Independent Peer Review Report of the SEDAR 82 Gray Triggerfish Stock Assessment Review

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Prepared for Center for Independent Experts
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DickeyCollas Marine
Science For Sustainable Sea & Ocean Management

Contents

Executive summary

A review of research track assessments for Gray Triggerfish was held on March 11-14, 2024, in Atlantic Beach, NC. The Review Panel consisted of Marcel Reichert (Chair – SAFMC SSC), Anne Markwith (SAFMC SSC), Alexei Sharov (SAFMC SSC), Steven Holmes (CIE), Mark Dickey-Collas (CIE), and Larry Jacobson (CIE).

The data, analyses and stock modelling presented were part of a 'Research Track Stock Assessment'. The results were not meant to be a quantitative basis for management recommendations as yet, as they did not include the most recent data. The review followed on from a data workshop (DW) and an assessment workshop (AW).

The panel supported the decisions made by the data workshop and assessment workshop. Available data comprised landings, estimates of discards, one fishery independent survey which combined two components (trap and TV), and age and length compositions. It also included fecundity estimates of females. These data are sufficient to support the assessment methods for the stock.

In both assessments the landings data are assumed to be known with very high precision. The assessment used the Beaufort Assessment Model (BAM) which is appropriate for the data available as it can integrate a range of different data types.

The data decisions made by the DW and AW were justified. The data uncertainties were acknowledged, reported, and properly characterized. The model derived data and parameter inputs and the methods were appropriate.

The methods to evaluate uncertainty described and captured the sources of uncertainty in the input data. The assessment and the metrics derived from the assessment assume stability in the long-term productivity and distribution of the stock. A number of issues are likely to impact productivity and assessment. While not challenging the current assessment, they may need to be explored in the future.

I recommend future research and development on reproductive traits, ageing in relation to the assessment, catch/discard estimation, natural mortality/ ecosystem interactions, variable ecosystem/stock productivity/climate change and spatial distribution. I felt that the data and assessment team had a strong vision for next steps. The proposal by the team to further explore of M and the use of reproductive potential should be supported.

Introduction

A review of research track assessments for Gray Triggerfish was held on March 11-14, 2024, in Atlantic Beach, NC. The Review Panel consisted of Marcel Reichert (Chair – SAFMC SSC), Anne Markwith (SAFMC SSC), Alexei Sharov (SAFMC SSC), Steven Holmes (CIE), Mark Dickey-Collas (CIE), and Larry Jacobson (CIE).

SEDAR Review Workshops provide independent peer review of stock assessments prepared through SEDAR data and assessment workshops. The goal of the review is to ensure that the assessment and results presented are scientifically sound and that managers are provided adequate advice regarding stock status, management benchmarks, and the general nature of appropriate future management actions. The Review Panel has limited authority to request additional analyses, corrections of existing analyses and sensitivity runs.

The data, analyses and stock modelling presented were part of a 'Research Track Stock Assessment'. The results were not meant to be a quantitative basis for management recommendations as they did not include the most recent data. Research track assessments focus on methodology. Stock status was presented as a demonstration so that the Review Panel could evaluate the approach used.

The Review Panel's primary responsibility is to ensure that assessment results are based on sound science, appropriate methods, and appropriate data. During review, the Panel is allowed limited flexibility to deviate from the assessment provided by the Assessment Process. This flexibility may include modifying the assessment configuration and assumptions, requesting a reasonable number of sensitivity runs, requesting additional details and results of the existing assessments, or requesting correction of any errors identified. However, the allowance for flexibility is limited, and the Review Panel is not authorized to conduct an alternative assessment or to request an alternative assessment from the technical staff present.

I participated as a CIE reviewer. My role was to:

- use the prior submitted reports (see Appendix 1 below) to gain an in depth understanding of the issues and challenges explored by the DW and the AW;
- participate in panel discussions on assessment methods, data, validity, results, recommendations, and conclusions as guided by the Terms of Reference (see Appendix 4 below);
- assist the chair to develop and complete a joint review report; and
- prepare and submit an individual CIE Reviewer Report it in accordance with specifications provided in the Performance Work Statement (see Appendix 2 below).

