

41<sup>st</sup> Northeast Regional Stock Assessment Workshop (SAW-41)  
Stock Assessment Review Committee (SARC) Meeting  
Northeast Fisheries Science Center  
Woods Hole, Massachusetts  
June 6 – 9, 2005

Review Report

Prepared for

University of Miami  
Independent System for Peer Review

by

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## Executive Summary

- The 41<sup>st</sup> Stock Assessment Review Committee (SARC 41) met at the Northeast Fisheries Science Center, Woods Hole, Massachusetts, from June 6 - 9, 2005.
- The Committee was asked to review the assessments of three stocks:
  - 1) summer flounder
  - 2) bluefish
  - 3) tilefish
- This report provides a description of review activities, and a summary of findings and recommendations for each assessment. It indicates if, and how well, the terms of reference were met for each assessment. It also provides the author's opinion on the adequacy of each assessment in serving as a basis for providing scientific advice to management.
- For summer flounder, there were no major areas of concern. Terms of reference were met as the assessment was an update only and biological reference points were calculated as requested. In the author's opinion, the assessment, as presented, was more than adequate in serving as a basis for providing scientific advice to management.
- For bluefish, there were several areas of concern. In particular, sampling from the fishery was poor in some areas and years. The use of age dis-aggregated catch per unit effort in the assessment model was also contentious. It was also questioned why the assessment was being reviewed only one year after having been rejected by SARC 39. However, despite some shortfalls, the terms of reference were met, and in the author's opinion, the assessment was adequate in serving as a basis for providing scientific advice to management.
- For tilefish, there was some concern regarding the measure of effort and the use of commercial catch per unit effort as an index of abundance. However, the assessment was thorough and included multiple model options and sensitivity analyses. The terms of reference were met, and in the author's opinion, the assessment was more than adequate in serving as a basis for providing scientific advice to management.
- The report also provides some perceptions by the author of the revised SAW model.

## Background

In May 2005, the Center for Independent Experts (CIE) at the University of Miami requested that I act as one of four panellists for the SARC 41 to be held at the Northeast Fisheries Science Center in Woods Hole, Massachusetts from June 6 – 9, 2005. The Stock Assessment Review Committee (SARC) is an integral part of the Northeast Regional Stock Assessment Workshop (SAW), which is a formal scientific peer review process for evaluating and presenting stock assessment results to managers.

The SARC 41 was asked to review the assessments for three species: 1) summer flounder (*Paralichthys dentatus*), 2) bluefish (*Pomatomus saltatrix*), and 3) tilefish (*Lopholatilus chamaeleonticeps*).

The statement of work provided by the CIE (Appendix 1) clearly defined the roles and responsibilities of panellists, principally to review the assessments with respect to their adequacy in serving as a basis for providing scientific advice to management.

## **Description of Review Activities**

The SAW chair, Jim Weinberg, distributed electronic and paper copies of the terms of reference (Appendix 2) and all working and background papers (Appendix 3) for SARC 41 approximately ten days prior to the meeting. Upon receipt of this documentation and prior to the meeting, I read all of the assessment documents, summarized results, identified areas of concern, and developed questions to ask during the meeting. I was appointed as SARC leader for the tilefish review and was asked to pay additional attention to this assessment.

The meeting was convened at 1300 h on June 6<sup>th</sup> by the SAW Chair. Following introductions, the revised SAW model was described. This is the third SARC under the new model, which is now designed to assess scientific credibility only and not provide management advice. Control of the meeting was then passed to the SARC Chair, Cynthia Jones. For each of the three stock assessments, a detailed presentation was given by a lead researcher. The summer flounder assessment was presented by Mark Terceiro on the afternoon of June 6<sup>th</sup>. The bluefish assessment was presented by Jessica Coakley on the morning of June 7<sup>th</sup>, and the tilefish assessment by Paul Nitschke on the afternoon of June 7<sup>th</sup>. Each presentation was followed by an extensive question and discussion period. The SARC terms of reference precluded requests for any further analyses by the working groups. On the morning of June 8<sup>th</sup>, each presenter returned to provide points of clarification and to answer further questions from the SARC panellists. On the afternoon of June 8<sup>th</sup> and on June 9<sup>th</sup>, SARC panellists commenced writing their review reports.

