It is unclear if the data from the trap survey has been analyzed to test for reductions in density at the margins of the survey frame.

The analytic team asserted that, within the geographic limits of the survey, all known areas of suitable habitat are surveyed but unmapped areas of suitable habitat may still exist. Ideally, a comprehensive mapping of bottom habitat would exist but in its absence the trap survey and analytic team are simply encouraged to take account of any new information on habitat composition that becomes available.

TOR 4. Provide, or comment on, recommendations to improve the assessment

a) Consider the research recommendations provided by the Data and Assessment workshops in the context of overall improvement to the assessment, and make any additional research recommendations warranted.

b) If applicable, provide recommendations for improvement or for addressing any inadequacies identified in the data or assessment modeling. These recommendations should be described in sufficient detail for application, and should be practical for short- term implementation (e.g., achievable within ~6 months). Longer-term recommendations should instead be listed as research recommendations above.

TOR 4. a)

The overall comment on the recommendations, related to the data workshop, is that there were too many. Ideally, future research should be prioritized in terms of what is most important to a stock assessment, namely, reliably estimating the status of a stock and its likely evolution in a short-term projection. To assist the SSC the review panel attempted to prioritize the recommendations into broad categories of high, medium, and low priority. The recommendations were also categorized into short term and longer-term research. Short term versus long term should not be confused with high priority versus low priority. Longer-term research could still be high priority, but simply requiring a longer time to complete. 'Short term' research recommendations would still be expected to be outside the remit of ToR 4. b). I agree with the priorities established. A figure (Figure 1) was produced for the review panel report and is repeated below.

New research recommendations made by the review panel were:

Short term: Consider alternative estimation methods for spawning potential.

The transition from SSB to an estimate of eggs spawned was demonstrated to have a significant effect on the perception of stock trends. Alternative treatments of existing data to examine if any produced a model with better fits to removals and/or age/length distributions was considered 'low hanging fruit' in terms of the time and expense required.

Short term: Test for nonlinear effects in survey indices.

The RW debated whether the traps used in the trap survey could become saturated with a consequent loss of signal in the abundance estimates. It was suggested techniques other

than confirmation of numbers within traps from the video component of the survey could be employed. One possibility is a study of fish behavior in and around the traps, like the one reported in Bacheler et al. (2013) for Black Seabass.

Longer term: Investigate surveys from north of the North Carolina, Virginia border.

The AW recommended expanding the SERFS trap survey further north and the review panel endorsed that recommendation. This is to test for a northward expansion of Triggerfish (a possible response to climate change). Survey series from north of the North Carolina, Virginia border may also contain information on changing range limits for this species.

The surveys may be useful in other ways. The lead analyst showed figures illustrating how the Northeast Fisheries Science Centre bottom trawl survey caught Gray Triggerfish over a wider range of locations in the fall than in the spring. Further investigation might reveal whether the fall survey captures newly settled fish not found by the spring survey.

Longer term: To test whether the current stock unit definition (Gulf of Mexico and South Atlantic) is justified.

Adult Triggerfish are considered sedentary and recruitment is from a common pelagic stage, however the current stock definition boundaries are defined according to jurisdictions of fishery management councils. Consideration of maps of fish density may suggest modified boundaries.

In addition: the geographic coverage of the SERFS survey was expanded to its current range from 2010. If the coverage has been effective even over the sampling frame, it should be possible to test for any movement in the center of gravity of the population within those boundaries (see Adams et al. 2018).