The full team attending the review is provided in Appendix 3. The report below reflects my own opinions as a CIE reviewer to SEDAR 82 and is based around the terms of reference described in Appendix 2. The agenda of the review is provided in Appendix 4.

The review – Summary of Findings by Term of Reference

The Terms of Reference for the review are provided in Appendix 2.

1. Evaluation of the data used in the assessment.

Summary

a) The data decisions made by the DW and AW were justified.

b) The data uncertainties were acknowledged, reported, and properly characterized.

c) The model derived data and parameter inputs and the methods were appropriate.

Elaboration

Background on the species, fisheries and management.

The background of general biology and ecology of gray triggerfish was presented. The reproductive strategies of gray triggerfish were important to consider. The species is gonochoristic (separate sexes), the males build nests in the sediment and form harems. Multiple females can spawn in each nest. The juveniles nursery under *Sargassum*.

I viewed these attributes as important as there are clearly density regulating mechanisms that can dissipate any recruitment signal linked to SSB. The sex ratio is apparently approximately 50:50 throughout their lives.

Gray triggerfish in the western Atlantic is considered one stock, and this is supported by genetic studies. The assessment history and management were described. The fish are caught in various different multispecies fisheries.

The fisheries are both commercial handline and recreational headboat. The fish are predominantly harvested with hook and line gear in both commercial and recreational fleets, and are typically caught mixed in with multiple species. The fishing fleets include relatively many small boats, and the recreational harvest has been an increasing proportion of the catch over time.

The stock is managed as the South Atlantic stock and there is no management north of North Carolina waters. Since 2012 there are annual catch limits for the commercial fisheries, with seasonal closures, retention limits and minimum size limits. There are also catch limits for the recreational fisheries with seasonal closures, daily bag limits and a minimum size limit.

The last benchmark assessment was completed in 2016, under SEDAR 41.

Data used in the assessment.

The following data are available to the assessment:

- commercial landings (1950-2021)
- recreational landings (1974-2021)
- length compositions (1981-2021)
- age compositions (1990-2020)
- SERFS trap/video index(1990-2021)

The assessment model was run from 1982 onwards. Removals were assumed to be precisely known.

A key and unusual feature of the assessment model was due to uncertainties in the aging of gray triggerfish, based on analysis of otoliths and spines, which caused the age compositions to be separated into two stanzas:

- from 1982 to 2014 the model used 1 to 5+ age (yr) groups; and
- from 2015 to 2021 it used 1 to 8+ age groups.

The rationale for this was thoroughly explained to the review panel and was broadly accepted as the most pragmatic approach to deal with the uncertainties in ageing. Age error matrices were used in modelling the age data. These were judged appropriate to deal with changes in ageing procedures and variance in ageing.

An integrated tuning series was created combining information from chevron traps with video cameras using a hierarchical Bayesian approach. There was discussion about the rationale for using this one combined survey as the sole fishery independent time series. The discussion was hindered by the DW and AW reports failing to describe the decision process that led to this decision to use one combined index. For quality assurance purposes, I would have thought it best practice to document this important decision (and the rationale) in the DW and AW reports. The review panel explored the issue further with the assessors. The explanation provided clarity and, overall, the review panel accepted this major key assumption for input data into the stock assessment.

Life history characteristics by age were presented clearly to the review panel. It would have been useful to have had a better description of the sex ratio information, however, overall, this did not impact the quality of the assessment.

I questioned the effort put into estimating discards, but this was explained in terms of the mixed fishery, and I noted that if the discards had not been estimated and included as a fleet, someone would have asked for them.

I had no further concerns about unacknowledged data uncertainties.

2. Evaluation of the strengths and weaknesses of the methods used.

Summary

a) The methods were appropriate for the available data.

b) The assessment model was configured properly and used in a manner consistent with standard practice.

c) The modelling issues were clearly identified and addressed.

Elaboration

The Beaufort Assessment Model is a well described and utilised statistical catch-age formulation that fits to multiple data sources simultaneously in a single integrated analysis. It has been heavily tested and is used by the SEFSC for stock assessment of a variety of stocks in the South Atlantic. The Review Panel concluded that the modelling was suitably parsimonious and did not estimate parameters for which there is too little information in the data. The time series of catch and age information was sufficient to estimate trends in abundance, biomass, fishing mortality, and spawning potential. The review panel examined and found cohorts that were visible in the catch age composition data (e.g., the strong 1997 index) and apparent in the modelled population. Also, the recruitment estimates from 2015 onwards showed consistency between modelled outputs and the source data.