As per the CIE statement of work, this report provides a summary of findings and a list of recommendations for each of the assessments. A similar summary outline has been followed for each assessment. The report does not include a synopsis of each assessment; only those areas of concern that were discussed during the meeting have been included. As requested by both the SAW and SARC chairs, research recommendations have been prioritized and made as specific as possible. In the discussion and conclusions for each assessment, particular attention has been paid to how well each of the working groups addressed their respective terms of reference. I have also provided my opinion on the adequacy of each assessment in serving as a basis to provide scientific advice to management.

I would be remiss if I did not acknowledge the following people during SARC 41. The SARC chair, Cynthia Jones, provided a wealth of knowledge regarding the species assessed, ensured that each assessment was thoroughly reviewed, and maintained a tight meeting schedule. Fellow panellists Patrick Cordue and Olav Godo provided insightful expertise during the meeting and stimulated thought provoking discussion between the working groups and the

panel. The rapporteurs for each of the assessments documented the major points of discussion and greatly facilitated the writing of this report. Special thanks go to Jim Weinberg (SAW Chair), who was extremely helpful prior to and during the meeting in ensuring that panellists had all information necessary to review the stocks in question.

## **Summer Flounder**

### *Fishery Data*

There are two components to the summer flounder fishery, the commercial fishery, which accounts for approximately 65% of landings by weight, and a recreational fishery, which accounts for the remaining 35%. Both components are adequately sampled, well within the protocol (200 mt per 100 lengths) established by the working group.

The recreational fishery is not directly monitored. There is often a lag in the reporting of recreational landings, which can sometimes lead to an over-run in this component of the fishery. This problem is recognized but is difficult to address due to the nature of the reporting structure.

Approximately 700 – 800 mt are discarded annually in the commercial fishery. Of this amount, 70% is discarded from trawls, and 30% from scallop dredges. An 80% mortality rate is assumed for both gears, based upon anecdotal information only. Estimates of the mortality rate of discards by gear type would be very beneficial.

The mortality rate of discards in the recreational fishery is better estimated. However, no length data are available for recreational fishery discards.

No age data are available from the recreational fishery. This is a potential weakness as age/length keys from the commercial fishery are used to estimate recreational fishery ages. There is a concern regarding the validity of this approach if commercial and recreational fishery areas do not overlap, in particular, by depth. A dedicated sampling program is required to obtain age data from the recreational fishery.

All ages are currently derived from scales. There are some concerns regarding the use of scales to age older fish. This problem may become more serious as the stock size increases and there is a greater proportion of older fish in the population. It was indicated that otoliths are expensive to collect due to the value of the fish, both commercially and recreationally, as a head-on product. However, this issue needs to be addressed.

### *Survey Data*

Abundance indices are derived from three seasonal NEFSC research trawl surveys. Of the survey abundance indices available, these cover the broadest spatial and temporal range. Consideration should be given to combining these indices into a single annual index.

There are also numerous state-run surveys covering smaller areas at variable times of the year. These should also be combined to provide a single annual index with greater spatial coverage.

### *Assessment Model*

The current assessment model (ADAPT VPA) does not estimate errors in the catch at age. It was noted that the working group is moving towards the use of a forward age-structured program (such as ASAP). If so, the working group should use the most up-to-date model to optimize the use of available data.

A retrospective pattern exists in the output of the VPA. It was suggested that caution be exercised when interpreting such patterns as the VPA results are from one realization only and that auto-correlation between years can exacerbate such relationships. Simulations should first be run to determine if a bias actually exists. It was also suggested to review how retrospective patterns have been treated by the international stock assessment community.

### *Biological Reference Points*

The working group used both non-parametric and parametric approaches to calculate biological reference points. Both approaches provided similar results. The non-parametric approach was accepted because of concern regarding the limited time series available to calculate stock-recruit relationships.

### *Discussion and Conclusions*

The terms of reference for the summer flounder assessment were very 'tight' as the working group was asked to update the summer flounder assessment models using the same configurations as in the 2004 assessment update. It was questioned why an update would be presented to a SARC panel. Clarification was provided, but only after the assessment presentation and a lengthy discussion that the principle emphasis of this review was on the calculation of biological reference points. This should have been emphasized prior to the assessment review.