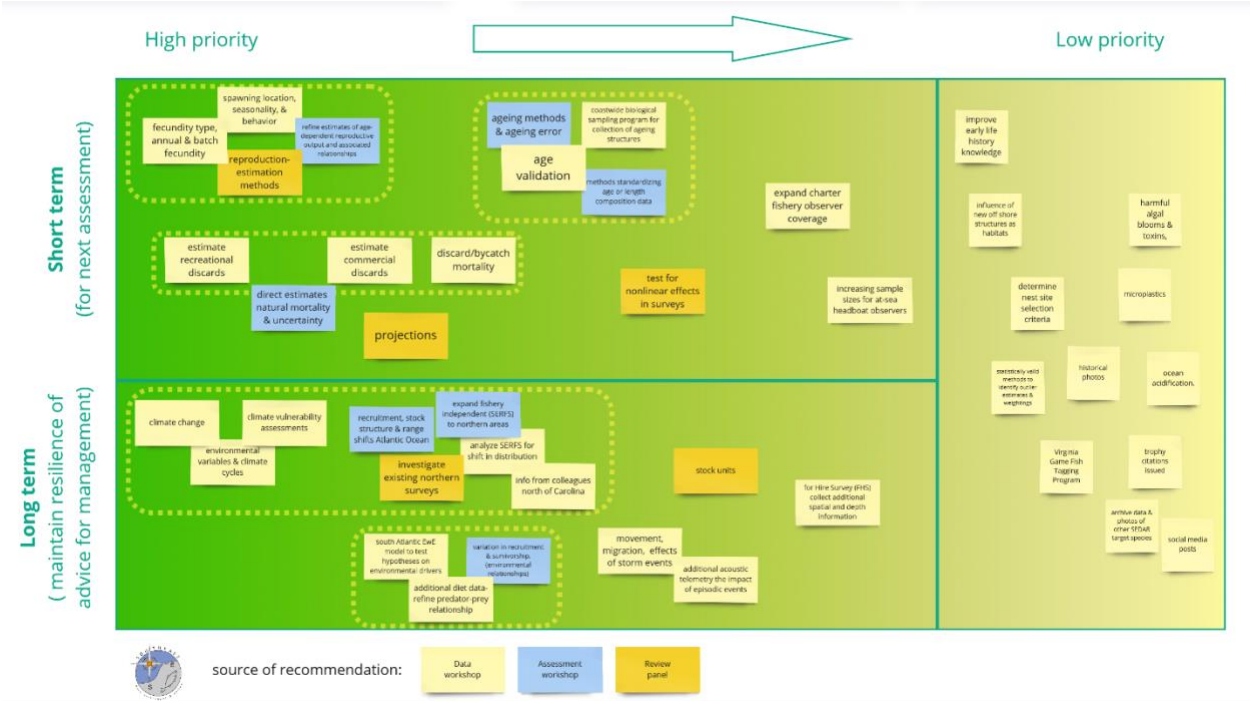

Figure 1: Short and long-term research and management recommendations.

TOR 4. b)

Recommendations from the review panel under this ToR are focused on short term projections.

- The short-term projections followed standard South Atlantic Management Council procedures by using mean recruitment at the virgin R_0 level in the year following the terminal year of the assessment. In the stochastic projections the expected annual recruitment value $\overline{R_y}$ is also calculated from the full time series of the replicate assessment runs. For future assessments, testing for recent trends in recruitment (from the model results) is recommended. If a trend were apparent, basing the deterministic recruitment value and calculation of $\overline{R_y}$ on means from a period close to the terminal year could be investigated.
- Short term projections could be performed from each terminal year of the retrospective analysis runs, to see if projections are like eventual model estimates based on data in later years, i.e., it may be informative to conduct hindcasting.

Additionally, I would recommend complementing the retrospective analysis results with figures using the Mohn's ρ statistic (see also under ToR 2c). It would also be good to include in figures of estimated projections some individual instances of projections, as was done in Figure 41 of the assessment report (for the estimated time series of $SSB/MSST_{F40}$ and F/F_{40}). The projections demonstrated were based on assumptions about F. They showed predicted outcomes if certain F values were achieved. It might also be informative for managers if projections based on assumptions about future removals were included, most importantly if removals stayed at current catch limits or at the mean of the most recent three years.

TOR 5. Provide recommendations on possible ways to improve the Research Track Assessment process.

The review panel was made aware that research track assessments may or may not continue going forwards (possible change back to benchmark assessments), however I consider the following comments would be relevant to either type of assessment.

It would be good to structure the Review Workshop such that there is a clearer separation between the presentation of the data and the assessment model. At SEDAR 82 all presentations (data used in the model, base model configuration, diagnostics and projections) were conducted in quick succession. The data workshop report had been made available to the review group ahead of the meeting, but I felt there was a degree of doubling back to issues of clarification or concern regarding data because there had been insufficient time for reviewers to digest information and from questions in the first instance. A pause for discussion after each element of the presentations would have been beneficial.

The review also would have benefitted from the participation of one or more members from the data workshop. The lead analyst responsible for the assessment model was present at the meeting. Understandably, this person was not always fully aware of the decision processes taken in compiling input data. In addition, aspects of the data workshop, e.g., ecosystem considerations,

including climate change effects, received little attention. Participation of data workshop member(s) could be in person or by webinar.

If a large number of unprioritized recommendations continue to be received from the data and/or assessment workshops in future SEDAR assessments, it is recommended that the review workshop perform a prioritizing exercise similar to that performed for SEDAR 82.

TOR 6 Prepare a Review Workshop Summary Report describing the Panel's evaluation of the Research Track stock assessment and addressing each Term of Reference.

The review workshop summary report was prepared by the review workshop chair and members of the review panel and submitted for inclusion in the full set of documents associated with SEDAR 82.