The summary of the base modelling assumptions as I understood them was as follows:

- Age-structured life history
  - $W_{fishWhole} = {}_aL^b$
  - $FL_{population} = VB_{population}(age)$
  - $FL_{landings} = VB_{landings}(age)$
  - Age-error matrix
  - Age-dependent natural mortality
  - Age-dependent sex ratio
  - Age-dependent female maturity
  - Age-dependent fecundity
- Match landings and discard time series
- Fit indices of abundance time series
- Fit age compositions
- Fit length compositions
- Estimate recruitment deviations
- Estimate initial numbers-at-age deviations
- Estimate fleet specific fishing mortality (average and time series of deviations)
- Estimate selectivity parameters
- Calculate biological reference points and stock status

Model initialisation

- F*init* is being estimated with a light prior, and is used in calculations of initial fishing mortality
  - A sensitivity run with initial mortality computed from the average F for the first three years resulted in very high estimates of initial F
  - Likelihood profiles on F_{init} were also conducted
- Initial age structure in 1982 is fixed at equilibrium since composition data were not available in early years to inform the deviations from equilibrium

Selectivity

Landings

- Commercial handline
  - Logistic
  - One time block
- Recreational headboat
  - Logistic
  - One time block
- Recreational general
  - Set equal to recreational headboat selectivity

Discards

- Recreational headboat
  - Logistic exponential (4 parameters; only 1 estimated)
  - One time block
- Recreational general
  - Set equal to recreational headboat discard selectivity

Survey

- SERFS trap video
  - Logistic
  - One time block

Recruitment

Stock-recruit relationship

- No estimable stock-recruit relationship
- Using mean recruitment model
- R_0 (unfished age-1 recruitment) is being estimated
- Steepness (h) is not used
- Rec sigma (σ) is estimated with a normal prior

Recruitment deviations

- Age composition data spans 1990-2020
- Recruitment deviations estimated from 1990-2018

One panel member raised issues about 'tension' in the models. I did not share this concern. Especially after further explanation by the assessment experts. I agreed with the approach taken to estimate selectivity across the fleets. I felt that there was a resistance of some reviewers to consider the plurality of knowledge sources. The Review Panel requested several additional analyses and figures to explore the potential tension between the index and the age compositions. The additional analyses further supported the modelling choices.

Other sensitivity results suggested that there was a reasonable and appropriate balancing of size composition, age composition and survey data in the model. Model results were surprisingly robust to weights applies to different sources of information.

A secondary model, an Age Structured Production Model (ASPM), was run alongside to provide further insights. ASPMs are simplified versions of statistical catch-at-age models as they do not fit to age or length composition data. The Review Panel agreed running the ASPM was a useful exercise that highlighted the importance of the age and length data in the assessment.

Due to my background in research in reproductive potential of fish stocks, I paid close attention to the use of egg production instead of SSB as a metric of stock status. I asked the panel to consider this issue closely and then to affirm or not their support for the approach. I felt that the methods were justifiable and were a helpful description of the reproductive potential of the stock.

Having said this, the lack of contrast between egg production and recruitment, and also the time series remaining far from the origin, meant that recruitment steepness could not be estimated. The approaches used as work arounds to this issue were appropriate.

I felt that the documentation around the use of egg production and inferring $F_{40\%}$ was lacking. I agreed with the rest of the review panel that more work was needed on the choice and impact of reference points (noting that this was a research track assessment). 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}. Simulations on $F_{40\%}$ used spawning biomass instead of egg production in their calculations. I supported the rest of the review panel that more simulations were required for developing harvest control approaches for Gray Triggerfish.

3. Consideration of how uncertainties in the assessment are addressed.

Summary

a) The methods to evaluate uncertainty described and captured the sources of uncertainty in the input data.

b) The assessment and the metrics derived from the assessment assume stability in the long-term productivity and distribution of the stock. A number of issues are likely to impact productivity and assessment. While not challenging the current assessment, they may need to be explored in the future.