Several research recommendations from the SARC 35 review of the 2002 assessment and from the 2003 and 2004 assessment updates have not yet been addressed; where appropriate, these should be retained and addressed in detail prior to the next benchmark assessment review.

The working group fulfilled all of its terms of reference and provided a thorough review and presentation to the SARC panel. The assessment, as presented, is more than adequate to serve as a basis for providing scientific advice to management.

*Recommendations from SARC 41*

1. Evaluate the use of a forward calculating age-structured model for the next benchmark assessment review. Consideration should be given to the use of the most up-to-date model to optimize the use of all available data.
2. Combine NEFSC research trawl survey indices into a single annual abundance index.
3. Combine state-run survey indices into a single annual abundance index.
4. Design and implement a program for the collection of otoliths from the commercial and recreational fisheries. In addition to satisfying the concern regarding the use of scales to age older fish, it would also provide age data from the recreational fishery.
5. Design and implement a research program to estimate the mortality rate of discards for each of the primary commercial fishery gears (i.e. trawls and scallop dredges).

*Additional Recommendations from the Working Group (some of which are included above)*

1. Initiate an age structure exchange between the NEFSC and all interested state agencies and academic institutions, with a goal of completing the laboratory work and a summary report by May 1, 2006.
2. Complete the NEFSC comparison study between scales and otoliths as aging structures for summer flounder, and prepare a summary report by May 1, 2006.
3. Develop a long term protocol to sample otoliths from summer flounder caught in the recreational and commercial fisheries (e.g. purchase samples; as a component of the Research Set-Aside projects; as Cooperative Research with industry).
4. Develop a long term protocol to correct summer flounder scale ages using a more limited sample of otolith ages.
5. Explore statistical methods to develop "combined" survey abundance indices (by age if possible) from state agency survey data, for use in calibration of analytical assessment models.

**Bluefish***Fishery Data*

Concerns were expressed regarding stock structure. Given that the assessment covers a broad area from Maine to Florida, it was questioned whether this represents a single or several stocks. This concern was also reinforced by the presence of two spawning cohorts. It was not clear what triggers spawning or even where spawning occurs. Although many basic

questions remain unanswered, tagging studies have demonstrated a broad migratory pattern and genetic studies have shown no differences between areas.

A combination of scales and otoliths are used to age bluefish. It was indicated that some aging comparisons have been done. However, no detailed scale / otolith comparative studies have been completed. This was recommended as early as 2002 in the bluefish FMP review. There were also some concerns regarding the aging of older fish by scales. To address this, the subcommittee used a 6+ age group in the assessment. However, it was suggested, that as the stock rebuilds, it will be important to know the dynamics of this plus group.

Overall, commercial fishery sampling is poor to adequate. Concerns were expressed regarding the use of combined age-length keys, across areas and years, for gill net catches as gill net mesh size varies by area. Small and large fish are currently sampled from the commercial fishery but mid-sized ones tend not to be. This is more acute now compared to the 1980's. It is unclear if this is a sampling problem or whether the fishery does not target these fish. This leads to uncertainty in the use of these data to represent population length structure. Although the commercial fishery represents less than 20% of landings, sampling improvements are required. In particular, stratified samples are required to create age keys for mid-sized fish in all areas.

A discard mortality rate of 15% is assumed for the recreational fishery. It has already been recommended by SARC 39 that this be evaluated but no action has been taken to date. This is more critical in recent years as the level of discards has increased.

### *Survey Data*

Of the fishery independent surveys, the NEFSC fall trawl surveys cover the broadest area, from Cape Hatteras to Maine. However, there were concerns that these surveys do not encompass the range of bluefish and catch mostly ages 0 and 1 fish.

In the assessment document, the subcommittee concluded that an "examination of (state run) survey results did not reveal any consistent signal of bluefish abundance or biomass indices among programs". However, these surveys were then deemed suitable for the assessment model. The SARC 39 recommended an integrated analysis of the various juvenile bluefish surveys, including a workshop to evaluate data quality, ability as indices, and survey coherence. Sufficient time should have been granted to conduct this workshop and implement the results prior to the review of this assessment.

### *Assessment Model*

The use of the ASAP model, compared to the ASPIC model in SARC 39, is a positive step forward. Concern was expressed regarding the use of CPUE at age in the model. It was suggested that a model assumption was violated as the CPUE at age is derived from the catch at age, whereas the model assumes that both are independent.

