9. SEDAR 50 BLUELINE TILEFISH ASSESSMENT REVIEW

9.1. Documents

Attachment 17. SEDAR 50 SAR, Blueline Tilefish
Attachment 18. Assessment Overview Presentation
Attachment 19. Letter from MAFMC

9.2. Presentation

Assessment Overview: Dr. Erik Williams, SEFSC

9.3. Overview

The Committee is asked to review the Blueline Tilefish Benchmark assessment prepared through SEDAR 50 and provide fishing level recommendations (Attachment 17). The SEDAR 50 Review Workshop report completion was delayed due to Hurricane Irma and won't be available when the briefing materials initially go out, however it will be provided when it becomes available.

Blueline Tilefish was first assessed in SEDAR 32, including data through 2011. The stock was found to be not overfished but it was undergoing overfishing. Blueline Tilefish had several unique issues, making it difficult to assess. First, the stock extends up into the Mid-Atlantic, where it has not historically been managed. Due to the lack of formal management, almost no sampling data was available from that region.

The inclusion of data through the Mid-Atlantic region led to SEDAR 50 being a joint assessment between the Mid-Atlantic and the South Atlantic. SEDAR 50 will be reviewed by both of the regional SSCs since a portion of the fishery, and therefore a portion of the decided upon ABC, falls into the Mid-Atlantic's jurisdiction (Attachment 19).

The second issue was the large spatio-temporal change in how the fishery operated in the terminal years of the assessment. Landings in recent years were higher than any seen in the time series. This spike in landings is coupled with a change to directed targeting for Blueline Tilefish and an increase in interest from Mid-Atlantic fishermen.

The final issue is related to ageing. It was determined that age determination was too uncertain to be used in the assessment, therefore making a catch-at-age model (as was used in SEDAR 32) an unlikely candidate for obtaining information that is useful for management. Therefore, a number of data-limited methods were employed to assess this stock for the current assessment, including production models and the DLM Toolkit.

Due to these issues, and the many attempts at addressing these issues, the overview presentation is still preliminary (Attachment 18). It is an amalgamation of presentations given at the various SEDAR 50 workshops and is a bit disjoint and cumbersome. However, a revised version is being prepared and will be distributed to the Committee as it becomes available.

9.4. SSC RECOMMENDATIONS

Table 5. Blueline Tilefish Recommendations for South of Hatteras only. Reference points and OFL projections from Briefing Book Attachment 17, ABC projections from Appendix 2.

Criteria	**Deterministic**	**Probabilistic**
Overfished evaluation ($B/B_{MSY)}$	1.06	1.16
Overfishing evaluation (F/F_{MSY})	0.92	0.86
MFMT (F_{MSY})	0.146	0.148
B_{MSY} (1000 lbs.)	1,467	1,452
MSST (1000 lbs.)	1,100	1,080
MSY (1000 lbs.)	212	216
Y at 75% F_{MSY} (1000 lbs.)		
ABC Control Rule Adjustment	20%	
P-Star	30%	
M	0.17	

OFL RECOMMENDATIONS		ABC RECOMMENDATIONS	
Year	**Landed LBS**	**Year**	**Landed LBS**
2017	232,000	2017	167,000
2018	230,000	2018	172,000
2019	227,000	2019	175,000
2020	225,000	2020	178,000

- *Note that OFL recommendations are projections at $F=F_{MSY}$, and the ABC projections are at P*=0.3. The ABC projections were provided to Council staff after the completion of the meeting.*

  - Assessment review
    - Does the assessment address the ToRs to the SSCs satisfaction?
      - *Yes*
    - Does the assessment represent Best Scientific Information Available?
      - *Yes*
    - Does the assessment provide an adequate basis for determining stock status and supporting fishing level recommendations?
      - *Yes, for the south of Hatteras area. See below for the area south of Hatteras.*
  - Identify, summarize, and discuss assessment uncertainties
    - Review, summarize, and discuss the factors of this assessment that affect the reliability of estimates of stock status and fishing level recommendations.

- *There were no age data available. The growth parameter estimates come from length information that is sparse. The estimate for M is from a meta-analysis. It is unclear if the uncertainty of these age estimates is fully carried forward in the model. In absence of age information, the committee recommends a model that is more appropriate for the available data.*
- *Maturity information was based on very few samples and added to the uncertainty*.
- *Having the indices end 7 years before the terminal year of the assessment turns these most recent years into projections with known catch. The model is deducting removals from the estimated production. Sensitivity analyses were run in order to address this uncertainty.*
- *The growth curve estimated in the Review Workshop (RW) Age Structured Production Model (ASPM) was quite different than that from the Data Workshop, which the SSC found to be concerning.*
- *Although the ASPM allows for further exploration of uncertainties, this is not a sufficient reason to select the ASPM over the ASPIC. Using the ASPM added model complexity that was not well justified given the problematic ageing data and an estimated growth curves that did not mirror empirical curve.*
- *The ASPM fixes the CVs for the indices at 0.2, which can artificially change the relative weighting of the indices in the model.*
- *The additional uncertainty (increased CVs on the indices) was added to account for process error that was not taken into consideration during the GLM fitting. It was pointed out that this inflation of uncertainty does not have the same effect as estimating recruitment anomalies.*
- *The SSC is concerned over the lack of any indices at the end on the time series with which to track recent and current stock status.*
- *Results of the ASPM and all the sensitivity runs indicate this model is sensitive to many of the assumed parameter values and there is a very large amount of uncertainty in this model.*
- *Although use of the ASPIC allows for less explicit accounting for uncertainties, it produced more conservative estimates of productivity by ignoring the age structured dynamics of the stock.*
- *There were concerns about the use of the headboat index, which is being used in the ASPM Review Workshop base run. When the headboat index was removed from the ASPM during an exploratory run during the AW, the results were very similar to the ASPIC runs with the two commercial indices.*
- *The SSC supports the decision to remove the headboat index from the model.*