Elaboration

Monte Carlo Bootstrap Ensemble (MCBE), likelihood profiles, sensitivity analysis (23 different scenarios) and retrospective patterns were examined.

The following elements were explored with MCBE.

- Landings and discards resampled from log-normal distributions defined by values provided by data providers.
- Indices resampled from log-normal distributions defined by values provided by data providers.
- Length and age composition data resampled, with replacement.
- Natural mortality (as a scalar) was sampled from a uniform distribution between 0.2387 and 0.5313, which was then used to rescale M-at-age.
- Discard mortalities were sampled from a uniform distribution between 0.364 to 0.814.

The sensitivity scenarios covered F_{init}, M, discard mortality rate, age error, age compositions, batch fecundity and batch number without age, steepness, recreational discards, start of the traps/video index, recreational catches, weights of surveys, and weights of ages in survey and age and length compositions.

I was surprised how robust were the MCBE results and the majority of the sensitivity analyses. This further strengthened my view that the model was performing well in capturing the dynamics of the input data. The only concerning sensitivity analysis was that around the batch fecundity assumptions (batch fecundity and batch number are not age-dependent). The assumption of using age-based fecundity had an impact. This was further explored during the review and the decisions made appeared appropriate.

The retrospective analysis also confirmed further my confidence in the work. The discussions on likelihood profiles became muddled and I struggled to follow the logic of some in the panel. However, the panel came to a consensus on the insights provided by the further exploration of the likelihood profiles.

As with almost all stock assessments, uncertainties around the choice of M have an important influence. This was highlighted by the AW too. The methods used were fairly traditional and, like other members of the review panel, I think that in the future some further estimates from external sources would be helpful.

The assessment and the metrics derived from the assessment assumed stability in the long-term productivity and distribution of the stock. As the marine ecosystem of the eastern seaboard of the US changes over the next few decades, assessment and management measures will need to be found that are resilient to a changing social-ecological fisheries system.

Also, the current assessment does not account for the potential of input information to lose their assumed linear association with abundance or density of fish, e.g., density effects on the dynamics of various lifecycle stages, effectiveness of the survey gear, or selectivity of the fishery. Examples could be the saturation of breeding habitat, the impact of harems, the availability of *Sargassum* as nursery habitat and potential saturation of survey traps.

As management measures develop, especially if resources for monitoring and assessment become constraining, it might become more relevant to consider the fishery in a multispecies context.

4. Recommendations to improve the assessment.

Summary

a) The review panel consider the recommendations from the DW and the AW. The review panel synthesised these recommendations and prioritised the recommendations as follows:
   - Reproductive traits;
   - Ageing;
   - Catch/discard estimation;
   - Natural mortality / ecosystem interactions;
   - Variable ecosystem / stock productivity / climate change; and
   - Spatial distribution.

b) I felt that the data and assessment team had a strong vision for next steps and the panel's answer to question 4a was appropriate guidance. The proposal to begin re-aging fish spines prior to 2015 was welcomed by the panel. In addition, further exploration of M and the use of reproductive potential were also welcomed.

Elaboration

The data workshop provided a long list of recommendations which had not been holistically assessed in an integrated manner. The recommendations had been cut and pasted into the final list and had also not been prioritised. There were fewer recommendations from the assessment workshop.

As a first stage of scoping these recommendations, the review panel plotted the recommendations from the DW and used our judgement as to whether the recommendations were to improve existing methods/time series or develop new methods/time series. They were also prioritised as high, medium or low in terms of their relevance to improving stock assessment advice for management (Figure 1).

This first scoping was then used to combine the DW recommendations with those of the AW and feed into the review panel recommendations (Figure 2). The research recommendations were also considered in terms of their delivery timeline, before the next benchmark versus for the future. Crucially, elements from both the shorter term and longer term recommendations should be considered high priority (see figure 2).