This assessment was the first attempt to use the ASAP model for bluefish. There were concerns that the assessment may have been rushed and that results were not sufficiently documented. For example, it was indicated that various sensitivity analyses were conducted but not included in the assessment document. It was also suggested that standardized residuals are required to evaluate the model fit.

### *Biological Reference Points*

Given concerns regarding the assessment model, biological reference points were not discussed by the SARC. However, as per their terms of reference, the subcommittee provided new reference points based on the results of the ASAP model.

### *Discussion and Conclusions*

The terms of reference for the bluefish technical committee / assessment subcommittee differed from those for summer flounder or tilefish. They were not asked to review, evaluate, and report on the status of research recommendations. Instead, they were asked to develop recommendations for future research, which they have done. Unfortunately, several important recommendations from SARC 39 have not been addressed. For example, it was recommended that the mortality of bluefish released by anglers should be investigated in detail; this was not done. It was also recommended that maturity ogives be constructed and presented in future assessments; this was not done. An integrated analysis of the various research surveys for juvenile bluefish was also recommended; this was only partially achieved.

The technical committee / assessment subcommittee have made substantial advances since SARC 39. Given concerns expressed regarding the use of the ASPIC model in SARC 39, a partially age-structured (Collie – Sissenwine) model was attempted. Eventually, a catch-at-age (ASAP) model was selected. This addressed concerns regarding errors in the catch and was better suited to handle observed selectivity patterns. Unfortunately, it appears that the subcommittee had insufficient time, and possibly expertise, to provide full documentation of results in the current assessment document.

I believe that the technical committee / assessment subcommittee have addressed all five terms of reference. Concerns were expressed during this SARC regarding formulation of the current ASAP model and incomplete diagnostics. However, it was not clearly demonstrated that these concerns would affect the model output and conclusions of the subcommittee. There are many improvements that the subcommittee could have made, in particular with regard to documenting results. I believe that the current assessment can serve as a basis for providing scientific advice to management. However, I seriously question why the bluefish assessment had to be reviewed by this SARC after having been rejected by SARC 39 only one year ago. Given more time, the technical committee / assessment subcommittee could have addressed more of the previous recommendations and provided more thorough analysis and documentation of their results.

### *Recommendations from SARC 41*

1. Re-evaluate the use of the ASAP model using CPUE rather than CPUE at age data. Ensure that all sensitivity analyses are documented and provide diagnostics including uncertainty information.
2. Evaluate the use of the most up-to-date models such as the Stock Synthesis 2 model.
3. Improved sampling is required. In particular stratified samples are required to create age-length keys for mid-sized fish in all areas. Otoliths should be collected and used to age all older fish.
4. Convene a workshop to compare scale and otolith ages.
5. Conduct an integrated analysis of the various juvenile bluefish surveys to evaluate data quality, ability as indices, and survey coherence. The goal of this evaluation should be the combination of these survey results into a single index of abundance.
6. Evaluate the assumed mortality rate of 15% for discards in the recreational fishery.

### *Additional Recommendations from the Subcommittee (some of which are included above)*

#### Commercial Data

- Increase sampling of size and age composition by gear type and statistical area.
- Target landings for biological data collection and increase intensity of sampling for biological data.

#### Recreational Data

- Increase sampling of size and age composition by gear type and statistical area.
- Target landings for biological data collection and increase intensity of sampling for biological data.

#### Ageing Data

- Complete a scale – otolith comparison study.
- Conduct a study or workshop to address discrepancies between estimated bluefish age from scales and otoliths and the chronological age. Examine issues of inter- and intra-reader variation in interpretation of ages.
- Examine the feasibility of each state collecting sample of hard parts for ageing, with one or two laboratories interpreting the annuli for consistency.

#### Fishery – Independent Data

- Continue research on species interactions and predator – prey relationships.
- Examine alternative weighting schemes for the available fishery – independent surveys (e.g. area, inverse variance, N, etc.).
- Investigate the feasibility of alternative survey methods that target bluefish across all age classes to create a more representative fishery – independent index of abundance.
- Initiate sampling of offshore populations in winter months.

- Conduct research on influences on recruitment including pathways of larval bluefish.
- Initiate coastal surf zone seine study to provide more complete indices of juvenile abundance.

