Chair Report to the Center of Independent Experts (CIE) on the Atlantic Menhaden and Atlantic Croaker SEDAR Assessment Review Panel held on October 6 to 9, 2003 in Raleigh, North Carolina.

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Summary of Meeting

The **S**outh **E**ast **D**ata, **A**ssessment, and **R**eview (**SEDAR)** process for stock assessment and review is used in the National Marine Fisheries Service-Southeast Fisheries Science Center's (NMFS-SEFSC) area of responsibility. This program provides a framework for independent peer review of stock assessments undertaken jointly by NMFS-SEFSC, three Regional Fishery Management Councils, two Interstate Fishery Commissions, and state fishery agencies. This process involves separate workshops to review the data and then the models used in the workshop. The data workshop and assessment workshop were convened by the ASMFC under its established protocols for stock assessment of species managed under the Atlantic Coastal Fisheries Cooperative Management Act. The Commission assessments come to SEDAR in the Review Panel meeting. I represented the Center of Independent Experts as chair for the Peer Review panel held in Raleigh, NC, 6 to 9 October, 2003. The two assessments reviewed by this SEDAR Peer Review Panel were for Atlantic menhaden and Atlantic croaker from the Atlantic States Marine Fisheries Commission's area of jurisdiction.

Panel membership:

Steve Bobko, Old Dominion University, VA
William Goldsborough, CBF, Annapolis MD
Najih Lazar, RI DEM, Jamestown RI
Tom Miller, Chesapeake Biological Laboratory, Solomons MD
Jim Nance, NMFS, Galveston TX
Paul Nitschke, NMFS, Woods Hole MA
Lee Paramore, NC DMF, Wanchese NC
Stephen Smith, DFO, Dartmouth NS (CIE)
Elizabeth Wenner, SC DNR, Charleston SC
Geoffrey White, ASFMC, Washington DC
William T. Windley, MD Saltwater Sportfish Assoc., North East MD

Meeting Process

The first three terms of reference (Appendix 1) were used to structure the meeting into separate presentations on the data, models and the technical committee's recommendation on stock status for each of the species reviewed. Each presentation was followed by comments from the panel, followed by comments from the other participants. After the first pass through the assessment, requests for additional analyses were discussed making sure that these analyses were focused on answering a particular question and did not constitute an alternate assessment. Once the results of these analyses had been presented and discussed, there was a second pass through the first three terms of reference. The chair summarized the points from the previous discussion for each term of reference and then directed the panel and participants to reach conclusions on the adequacy and appropriateness of the material presented and the recommendations that were made. Notes made by the chair and ASFMC staff during these discussions were used to construct the draft report of the peer review panel's evaluation. Research recommendations were identified during this time as well. Printed copies of the draft report including the research recommendations were supplied to all panel members before being discussed.

All relevant documents were supplied to the chair the week of 22 September in the form of paper copies of the two main assessment reports (ASFMC 2003a, b) in addition to electronic copies on CD of all of the documents in Appendix 2.

Menhaden

The Review Panel meeting convened at 1:00 pm on Monday 6 October with Doug Vaughn (NMFS-SEFSC) presenting background on the biology of menhaden, the history of the fisheries and the data used in the assessment. While all data sources were discussed by the panel, much of our time was spent on the use of different natural mortalities (M)-at-age for the Menhaden. While everyone acknowledged that this change from previous assessments where a constant M for all ages was used was definitely more biologically realistic, it was difficult to determine if the relative mortalities at age were realistic for menhaden. These relative mortalities were obtained from a multi-species virtual population analysis (MSVPA) conducted by an ASFMC working group. The results of the MSVPA are currently being peer reviewed and no documentation was available for our review panel.

Erik Williams (NMFS-SEFSC) presented the background and results from a new forward-projecting catch-at-age model for menhaden. Previous assessments had used an un-tuned virtual population model. While many aspects of the model and its underlying assumptions were discussed, panel members and participants returned to the non-constant mortalities-at-age, in particular to the use of very high mortalities for ages 0 and 1 year. These high mortalities were meant to represent the importance of menhaden as a forage fish for many other species of fish, birds and marine mammals. The stock assessment and the panel's terms of reference were directed toward providing advice for menhaden

fisheries only but some members of the panel and other participants expressed frustration with the lack of information presented for broader ecosystem-based issues. In addition, the population model was designed to evaluate stock status on a coast wide basis and therefore could not be used to answer questions about local depletions that were raised during the meeting. All of these concerns were recorded in panel summary report (Appendix 3) with request for direction from ASFMC.