- *The growth curve estimated from the ASPM was different from the empirical growth curve. The difference arises because the ASPM is modeling the growth of individuals captured in the fishery and is not representative of the population as a whole.*

- Describe the risks and consequences of the assessment uncertainties with regard to status and fishing level recommendations.
- Are methods of addressing uncertainty consistent with SSC expectations and the available information?
  - *Given the available information, the uncertainties were addressed to the Committee's expectations.*
- List (in order of the greatest contribution to risk and overall assessment uncertainty) and comment on the effects of those assessment factors that most contribute to risk and impact status determinations and future yield predictions.
  - *No age data.*
  - *No fishery independent index.*
  - *Questionability of catch; i.e. possible misidentifications in the early landings, including the magnitude of the spike in landings in the early 1980s, which may be due to distinct species all being recorded as generic "tilefish". However, the committee noted that the spike in the catch occurred before it was seen in the relative abundance data, and was demonstrated to have only minor influence on the model parameters.*
  - *There was insufficient information to support full characterization of life history parameters. E.g. there were no ages at maturity, few immature fish in the samples, and unknown sources of recruits. Certain life history information used was borrowed from Golden Tilefish.*
  - *Amount of recruitment from the Gulf of Mexico is unknown and could affect stock dynamics along the southeast Atlantic coast.*

- Provide fishing level recommendations
  - Apply the ABC control rule and complete the fishing level recommendations table.
    - *The SSC recommends use of the Assessment Workshop ASPIC model for stock status and fishing level recommendations for the area south of Hatteras. This is the model which best fits the available data. The Committee felt that although the ASPM seemed to be able to explicitly incorporate more detailed life history information, the lack of data on BLT required parameters for this model to be based on meta-analyses or some other form of 'borrowing' from other species. Therefore, the SSC felt this added additional uncertainty to the assessment and chose to proceed with results from ASPIC.*

- *P* calculation for South of Hatteras.*
  - *Dimension I: Assessment Information – Tier 1 (0%)*
  - *Dimension II: Uncertainty Characterization – Tier 4 (7.5%)*
    - *Many uncertainties not accounted for in a surplus production model*
  - *Dimension III: Stock Status – Tier 2 (2.5%)*
  - *Dimension IV: PSA – Tier 3 (10%). The SSC review the PSA score and did not see any reason to change the score at this time.*
  - *Correction = 20%*
  - *P* = 30%*
- *ABC north of Hatteras*
  - *Focus on Mean Length estimators due to strong signal.*
  - *Average the modes of each ML estimator could possibly be used to determine ABC.*

- Comment on any difficulties encountered in applying the Control Rule, including any required information that is not available.
  - *The SSC is struggling with the use of the current ABC CR for the stock north of Cape Hatteras with issues that have been pointed out by the Committee.*
  - *The SSC recommends sending representatives to the MAFMC SSC meeting where Blueline will be addressed.*
  - *The SSC recommends that a joint working group be created of members from the SAFMC's and the MAFMC's SSCs. Task of this working group should include:*
    - *Determine data upon which a split of the ABC between the Council jurisdictions for the area north of Hatteras can be based.*
    - *Confirm or refine the ABC recommendation from the SAFMC's SSC.*
  - *The SSC further recommends that this Working Group:*
    - *Includes a member of the assessment team.*
    - *Includes an in-person meeting due to the complexity of the tasks.*
    - *Have a webinar or conference call to bring the MAFMC SSC representatives up to speed on this issue.*
  - *The ToRs will be constructed by the working group (of both SAFMC and MAFMC SSC members). The expectation is to have this workshop completed prior to the MAFMC SSC's meeting (likely in March of 2018), and brought back to the Committee via email.*

- *SAFMC's SSC members for this Blueline Tilefish Working Group: Scott Crosson, George Sedberry, Robert Ahrens*

- Provide advice on monitoring the stock until the next assessment
  - What indicators or metrics should the council monitor and could the SSC evaluate to evaluate the stock until the next assessment?
  - Is there a recommended trigger level for these metrics? How should the Council respond if a trigger is activated?
    - *Persistent changes in mean lengths in the catch, particularly a decrease, should trigger a re-examination of the utility of the current assessment, as the changes may imply a truncation in the size/age composition of the stock. Further, substantial changes in landings might indicate changes in the fleet or stock distribution and should warrant a closer look as well.*
- Provide research recommendations and guidance on the next assessment
  - Review the included research recommendations, and indicate those most likely to reduce risk and uncertainty in the next assessment.
    - *Addressing issues/discrepancies in aging.*
    - *Life history information, particularly maturity and fecundity, and growth parameters.*
    - *The extent to which recruitment is contributing to each geographic area from other areas (even outside the system), in other words, larval advection vs. self-recruitment.*
    - *Improvements in fishery dependent and independent indices.*
    - *All of these factors need to be looked at in terms of the entire biological stock.*
  - Provide any additional research recommendations the SSC believes will improve future stock assessments.
    - *Development of a fishery independent index of abundance.*
    - *More detailed spatial information of the catch location. This will assist with interpreting landings data and will assist in dividing ABC between jurisdictions.*
  - Provide guidance on the next assessment, addressing its timing and type.
    - *Type and timing will depend on if and when additional information becomes available.*
    - *Resolving issues with age determination and estimates of natural mortality will decrease model uncertainty and increase the likelihood of a successful next assessment.*

- *An attempt should be made to use all data poor methods available to assess the biological stock as one unit.*