References

Adams C.F.; Alade L.A.; Legault C.M.; O'Brien L.; Palmer M.C.; Sosebee K.A. et al. (2018). Relative importance of population size, fishing pressure and temperature on the spatial distribution of nine Northwest Atlantic groundfish stocks. PLoS ONE 13(4): e0196583.https://doi.org/10.1371/journal.pone.0196583

Bacheler, N. M.; Schobernd, Z. H.; Berrane, D. J.; Schobernd, C. M.; Mitchell,W. A.; Geraldi, N. R. (2013). When a trap is not a trap: converging entry and exit rates and their effect on trap saturation of black sea bass (*Centropristis striata*). *ICES Journal of Marine Science, 70*: 873–882.

Shervette, V.R.; Hernández, J.R. (2022). Illuminating otoliths: new insights for life history of Balistes triggerfishes. SEDAR82-DW14

Appendix 1. Materials provided for review

SEDAR 82 South Atlantic Gray Triggerfish SECTION II: Introduction

SEDAR 82 South Atlantic Gray Triggerfish SECTION II: Data Workshop Final Report

SEDAR 82 South Atlantic Gray Triggerfish SECTION III: Assessment Report

SEDAR 82 South Atlantic Gray Triggerfish SECTION IV: Research Recommendations

Working Papers:

Assessment Workshop

SEDAR 82-AW01: South Atlantic U.S. gray triggerfish (*Balistes capriscus*) age and length composition from the recreational fisheries

SEDAR 82-AW02: South Atlantic U.S. gray triggerfish (*Balistes capriscus*) age and length composition from the commercial fisheries

SEDAR 82-AW03: Commercial Discard Estimation of South Atlantic Gray Triggerfish

Data Workshop

SEDAR 82-DW01: Report to SEDAR 82 Gray Triggerfish Research Track Panel: Data used in Morphometric Conversions in SEDAR 41

SEDAR 82-DW02: Summary of Management Actions for Gray Triggerfish (*Balistes capriscus*) from the South Atlantic as Documented within the Management History Database

SEDAR 82-DW03: Synopsis of Age Validation Study of Gray Triggerfish through Chemical Marking

SEDAR 82-DW04: Standardized video counts of southeast US Atlantic gray triggerfish (*Balistes capriscus*) from the Southeast Reef Fish Survey

SEDAR 82-DW05: Gray Triggerfish Fishery-Independent Index of Abundance and Length/Age Compositions in US South Atlantic Waters Based on a Chevron Trap Survey (1990-2021)

SEDAR 82-DW06: Evaluation and Limitations of MRIP Intercept Data for Developing a Gray Triggerfish Abundance Index

SEDAR 82-DW07: Exploratory data analysis and qualitative evaluation of the Stephens and MacCall subsetting method following increased management regulations in the South Atlantic headboat fishery

SEDAR 82-DW08: Nominal Length and Age distributions of Southeast U.S. Atlantic gray triggerfish (*Balistes capriscus*) from recreational and commercial fisheries

SEDAR 82-DW09: General Recreational Survey Data for Gray Triggerfish in the South Atlantic

SEDAR 82-DW10: Standardized catch rates of gray triggerfish (*Balistes capriscus*) from headboat at-sea-observer data

SEDAR 82-DW11: A Summary of Length Frequency and Hook Usage from the Size Distribution of Gray Triggerfish Discards recorded during Recreational Fishery Surveys in the South Atlantic

SEDAR 82-DW12: Correcting an error in Runde et al's (2019) estimates of discard survival by release condition, discard survival by depth, and overall discard survival of gray triggerfish in the southeastern US hook-and-line fishery.

SEDAR 82-DW13: Descriptions of Florida's Atlantic Coast Gray Triggerfish (*Balistes capriscus*) recreational fishery assessed using fishery-dependent survey data

SEDAR 82-DW14: Illuminating otoliths: new insights for life history of Balistes triggerfishes

Reference Documents:

SEDAR 82-RD01: Sedar 41 Stock Assessment Report South Atlantic Gray Triggerfish

SEDAR 82-RD02: Sedar 43 Stock Assessment Report Gulf Of Mexico Gray Triggerfish

SEDAR 82-RD03: Territoriality, Reproductive Behavior, And Parental Care In Gray Triggerfish, *Balistes Capriscus*, From The Northern Gulf Of Mexico

SEDAR 82-RD04: Validation Of Annual Growth-Zone Formation In Gray Triggerfish *Balistes Capriscus* Dorsal Spines, Fin Rays, And Vertebrae