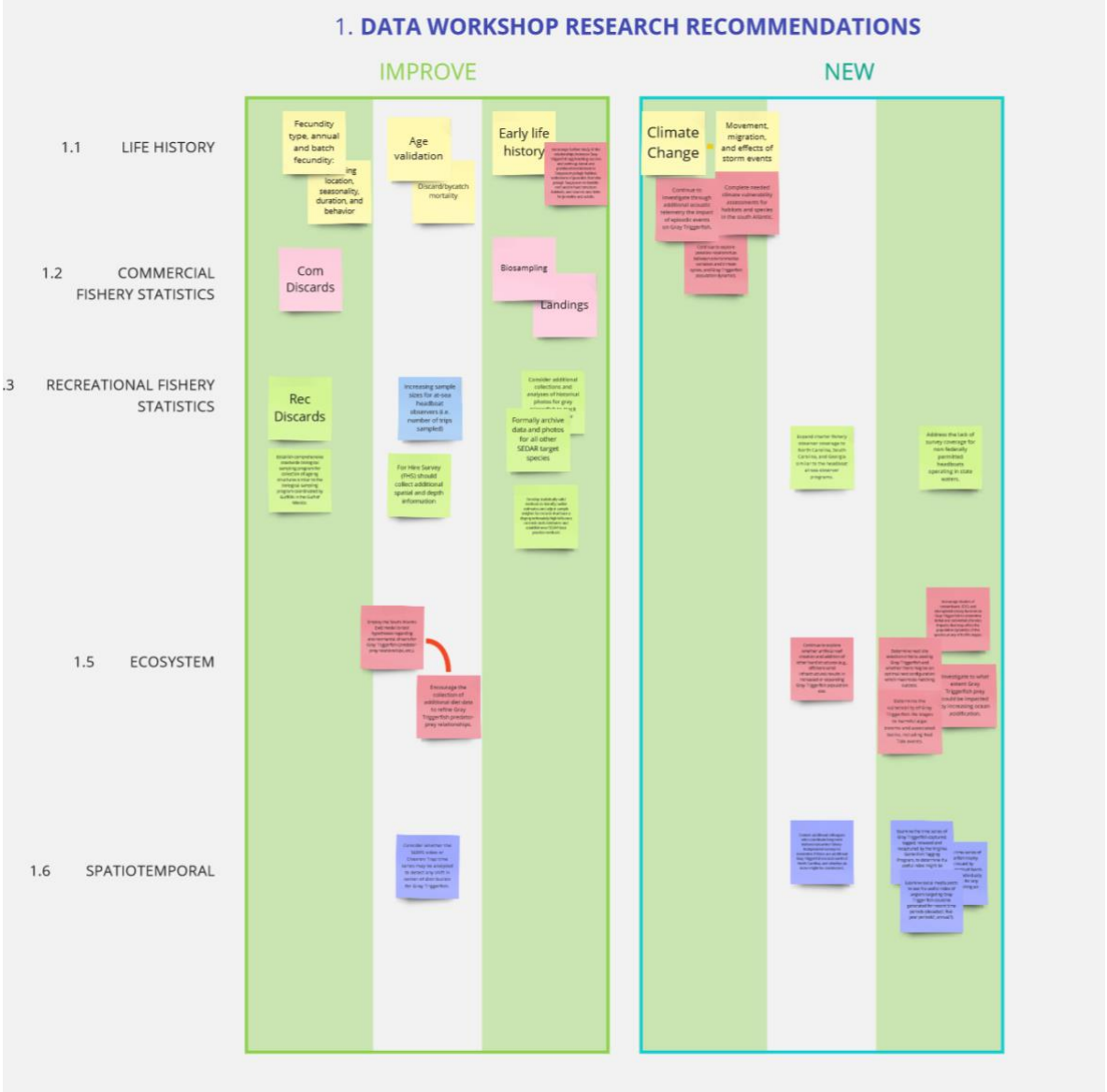

Figure 1: The initial scoping of the recommendations from the data workshop.