#### Models, Inputs and Outputs

- Explore a tag based assessment and associated costs compared to age based assessments.
- Determine if a tag based assessment could supplement or replace other assessment techniques.
- Continue to examine alternative models including a forward projection catch-at-age model.

### **Tilefish**

#### *Fishery Data*

There is a commercial fishery only for tilefish; recreational landings are minimal. There are also minimal commercial discards. The fishery is restricted to two statistical areas and fish are landed in two or three ports only by a maximum of fifteen vessels. It was suggested that data quality should therefore be good; if not, improvements should be easily attainable through collaboration with the industry.

The definition of the stock was questioned. The fishery is restricted to two statistical areas; it was unclear whether this is the stock area or whether the stock extended beyond the area fished. This distinction is important as fishery CPUE is used as an abundance index.

Concern was expressed why 41% of commercial landings in 2004 were assigned to 'other gears'. It was explained that these landings were not assigned to one of the two principal gears due to a new electronic coding procedure in 2004. It was indicated that these landings can be assigned and that the percentage landed by gear will not likely change in 2004. It is important that this problem should not re-occur in the future.

#### *Survey Data*

There are no survey data available for tilefish. Commercial CPUE is used as an index of abundance. Effort is currently defined as 'days at sea'. There were concerns expressed that this may not be a reliable measure of effort as it is not coded in all logbooks. It was suggested that 'number of hooks fished', 'gallons of fuel used', or 'amount of bait purchased' may provide better measures of effort. Although such information is not available from logbooks, it was suggested that it may be available if individual fishermen were interviewed.

Concerns were also expressed that changes in gear technology may have affected commercial effort. It was noted that size of hooks fished decreased during the 1980's and that some vessels have recently increased their hook sizes. It is unclear what effect these changes may have had on effort. To account for potential changes in catchability over time, the working group separated the CPUE into three time series.

It is unclear whether older fish do not exist or whether the fishery does not target them. The working group has recommended that a hook selectivity experiment be conducted. It was suggested that this experiment incorporate a spatial – depth component to determine if the larger fish are located in deeper water. This experiment would also provide valuable information on recruiting year classes. It could also serve as the basis for an annual index, independent of the commercial fishery.

### *Assessment Model*

As in previous assessments, the working group used a surplus production (ASPIC) model. This model assumes that commercial CPUE tracks stock abundance. As indicated in the previous section, concerns were expressed concerning this assumption. However, it was concluded that there were insufficient data to suggest otherwise.

A lagged recruitment survival growth (LRSG) model was presented, which indicated that the stock had not been overfished for the past decade. This differed from the results of the ASPIC model. The LRSG model was rejected as it combined the commercial CPUE into a single times series. It was unclear if the model could incorporate multiple time series. It was suggested that this be further investigated.

### *Biological Reference Points*

There was very little discussion regarding the re-estimation of biological reference points.

The working group concluded that projections were too uncertain but that the existing TAC of 905 mt appears to have sufficiently restrained F to allow stock biomass to increase towards Bmsy. It was noted that in the most recent years, landings were approximately 25% greater than the TAC.

### *Discussion and Conclusions*

It was noted in the assessment document that most of the commercial catch from 2002 to 2004 was derived from a single (1999) year class. Some concern was also expressed for the future as there is no evidence of strong recruitment of subsequent year classes. This should be reflected more strongly in the summary report.

Given the limited size of the fleet, less than fifteen vessels fishing from two or three ports, there is an excellent opportunity for collaboration between industry and the assessment working group. Of the three assessments presented to SARC 41, tilefish was also the only one for which an industry representative was in attendance. It was suggested that fishermen may be able to provide more detailed effort information than currently exists in their logbooks. Collaboration with fishermen could also improve the content of future logbooks. Industry could also be involved in future hook selection experiments and in the collection of fishery

independent abundance indices. This fishery could act as a model of cooperation between industry and government.

The working group fulfilled all of its terms of reference and provided a thorough review and presentation to the SARC panel. I was most impressed that the group had examined thirteen configurations of the surplus production model and had conducted multiple sensitivity analyses. The assessment, as presented, is more than adequate to serve as a basis for providing scientific advice to management.