SEDAR 82-RD05: Factors Affecting Estimates Of Size At Age And Growth In Grey Triggerfish *Balistes Capriscus* From The Northern Gulf Of Mexico

SEDAR 82-RD06: Population Structure, Connectivity, And Hylogeography Of Two Balistidae With High Potential For Larval Dispersal: *Balistes Capriscus* And *Balistes Vetula*

SEDAR 82-RD07: Genetic Variation Of Gray Triggerfish In U.S. Waters Of The Gulf Of Mexico And Western Atlantic Ocean As Inferred From Mitochondrial DNA Sequences

SEDAR 82-RD08: Spatial Connectivity In An Adult-Sedentary Reef Fish With Extended Pelagic Larval Phase

SEDAR 82-RD09: Behavior Of Gray Triggerfish *Balistes Capriscus* Around Baited Fish Traps Determined From Fine-Scale Acoustic Tracking

SEDAR 82-RD10: Fine-Scale Movement Patterns And Behavioral States Of Gray Triggerfish *Balistes Capriscus* Determined From Acoustic Telemetry And Hidden Markov Models

SEDAR 82-RD11: Age, Growth And Longevity Of The Gray Triggerfish, *Balistes Capriscus* (Tetraodontiformes: Balistidae),

From The Southeastern Brazilian Coast

SEDAR 82-RD12: Age, Growth, And Mortality Of Gray Triggerfish (*Balistes Capriscus*) From The Southeastern United States

SEDAR 82-RD13: Age Validation And Growth Of Gray Triggerfish, *Balistes Capriscus*, In The Northern Gulf Of Mexico

SEDAR 82-RD14: SEDAR43-WP-03: Reproductive Parameters Of Gray Triggerfish (*Balistes Capriscus*) From The Gulf Of Mexico: Sex Ratio, Maturity And Spawning Fraction

SEDAR 82-RD15: Refuge Spacing Similarly Affects Reef-Associated Species From Three Phyla

SEDAR 82-RD16: Sixteen Lessons From A 40-Year Quest To Understand The Mysterious Life Of The Grey Triggerfish

SEDAR 82-RD17: Trends In Relative Abundance Of Reef Fishes In Fishery-Independent Surveys In Waters Off The Southeastern United States

SEDAR 82-RD18: Feeding Habits Of 2 Reef-Associated Fishes, Red Porgy (*Pagrus Pagrus*) And Gray Triggerfish (*Balistes Capriscus*), Off The Southeastern United States

SEDAR 82-RD19: A Review Of The Biology And Fishery For Gray Triggerfish, *Balistes Capriscus*, In The Gulf Of Mexico

SEDAR 82-RD20: Movement Patterns Of Gray Triggerfish, *Balistes Capriscus*, Around Artificial Reefs In The Northern Gulf Of Mexico

SEDAR 82-RD21: Stock Structure Of Gray Triggerfish, *Balistes Capriscus*, On Multiple Spatial Scales In The Gulf Of Mexico

SEDAR 82-RD22: Age And Growth Of Gray Triggerfish (*Balistes Capriscus*) From A North-Central Gulf Of Mexico Artificial Reef Zone

SEDAR 82-RD23: The Reproductive Biology Of The Grey Triggerfish *Balistes Capriscus* (Pisces: *Balistidae*) In The Gulf Of Gabe`S (South-Eastern Mediterranean Sea)

SEDAR 82-RD24: Simplicity And Diversity In The Reproductive Ecology Of Triggerfish (*Balistidae*) And Filefish (*Monacanthidae*)

SEDAR 82-RD25: Age, Growth, And Reproduction Of Gray Triggerfish *Balistes Capriscus* Off The Southeastern U.S. Atlantic Coast

SEDAR 82-RD26: Gray Triggerfish Reproductive Biology, Age, And Growth Off The Atlantic Coast Of The Southeastern USA

SEDAR 82-RD27: Evolution Of Female Egg Care In Haremic Triggerfish, *Minecanthus Aculeatus*

SEDAR 82-RD28: Oogenesis And Fecundity Type Of Gray Triggerfish In The Gulf Of Mexico

SEDAR 82-RD29: A Snapshot Of The Age, Growth, And Reproductive Status Of Gray Triggerfish (*Balistes Capriscus*, Gmelin 1789) On Three Artificial Reefs In The Northwest Gulf Of Mexico

SEDAR 82-RD30: Age, Growth And Reproductive Biology Of 'the Gray Triggerfish (*Balistes Capriscus*) From The Southeastern United States, 1992-1997

SEDAR 82-RD31: Growth Of Grey Triggerfish, *Balistes Capriscus*, Based On Growth Checks Of The Dorsal Spine

SEDAR 82-RD32: Shelf-Edge Reefs As Priority Areas For Conservation Of Reef Fish Diversity In The Tropical Atlantic

SEDAR 82-RD33: SEDAR62-WP17: Do Sagittal Otoliths Provide More Reliable Age Estimates Than Dorsal Spines For Gray Triggerfish?