Panel members were concerned about the influence of the large 1958 year class on the model estimates and Erik Williams was asked to run the model based on data from 1965 to the present. Erik gave this presentation on Wednesday morning and the model results appeared to be quite robust to the 1958 year class.

The new population model necessitated a redefinition of the reference points for this stock. Doug Vaughan presented the reasons for changing from spawning stock biomass to population fecundity expressed as the number of maturing or ripe ova and changing from F_{max} to an F-target based on the 75th percentile of fecundity/R_0. In the former case fecundity is related to the size of the fish and this new measure was considered to be a more accurate representation of reproductive capacity than simply using spawning stock biomass. The change in fishing mortality target was required because with the new model and the assumption of different mortalities-at-age, estimates of F_{max} were infinite.

We spent Tuesday afternoon reviewing research recommendations for menhaden and then dismissed the panel in the late afternoon so that the chair and ASFMC staff could write a draft summary report. This draft was printed out and made available to panel members late Tuesday evening.

Atlantic Croaker

On Wednesday morning, Janaka DeSilva (FLMRI) presented the data section of the Atlantic croaker assessment. There were a number of issues that came up during the presentation that needed to be dealt with. One of the more serious was the use of abundance estimates from the NMFS-NEFSC fall survey for 1982 to 2002. The time series for commercial landings used in the assessment began in 1973. The fall survey began in 1963 and this point was mentioned in the stock assessment but the technical committee had only obtained data for 1982–2002. The technical committee appeared to be unaware of the stratified random design that is used for this survey and opted instead to use a delta-lognormal model to estimate annual abundance. Concerns were expressed about the possible differences between the delta-lognormal and stratified estimates. Fortunately, Jim Nitschke (NMFS-NEFSC) had brought the fall survey data with him from 1973 to the present, so that some of these concerns could be addressed during the meeting.

This was the first time that the Atlantic croaker population has been modeled and because of the lack of age data, a surplus production model had been tried but failed. An age structured production model was constructed for the population with the age structure

generated in the model. All of the indices used to tune the model started in the early 1980's while the commercial landings time series started in 1973. Spawning stock biomass in 1973 was assumed to be a constant proportion of virgin spawning stock biomass. A likelihood component for deviations around the recruitment estimates from a Beverton-Holt spawner-recruit was reported as being required for the model to converge. The panel expressed concern about having a landing series starting in 1973 with tuning data series beginning in the 1980s. The lack of dynamic range in the survey indices suggested that the model might get the trend right but would have problems with scaling the population estimates. A new run of the model using the NMFS-NEFSC survey data from 1973 (with stratified estimates) was requested to investigate these concerns.

The reference points were the standard fishing mortality and biomass thresholds used for other stocks. Two separate models were developed for the fishery from North Carolina and points north (mid-Atlantic model), and from South Carolina to Florida (south Atlantic model). While there was a great deal of discussion on splitting the population this way, the panel did not have enough information to evaluate this approach. Stock status was only reported for the mid-Atlantic model.

The panel reviewed a comparison of abundance estimates from the NMFS-NEFSC survey using delta lognormal and stratified estimates. There was enough difference between the two approaches to recommend that more work needs to be done to understand these differences. In addition, the results of running the mid-Atlantic model with NMFS-NEFSC survey data back to 1973 suggested that there were enough differences between population estimates from this run and the original run based on data from 1982 to warrant concern.

During the panel's second pass through the terms of reference on Wednesday afternoon, it was discovered that the commercial landings did not include catch from the scrap or bait fishery. These data were not available in the original stock assessment but data from the North Carolina scrap fishery were presented by Janaka DeSilva. It was determined that prior to 1996, landings from the scrap fishery in North Carolina were between 10 and 50 percent of the total commercial landings. While it was unknown how significant landings from these scrap or bait fisheries were in other states, the problem was serious enough for the panel to conclude that the removals from the croaker stock used in the stock assessment were inadequate for the determination of stock status.

While the panel did evaluate all aspects covered in the first three terms of reference, problems with the survey series and landings led to the conclusion that the stock assessment would not be useful for management purposes. At this point, the panel was dismissed. For the remainder of Wednesday afternoon and early evening, the chair and ASFMC staff drafted up the croaker summary report and research recommendations. Printed copies were made available late Wednesday evening.

On Thursday morning, the panel reviewed the croaker report and research recommendations, and remedial measures for the stock assessment were drawn up. There

was enough time to also review the menhaden summary report. The panel completed all of this work by 11:00 am.