*Recommendations from SARC 41*

1. Design and implement a hook selectivity experiment with a spatial – depth component to determine if larger fish occur in deeper waters. The experiment should be designed to provide an annual index of abundance and potentially as a recruitment index.
2. Collaborate with fishermen and industry to determine if additional effort information is available beyond that recorded in logbooks.
3. Re-examine the lagged recruitment survival growth model to determine if it can incorporate multiple CPUE series. If so, compare and contrast the results with existing surplus production model output.

*Additional Recommendations from the Working Group (some of which are included above)*

1. Conduct a hook selectivity study to determine partial recruitment changes with hook size. Determine catch rates by hook size. Update data on growth, maturity, size structure, and sex ratios at length.
2. Collect data on spatial distribution and population size structure. This can help answer the question of the existence of a possible dome-shaped partial recruitment pattern where larger fish are less vulnerable to the fishery due to spatial segregation by size.
3. Continue to develop the forward projecting catch-length model as additional length data becomes available. Investigate the influence of adding a tuning index of abundance and model estimated partial recruitment (logistic) to the catch – length model.
4. Collect appropriate effort metrics (number and size of hooks, length of main line, soak time, time of day, area fished) on a haul basis to estimate commercial CPUE.
5. Initiate a study to examine the effects of density dependence on life history parameters between the 1978 – 82 period and present.
6. Increase observer coverage in the tilefish fishery to obtain additional length data.
7. Develop a bioeconomic model to calculate maximum economic yield per recruit.

## **Perceptions of the Revised SAW Model**

The SAW process is highly structured and well organized. I have had the privilege of attending two such reviews, SARC 36 under the old model, and now SARC 41 under the revised model. Although not requested in my statement of work (Appendix 1), I would like to provide some perceptions of the revised SAW model.

The current SARC consists of four panellists, all provided by the Center for Independent Experts. In reality, only three of these panellists review the assigned assessments, as the role of the SARC chair is to produce a summary report accurately and fairly representing the viewpoints of each panellist's report; "there shall be no attempt by the chair to develop a consensus report". In my opinion, the revised model poses some concerns. Under the old model, the SARC consisted of 12 to 18 panellists, including representatives from the CIE, NEFSC, ASMFC and others. This provided for a thorough review of the assigned assessments, more so than under the revised model. The old model also allowed for a consensus to be reached by the SARC regarding the adequacy of an assessment to provide scientific advice to management. This responsibility has been removed from the SARC in the revised model. It is unclear to me how this is now determined if the three CIE reviewers do not reach a consensus.

The SARC is now designed to assess scientific credibility only and not to provide management advice. This is a positive step as it provides a buffer between the science of stock assessment and the potential politics of management. This buffer or barrier should be maintained and the revised model attempts to address this. However, the assessment of scientific credibility should not preclude additional SARC panellists besides those provided by the CIE. Similarly, if the role of the SARC is to assess scientific credibility, it should also be responsible for reaching a consensus regarding the credibility of a particular assessment. In my opinion, this would strengthen and increase the transparency of the process.

The terms of reference regarding research recommendations should be consistent for all assessments. This was not the case for this SARC. This term of reference should also be strengthened to ensure that working groups or assessment subcommittees address all recommendations from previous reviews. If no action has been taken on a research recommendation, reasons should be given and potential impacts on the current assessment should be described.

## **Appendix 1. Statement of Work - Consulting Agreement between the University of Miami and John Wheeler - May 5<sup>th</sup>, 2005**

### *General*

The Northeast Regional Stock Assessment Review Committee meeting (SARC) is a formal, multiple-day meeting of stock assessment experts who serve as a peer-review panel for several tabled stock assessments. The SARC is the cornerstone of the Northeast Stock Assessment Workshop (SAW) process, which includes peer assessment development (SAW Working Groups or ASMFC technical committees), assessment peer review, public presentations, and document publication.

The Center for Independent Experts (CIE) shall provide a panel chair and three panelists for the 41st Stock Assessment Review Committee panel. The panel will convene at the Woods Hole Laboratory of the Northeast Fisheries Science Center in Woods Hole, Massachusetts, the week of 6 June 2005 (June 6-10) to review assessments for bluefish (*Pomatomus saltatrix*), tilefish (*Lopholatilus chamaeleonticeps*) and summer flounder (*Paralichthys dentatus*).