SEDAR 82-RD34: Low Discard Survival Of Gray Triggerfish In The Southeastern Us Hook-And-Line Fishery

SEDAR 82-RD35: Assessment Of Genetic Stock Structure Of Gray Triggerfish (*Balistes Capriscus*) In U.S. Waters Of The Gulf Of Mexico And South Atlantic Regions

SEDAR 82-RD36: Age And Growth Of Grey Triggerfish *Balistes Capriscus* From Trans-Atlantic Populations

SEDAR 82-RD37: Recruitment Of Age-0 Gray Triggerfish To Benthic Structured Habitat In The Northern Gulf Of Mexico

SEDAR 82-RD38: Description Of Reared Preflexion Gray Triggerfish, *Balistes Capriscus*, Larvae From The Northern Gulf Of Mexico

SEDAR 82-RD39: Competitive Interactions Between Gray Triggerfish (*Balistes Capriscus*) And Red Snapper (*Lutjanus Campechanus*) In Laboratory And Field Studies In The Northern Gulf Of Mexico

SEDAR 82-RD40: Snapper Grouper Advisory Panel Gray Triggerfish Fishery Performance Report October 2021

SEDAR 82-RD41: SSC Final Meeting Report May 3-5, 2016

SEDAR 82-RD42: Application of three-dimensional acoustic telemetry to assess the effects of rapid recompression on reef fish discard mortality

SEDAR 82-RD43: Spatial And Temporal Patterns Of Habitat Use By Fishes Associated With Sargassum Mats In The Northwestern Gulf Of Mexico

SEDAR 82-RD44: SEDAR 80- WP03: Photographic Guide to Extracting, Handling, and Reading Otoliths from *Balistes* Triggerfish Species

SEDAR 82-RD45: Queen triggerfish *Balistes vetula*: Validation of otolith-based age, growth, and longevity estimates via application of bomb radiocarbon

SEDAR 82-RD46: Larval and juvenile fishes associated with pelagic Sargassum in the north-central Gulf of Mexico

SEDAR 82-RD47: Fishes associated with pelagic Sargassum and open water lacking Sargassum in the Gulf Stream off North Carolina

SEDAR 82-RD48: SEDAR 41 -DW20: Standardized catch rates of gray triggerfish (*Balistes capriscus*) in the southeast U.S. from commercial logbook data

SEDAR 82-RD49: SEDAR 41 – DW13: Preliminary standardized catch rates of Southeast US Atlantic gray triggerfish (*Balistes capriscus*) from headboat logbook data

SEDAR 82-RD50: Representative Biological Sampling of Recreational Harvest on the East Coast of Florida to Improve Stock Assessments in the South Atlantic

SEDAR 82-RD51: A Survey to Characterize Harvest and Regulatory Discards in the Offshore Recreational Charter Fishery off the Atlantic Coast of Florida

SEDAR 82-RD52: SEDAR62 - WP11: The Effects of Hook Type on Gray triggerfish Catch per unit Effort

SEDAR 82-RD53: SEDAR 74 - DW12: SEFSC Computation of Uncertainty for General Recreational Landings-in-Weight Estimates, with Application to SEDAR 74 Gulf of Mexico Red Snapper

SEDAR 82-RD54: SEDAR68 - DW11: Estimates of Historic Recreational Landings of Scamp and Yellowmouth Grouper in the South Atlantic Using the FHWAR Census Method

SEDAR 82-RD55: SEDAR41-DW30: Discards of gray triggerfish (Balistes capriscus) for the headboat fishery in the US South Atlantic

SEDAR 82-RD56: Southeast Florida Coral Reef Fishery-Independent Baseline Assessment: 2012-2016 Summary Report

SEDAR 82-RD57: Ecosystem Status Report for the U.S. South Atlantic Region

SEDAR 82-RD58: Timing and locations of reef fish spawning off the southeastern United States

SEDAR 82-RD59: Virginia Game Fish Tagging Program Annual Report 2021

SEDAR 82-RD60: Report of the Working Group on Fisheries Ecology

SEDAR 82-RD61: Seaweed, seaweed everywhere

SEDAR 82-RD62: The Great Atlantic Sargassum belt

SEDAR 82-RD63: The establishment of a pelagic Sargassum population in the tropical Atlantic: Biological consequences of a basin-scale long distance dispersal event

SEDAR 82-RD64: Southeast Florida and South Carolina Anglers' Release Practices and Their Attitudes Toward Descending Devices

Presentations:

12 March 2024:

Background on the species and fisheries.	Nikolai Klibansky
Data and Base Model.	Nikolai Klibansky
Diagnostics and Projections.	Nikolai Klibansky

13 March 2024:

The result of adjusting relative weights between SERFS index and age compositions. Nikolai Klibansky

Appendix 2. Performance Work Statement for CIE reviewers for the Atlantic gray triggerfish research track stock assessments.