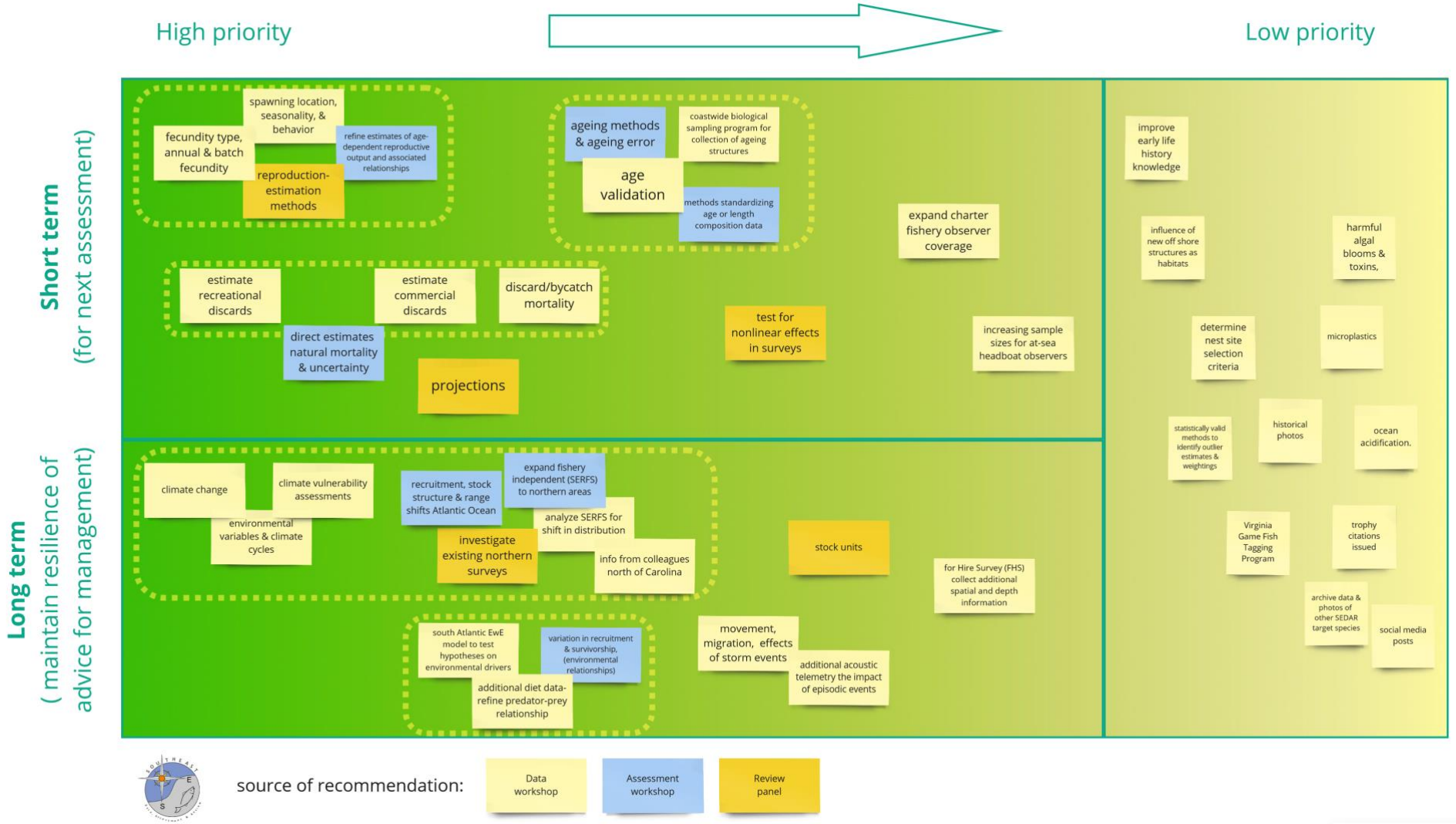

Figure 2: The results of the second stage of analysis of the recommendations. The recommendations are considered in terms of short-term and long-term research across a gradient of priorities to improve the stock assessments and management advice.

The review panel added the following recommendations:

- Investigate the overall utility of management measures in relation to the unit stock.
- Temporal and age-related fecundity and spawning season variability should be investigated further.
- Examine the utility and signal value of current fishery independent surveys north of North Carolina – Virginia border.
- Investigate the potential impact of trap saturation in the centre of the survey/stock distribution.

The analysis of the full set of recommendations (details in Figure 2) resulted in the following categories of recommendations:

- Reproductive traits;
- Ageing;
- Catch/discard estimation;
- Natural mortality / ecosystem interactions;
- Variable ecosystem / stock productivity / climate change; and
- Spatial distribution.