### *Specific Activities and Responsibilities*

The CIE's deliverables shall be provided according to the schedule of milestones in the table below. The final reports from the CIE will provide key information for a presentation to be made by NOAA Fisheries at meetings of the New England and Mid-Atlantic Fishery Management Councils in August and September 2006. The chair's duties shall occupy a maximum of 19 days (i.e., several days prior to the meeting for document review; the SARC meeting in Woods Hole; and several days following the meeting to review the individual panelist's Review Reports and produce the Summary Report). This report shall be a summary of the individual Review Reports, accurately and fairly representing all viewpoints. There shall be no attempt by the Chair to develop a consensus report.

Each panelist's duties shall occupy a maximum of 14 workdays (i.e., a few days prior to the meeting for document review; the SARC meeting; and a few days following the meeting to prepare a Review Report). The SARC Review Reports will be provided to the SARC Chair, who will produce the Summary Report based on the individual Review Reports.

### Roles and responsibilities:

- (1) (Chair and Panelists) Prior to the meeting: review the reports produced by the Working Groups.
- (2) (Panelists) During the meeting: participate, as a peer, in panel discussions on assessment validity, results, recommendations, and conclusions especially with respect to the adequacy of the assessments reviewed in serving as a basis for providing scientific advice to management.
- (3) (Panelists) After the meeting: prepare individual Review Reports, each of which provides an executive summary, a review of activities and, for each stock assessment reviewed, a summary of findings and recommendations that emerge from the findings,

all in the context of responsiveness to the Terms of Reference for each assessment. Advice on additional questions that are directly related to the assessments and are raised during the meeting should be included in the report text. These additional topics/issues should be listed along with the original Terms of Reference in a separate appendix attached to the report. See Annex 1 for further details on report contents and milestone table below for details on schedule. No later than June 24, 2005, these reports shall be submitted to the CIE for review<sup>1</sup> and to the Chair for summarization. The CIE reports shall be addressed to “University of Miami Independent System for Peer Review,” and sent to Dr. David Sampson, via e-mail to [David.Sampson@oregonstate.edu](mailto:David.Sampson@oregonstate.edu) and to Mr. Manoj Shivlani via e-mail to [mshivlani@rsmas.miami.edu](mailto:mshivlani@rsmas.miami.edu).

NEFSC staff and the SAW Chairman will be responsible for the production of the final SARC report, which will include the Chair’s Summary Report and the individual panelist’s Review Reports. Staff and the SAW Chairman will also be responsible for production and publication of the collective Working Group papers, which will serve as a SAW Assessment Report.

*NEFSC Contact person and SAW41 Chairman:*

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## Appendix 2. Terms of Reference for the 41st Northeast Stock Assessment Workshop

(approved: March 18, 2005)

SAW/SARC 41  
June 6-10, 2005  
NEFSC, Woods Hole, MA

### *Summer Flounder* - SAW Southern Demersal Working Group

1. Update the summer flounder assessment models (i.e. ADAPT VPA and AGEPRO projection) using the same configurations as those used in the 2004 SAW Southern Demersal Working Group (WG) assessment update.
2. Estimate biological reference points derived by yield and SSB per recruit analysis and by stock-recruitment modeling, following the procedures adopted by the 2002 Working Group on Re-Evaluation of Biological Reference Points for New England Groundfish.
3. Consider the recommendations of the MAFMC Science and Statistical Committee (SSC) 2001 peer review of the summer flounder Overfishing Definition in developing the analyses described in TOR 2. The major recommendations were to explore other proxies (besides  $F_{max}$ ) to  $F_{MSY}$ , to continue stock-recruitment model development as additional stock-recruit estimates become available, and to monitor and utilize new data on the population dynamics of summer flounder (e.g., age, growth, and maturity) as they become available.
4. Review, evaluate and report on the status of the SARC/Working Group research recommendations offered in previous SARC and WG reviewed assessments

### *Bluefish* - ASMFC Technical Committee/Assessment Subcommittee

1. Evaluate adequacy, appropriateness and uncertainty of fishery-dependent and fishery-independent data used in the assessment.
2. Evaluate adequacy and appropriateness of models used to assess the species and to estimate population benchmarks.
3. Evaluate and either update or re-estimate biological reference points as appropriate.
4. Estimate and evaluate stock status (biomass) and fishery status (fishing mortality rate).
  - a. Is the stock overfished; is overfishing occurring?
5. Develop recommendations for improving data collection and for future research.