Performance Work Statement (PWS)
National Oceanic and Atmospheric Administration (NOAA)
National Marine Fisheries Service (NMFS)
Center for Independent Experts (CIE) Program
External Independent Peer Review
Under Contract #1305M219DNFFK0025

SEDAR 82 South Atlantic Gray Triggerfish Assessment Review

Background

The National Marine Fisheries Service (NMFS) is mandated by the Magnuson-Stevens Fishery Conservation and Management Act, Endangered Species Act, and Marine Mammal Protection Act to conserve, protect, and manage our nation's marine living resources based upon the best scientific information available (BSIA). NMFS science products, including scientific advice, are often controversial and may require timely scientific peer reviews that are strictly independent of all outside influences. A formal external process for independent expert reviews of the agency's scientific products and programs ensures their credibility. Therefore, external scientific peer reviews have been and continue to be essential to strengthening scientific quality assurance for fishery conservation and management actions.

Scientific peer review is defined as the organized review process where one or more qualified experts review scientific information to ensure quality and credibility. These expert(s) must conduct their peer review impartially, objectively, and without conflicts of interest. Each reviewer must also be independent from the development of the science, without influence from any position that the agency or constituent groups may have. Furthermore, the Office of Management and Budget (OMB), authorized by the Information Quality Act, requires all federal agencies to conduct peer reviews of highly influential and controversial science before dissemination, and that peer reviewers must be deemed qualified based on the OMB Peer Review Bulletin standards. (https://www.whitehouse.gov/wp-content/uploads/legacy_drupal_files/omb/memoranda/2005/m05-03.pdf)

Scope

The **SouthEast Data, Assessment, and Review (SEDAR)** is the cooperative process by which stock assessment projects are conducted in NMFS' Southeast Region. SEDAR was initiated to improve planning and coordination of stock assessment activities and to improve the quality and reliability of assessments.

SEDAR 82 will be a CIE assessment review conducted for South Atlantic Gray Triggerfish. There is one model to be reviewed. The review workshop provides an independent peer review of

SEDAR stock assessments. The term review is applied broadly, as the review panel may request additional analyses, error corrections and sensitivity runs of the assessment models provided by the assessment panel. The review panel is ultimately responsible for ensuring that the assessment is appropriate for use by fishery managers. The specified format and contents of the individual peer review reports are found in **Annex 1**. The Terms of Reference (ToRs) of the peer review are listed in **Annex 2**. The tentative agenda of the panel review meeting is attached in **Annex 3.**

Requirements

NMFS requires three (3) reviewers to conduct an impartial and independent peer review in accordance with the Performance Work Statement (PWS), OMB guidelines, and the ToRs below. The reviewers shall have a working knowledge in stock assessment, statistics, fisheries science, and marine biology sufficient to complete the primary task of providing peer-review advice in compliance with the workshop Terms of Reference fisheries stock assessment. The chair, who is in addition to the three reviewers, will not be provided by the CIE. Although the chair will be participating in this review, the chair's participation (e.g., labor and travel) is not covered by this contract.

Tasks for Reviewers

1) Two weeks before the peer review, the Project Contacts will send (by electronic mail or make available at an FTP site) to the CIE reviewers the necessary background information and reports for the peer review. In the case where the documents need to be mailed, the Project Contacts will consult with the contractor on where to send documents. CIE reviewers are responsible only for the pre-review documents that are delivered to the reviewer in accordance to the PWS scheduled deadlines specified herein. The CIE reviewers shall read all documents in preparation for the peer review.

2) Attend and participate in an in-person review meeting. The meeting will consist of presentations by NOAA and other scientists, stock assessment authors and others to facilitate the review, to answer any questions from the reviewers, and to provide any additional information required by the reviewers.

3) After the review meeting, reviewers shall conduct an independent peer review report in accordance with the requirements specified in this PWS, OMB guidelines, and ToRs, in adherence with the required formatting and content guidelines; reviewers are not required to reach a consensus.