5. Recommendations to improve the Research Track Assessment process.

I felt that the amount of background material provided to the panel was appropriate. I also welcome the guidance documents for setting the context of the review. I felt that, overall, the review took place in a manner that was consistent with the guidelines.

I wish to thank the stock assessment team for the clarity of the presentations, and explanation of the methods used. I also wish to thank all involved in the review for the openness and constructive debate around the issues raised.

The Chair operated well and maintained the flow and delivery of the review. Some of the panel members did not appreciate that substantive discussions must be on the record, and the chair worked well to highlight this to them. Likewise, the Chair successfully controlled the post-meeting discussions during the report writing session.

I am concerned about the gender balance of the CIE reviewers. I understand that often logistic challenges prevent an inclusive and diverse team being assembled, but all CIE reviewers in SEDAR 82 identified themselves as male.

As an individual with challenged mobility, I wish to thank all for taking my reduced mobility into account and ensuring accessibility to all components of the review.

Appendix 1. Bibliography of materials provided for review

All documents were made available in good time prior to the review.

The documents, including supplementary information can be found on the website https://sedarweb.org/assessments/sedar-82/ and the project schedule is here https://sedarweb.org/documents/sedar-82-south-atlantic-gray-triggerfish-detailed-project-schedule/

The key documents were the

SEDAR 82 South Atlantic Gray Triggerfish Data Workshop Final Report

January 2023, 258 pages. https://sedarweb.org/documents/sedar-82-south-atlantic-gray-triggerfish-data-workshop-report/

SEDAR 82 South Atlantic Gray Triggerfish Section III Assessment Report

February 2024, 149 pages. https://sedarweb.org/documents/sedar-82-south-atlantic-gray-triggerfish-assessment-report/

SEDAR 82 South Atlantic Gray Triggerfish Assessment Review Agenda

March 2024 1 page. https://sedarweb.org/documents/sedar-82-south-atlantic-gray-triggerfish-review-workshop-agenda/

Three presentations in pdf form:

SEDAR 82 Review Workshop Presentation I – Gray Triggerfish Background. 18 pages

https://sedarweb.org/documents/sedar-82-review-workshop-presentation-i-gray-triggerfish-background/

SEDAR 82 Review Workshop Presentation II – Data and Base Model Review. 70 pages

https://sedarweb.org/documents/sedar-82-review-workshop-presentation-ii-data-and-base-model-review/

SEDAR 82 Review Workshop Presentation III – Diagnostics and Projections. 55 pages

https://sedarweb.org/documents/sedar-82-review-workshop-presentation-iii-diagnostics-and-projections/

All available background documents are listed here https://sedarweb.org/documents/sedar-82-south-atlantic-gray-triggerfish-document-list-9-26-2022/

Appendix 2. Performance Work Statement

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

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:

Larry Massey – NMFS Project Contact
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(386) 561-7080
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Science and Statistics Program
South Atlantic Fishery Management Council
4055 Faber Place Drive, Suite 201 North Charleston, SC 29405
Meisha.Key@safmc.net

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

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 Coordinator

- *Agenda Review, ToR, Task Assignments*
- *Take Breaks as needed throughout*

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 Chair

- *Assessment Data & Methods*
- *Identify additional analyses, sensitivities, corrections*
- *Review additional analyses*

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 Chair

- *Review additional analyses, sensitivities*
- *Consensus recommendations and comments*

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 Chair

- *Final sensitivities reviewed.*
- *Projections reviewed.*

12:00 p.m. – 1:30 p.m. Lunch Break

1:30 p.m. – 5:00 p.m. Panel Discussion / Work Session Chair

- *Review Consensus Reports*

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.

Friday - Travel

Appendix 3. Participants of the review

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
Erin 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

Appendix 4. Agenda of the review

SEDAR

SouthEast Data, Assessment, and Review

4055 Faber Place Drive, Suite 201, North Charleston, SC 29405

Phone: (843) 571-4366 Fax: (843) 769-4520 SEDARweb.org

SEDAR 82 South Atlantic Gray Triggerfish Assessment Review
March 12-14, 2024

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**	**Nikolai Klibansky**
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.