### *Tilefish* - SAW Southern Demersal Working Group

1. Characterize the commercial catch including landings and discards. Characterize recreational landings.
2. Estimate fishing mortality and total stock biomass for the current year and characterize the uncertainty of those estimates.
3. Evaluate and either update or re-estimate biological reference points as appropriate.
4. Where appropriate, estimate a constant TAC and/or TAL based on stock status for years following the terminal assessment year.
5. If projections are possible,
  - a. provide seven year projections of stock status under various TAC strategies and
  - b. evaluate current and projected stock status against existing rebuilding or recovery schedules, as appropriate.
6. Review, evaluate and report on the status of the research recommendations offered in the 1999 Science and Statistical committee reviewed assessment.

### **Appendix 3. Documents Reviewed for SAW/SARC-41, June 6 - 9, 2005, Northeast Fisheries Science Center, National Marine Fisheries Service, Woods Hole, MA.**

#### *General Documents*

Revisions to the Northeast Regional Stock Assessment Workshop –‘Old’ versus “new”

Terms of Reference for the 41<sup>st</sup> Northeast Stock Assessment Workshop, (approved March 18, 2005), SAW/SARC 41, June 6-10, 2005, NEFSC, Woods Hole, MA

#### *Summer Flounder*

A-1) Summer flounder: Stock assessment update and biological reference point estimation by SAW Southern Demersal Working Group, Mark Terceiro, NMFS/NEFSC

A-2) Summer Flounder Appendix A: Data Tables & Figures

A-3) Summer Flounder Appendices B: 1) ADAPT VPA Output, 2) AGEPRO Projection Output

A-4) SSC Committee Overfishing Definition (2001)

A-5) A; Summer Flounder, SAW/SARC-35 Report (2002), NEFSC Reference Document 02-14

A-6) Stock Assessment of Summer Flounder for 2003 by Mark Terceiro, August 2003, NEFSC Reference Document 03-09

A-7) SAW Southern Demersal Working Group 2004 Summer Flounder Assessment Summary, June 21, 2004

A-8) Re-evaluation of biological reference points for New England groundfish by Working Group on Re-Evaluation of biological reference points for New England groundfish, March 2002, NEFSC Reference Document 02-04

SARC/SAW-41 2 Powerpoint presentations by Mark Terceiro, June 6, 2005

SARC/SAW-41 Summer Flounder Rapporteur Report by Kathy Sosebee

#### *Bluefish*

B-1) B: Working paper for blue stock assessment 41<sup>st</sup> Northeast Stock Assessment Workshop working document for Stock Assessment Review Committee, June 6-10, 2005

B-2) Corrections to paper B1: Corrections to Paper B1: Bluefish SAW-41 Working Group Stock Assessment Report (May 24, 2005)

B-4) C: Bluefish SARC Report SAW/SARC-23 (1996)

B-5) Report on the 39<sup>th</sup> Northeast Regional Stock Assessment Workshop (SAW-39) Stock Assessment Review Committee (SARC) Meeting by Andrew I.L. Payne, SARC-39 Chair

SARC/SAW-41 Powerpoint presentation by Jessica Coakley, June 7, 2005

SARC/SAW-41 Bluefish Rapporteur Report by Gary Shepherd

*Tilefish*

C-1) Assessment of golden tilefish, *Lopholatilus chamaeleonticeps*, in Middle Atlantic-Southern New England Region, SAW 41 SARC Working Paper C1, a report of the Southern Demersal Working Group, NMFS/NEFSC

C-2) Golden Tilefish Summary Report, SARC 41

C-3) Assessment of tilefish in the Middle Atlantic-Southern New England Region by Paul Nitschke, Gary Shephard, and Mark Terceiro (1998) for S&S Committee Review

C-4) G. Tilefish (Background SAW/SARC 16)

SARC/SAW-41 Powerpoint presentation by Paul Nitschke, June 7, 2005

SARC/SAW-41 Powerpoint presentation by John Brodziak, June 7, 2005

SARC/SAW-41 Tilefish Rapporteur Report by Laurel Col