4) Each reviewer shall assist the Chair of the meeting with contributions to the summary report.

5) Deliver their reports to the Government according to the specified milestones dates.

Foreign National Security Clearance

When reviewers participate during a panel review meeting at a government facility, the NMFS Project Contact is responsible for obtaining the Foreign National Security Clearance approval for

reviewers who are non-US citizens. For this reason, the reviewers shall provide requested information (e.g., first and last name, contact information, gender, birth date, passport number, country of passport, travel dates, country of citizenship, country of current residence, and home country) to the NMFS Project Contact for the purpose of their security clearance, and this information shall be submitted at least 30 days in accordance with the NOAA Deemed Export Technology Control Program NAO 207-12 regulations available at the Foreign National Guest website. The contractor is required to use all appropriate methods to safeguard Personally Identifiable Information (PII).

Place of Performance
The places of performance shall be at the cooperators facilities and Atlantic Beach, NC.

Period of Performance
The period of performance shall be from the time of award through May 2024. Each CIE reviewer's duties shall not exceed 14 days to complete all required tasks.

Schedule of Milestones and Deliverables: The contractor shall complete the tasks and deliverables in accordance with the following schedule.

Within two weeks of award	Contractor selects and confirms reviewers
2 weeks prior to the panel review	Contractor provides the pre-review documents to the reviewers
March 12-14, 2024	Panel review meeting
Approximately 3 weeks later	Contractor receives draft reports
Within 2 weeks of receiving draft reports	Contractor submits final reports to the Government

*The Chair's Summary Report will not be submitted to, reviewed, or approved by the Contractor.

Applicable Performance Standards
The acceptance of the contract deliverables shall be based on three performance standards: (1) The reports shall be completed in accordance with the required formatting and content; (2) the reports shall address each ToR as specified; and (3) the reports shall be delivered as specified in the schedule of milestones and deliverables.

Confidentiality and Data Privacy
This contract may require that services contractors have access to Privacy Information. Services contractors are responsible for maintaining the confidentiality of all subjects and materials and may be required to sign and adhere to a Non-disclosure Agreement (NDA).

Travel
All travel expenses shall be reimbursable in accordance with Federal Travel Regulations (http://www.gsa.gov/portal/content/104790) and all contractor travel must be approved by the COR prior to the actual travel. Any travel conducted prior to the receipt of proper written authorization from the COR will be done at the Contractor's own risk and expense. International travel is authorized for this contract. Travel is not to exceed $12,000.

Restricted or Limited Use of Data
The contractors may be required to sign and adhere to a non-disclosure agreement.

Project Contacts:
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Science and Statistics Program
South Atlantic Fishery Management Council
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Annex 1: Peer Review Report Requirements

1. The report must be prefaced with an Executive Summary providing a concise summary of the findings and recommendations, and specify whether the science reviewed is adequate.

2. The report must contain a background section, description of the individual reviewers' roles in the review activities, summary of findings for each ToR in which the weaknesses and strengths are described, and conclusions and recommendations in accordance with the ToRs.

   a. Reviewers must describe in their own words the review activities completed during the panel review meeting, including a brief summary of findings, of the science, conclusions, and recommendations.

   b. Reviewers shall discuss their independent views on each ToR even if these were consistent with those of other panelists, but especially where there were divergent views.

   c. Reviewers shall elaborate on any points raised in the summary report that they believe might require further clarification.

   d. Reviewers shall provide a critique of the NMFS review process, including suggestions for improvements of both process and products.

   e. The report shall be a stand-alone document for others to understand the weaknesses and strengths of the science reviewed, regardless of whether or not they read the summary report. The report shall represent the peer review of each ToR, and shall not simply repeat the contents of the summary report.

3. The report shall include the following appendices:

   Appendix 1: Bibliography of materials provided for review
   Appendix 2: A copy of this Performance Work Statement
   Appendix 3: Panel membership or other pertinent information from the panel review meeting.

Annex 2: Terms of Reference for the Peer Review

SEDAR 82 South Atlantic Gray Triggerfish Assessment Review Workshop Terms of Reference

Review Workshop Terms of Reference

1) Evaluate the data used in the assessment. Consider the following:
   a) Are data decisions made by the DW and AW justified?
   b) Are data uncertainties acknowledged, reported, and properly characterized?
   c) For model derived data and parameter inputs (e.g., indices of abundance, life history quantities) are the methods appropriate?

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 the methods appropriate for the available data?
   b) Are assessment models configured properly and used in a manner consistent with standard practices?
   c) Were modeling issues clearly identified and addressed? If not, recommend potential methods for addressing these issues.

3) Consider how uncertainties in the assessment are addressed.
   a) Comment on the degree to which methods used to evaluate uncertainty reflect and capture the significant sources of uncertainty in the input data.
   b) Comment on sources of uncertainty not accounted for and possible approaches for incorporating these sources into future assessments (e.g. ecosystem, management policies).

4) Provide, or comment on, recommendations to improve the assessment
   a) Consider the research recommendations provided by the Data and Assessment workshops in the context of overall improvement to the assessment, and make any additional research recommendations warranted.
   b) If applicable, provide recommendations for improvement or for addressing any inadequacies identified in the data or assessment modeling. These recommendations should be described in sufficient detail for application, and should be practical for short- term implementation (e.g., achievable within ~6 months). Longer-term recommendations should instead be listed as research recommendations above.

5) Provide recommendations on possible ways to improve the Research Track Assessment process.

6) Prepare a Review Workshop Summary Report describing the Panel's evaluation of the Research Track stock assessment and addressing each Term of Reference.

Annex 3: Tentative Agenda - SEDAR 82 South Atlantic Gray Triggerfish Assessment Review

March 12-14, 2024

Monday - Travel

Tuesday

8:30 – 9:00 a.m.	**Introductions and Opening Remarks** *- Agenda Review, ToR, Task Assignments* *- Take Breaks as needed throughout*	**Coordinator**
9:00 a.m. – 12:00 p.m.	**Assessment Presentations**	**TBD**
12:00 p.m. – 1:30 p.m.	**Lunch Break**	
1:30 p.m. – 5:00 p.m.	**Panel Discussion** *- Assessment Data & Methods* *- Identify additional analyses, sensitivities, corrections* *- Review additional analyses*	**Chair**
5:00 p.m. – 5:30 p.m.	**ToR Review & Daily Wrap-Up**	**Chair**
5:30 p.m. - 6:00 p.m.	**Public Comment**	**Chair**

***Tuesday Goals*:** Initial presentations completed, sensitivities and modifications identified.

Wednesday

8:30 a.m. – 12:00 p.m.	**Panel Discussion** *- Review additional analyses, sensitivities* *- Consensus recommendations and comments*	**Chair**
12:00 p.m. – 1:30 p.m.	**Lunch Break**	
1:30 p.m. – 5:00 p.m.	**Panel Discussion / Work Session**	**Chair**
5:00 p.m. – 5:30 p.m.	**Daily Wrap-Up**	**Chair**
5:30 p.m. - 6:00 p.m.	**Public Comment**	**Chair**

Wednesday Goals: Final sensitivities identified, preferred models selected, projection approaches approved, begin summary report drafts.

Thursday

8:30 a.m. – 12:00 p.m.	**Panel Discussion** *- Final sensitivities reviewed.* *- Projections reviewed.*	**Chair**
12:00 p.m. – 1:30 p.m.	**Lunch Break**	
1:30 p.m. – 5:00 p.m.	**Panel Discussion / Work Session** *- Review Consensus Reports*	**Chair**
5:00 p.m. – 5:30 p.m.	**Daily Wrap-Up**	**Chair**
5:30 p.m. - 6:00 p.m.	**Public Comment**	**Chair**

Thursday Goals: Complete assessment work and discussions. Final results available. Draft Summary Report reviewed.

<u>Friday - Travel</u>

Appendix 3. Attendees for March 12 – March 14 Atlantic gray triggerfish research track peer review meeting.

Atlantic Gray Triggerfish Research Track Peer Review Attendance
March 12 – March 14, 2024

Review Panel

Marcel Reichert (Chair) ..... GMFMC SSC
Mack Dickey-Collas ..... CIE Reviewer
Steven Holmes ..... CIE Reviewer
Larry Jacobson ..... CIE Reviewer
Anna Markwith ..... SAFMC SSC
Alexei Sharov ..... SAFMC SSC

Analytic Team

Nikolai Kilbansky ..... NMFS SEFSC
Erik Williams ..... NMFS SEFSC

Council Representation

Kerry Marhefka ..... South Carolina

Staff

Julie A Neer ..... SEDAR
Chip Collier ..... SAFMC Staff
Judd Curtis ..... SAFMC Staff

Workshop Observers

Jie Cao ..... NC State
Walt Rogers ..... NMFS SEFSC
Amy Schueller ..... NMFS SEFSC
Matt Vincent ..... NMFS SEFSC

Workshop Observers via Webinar

Manuel Coffill-Rivera .....
Michele Ritter ..... SAFMC Staff
Michael Schmidtke ..... SAFMC Staff
Mclean Seward ..... NC DNR
Meredith Whitten ..... NC DNR