ASFMC staff distributed edited versions of both sets of summary reports and research recommendations by email to panel members by Friday 10 October. Draft Advisory reports were distributed by email on Wednesday 15 October with a request for comments on these and the summary reports back to ASFMC staff by 17 October. New versions of the documents were sent out to panel members on Monday 20 October and a conference call on Thursday 23 October was used to address outstanding issues. I chaired the conference call and the few outstanding issues were resolved with most of the panel members attending. ASFMC staff revised the reports and distributed the new versions electronically by late afternoon Thursday. All members were requested to get any last minute edits back to ASFMC staff by noon Friday (EDT) and the plan is to have the final versions out by Monday 27 October. *(I will send on a copy of the summary reports to CIE at that time.)*

Other observations

Overall, the panel review workshop was a success. ASFMC council staff did an excellent job of providing meeting support and the panel members worked well together reviewing the information provided. The technical committee members provided very lucid presentations that summarized the material from the large stock assessment documents very well.

However, I would like to make three observations about possible improvements in the future. The issues about the NMFS-NEFSC survey for the croaker assessment raise questions about the membership of the technical committees. As far as I could tell, no one on the croaker committee was familiar with this survey. Many problems could have been avoided if the data had arrived at the meeting along with an expert from Woods Hole.

We also had the sense that the croaker technical committee did not have enough time to do justice to the assessment. There was also some discussion about changes in membership during the process. Neither of these problems was conducive to ensuring a quality product no matter how dedicated the remaining individuals in the committee are.

A meeting chair should act as an impartial guide and facilitator. However, I found that there were many times when I had to act as a technical reviewer as well. These two roles can be in conflict because as chair, one would like to achieve a degree of balance between opinions expressed while a technical reviewer will tend to want to make sure that their opinion is noted and responded to. Future meetings should specifically include reviewers capable of dealing with technical aspects of the stock assessment so that the chair is free to concentrate on his/her required role.

Acknowledgements

I would like to thank Lisa Kline, Geoff White, Nancy Wallace and Laura Lee (Menhaden only) for all of their assistance with meeting notes and preparation of drafts during the meeting. We would not have been able to complete the work in the time allotted without their help. I would also like to thank the panel members and the participants for their contributions to this panel review. Everyone's dedication to the tasks at hand made my job as chair that much easier.

Appendix 1.

STATEMENT OF WORK

Consulting Agreement between the University of Miami and Dr. Stephen Smith

September 15, 2003

Introduction

The **S**outh **E**ast **D**ata, **A**ssessment, and **R**eview (**SEDAR)** process for stock assessment and review is used in the NMFS- Southeast Fisheries Science Center's area of responsibility. This program provides a framework for independent peer review of stock assessments undertaken jointly by NMFS-SEFSC, three Regional Fishery Management Councils, two Interstate Fishery Commissions, and state fishery agencies. The SEDAR process uses a three-phase approach: a data workshop, an assessment workshop, and a peer review panel workshop. The peer review panel is composed of stock assessment experts, other scientists, and representatives of the Councils/ Commissions, the fishing interests, and non-governmental conservation organizations. The communication elements of SEDAR include a stock assessment report from the Assessment Workshop, a review panel report evaluating the assessment(s) (drafted during the Review Panel Workshop), presentation of the peer reviewed assessment results to the Council(s)/Commission(s) and public, and publication of collected documents for stock assessments in that cycle of SEDAR.

The 2 assessments to be reviewed by this SEDAR Peer Review Panel are for Atlantic menhaden and Atlantic croaker from the Atlantic States Marine Fisheries Commission's area of jurisdiction. The data workshop and assessment workshop were convened by the ASMFC under its established protocols for stock assessment of species managed under the Atlantic Coastal Fisheries Cooperative Management Act. The Commission assessments come to SEDAR in the Review Panel meeting. The SEDAR Review Panel for Atlantic menhaden and Atlantic croaker assessments will include up to 12 members: a senior assessment scientist from NMFS, a Commission/Council Staff scientist, up to 4 assessment scientists from the ASMFC member states, a commercial or recreational fisherman from the respective species Advisory Panel, a scientist representative from a non-governmental organization, and a Chairperson from the Center for Independent Experts (CIE). Scientists from the ASMFC Technical Committee and Stock Assessment subcommittee will present the assessments and be available during the meeting to provide supplemental information as requested by the review panel.

SEDAR Assessment Review Panel Tasks-

The Panel will evaluate the Atlantic menhaden and Atlantic croaker assessments, the input data, assessment methods, and model results as put forward in the Atlantic States Marine Fisheries Commission (ASMFC) stock assessment reports.

Specifically, the Review Panel will:

1. Evaluate the adequacy and appropriateness of fishery-dependent and independent data used in the assessments (i.e. was the best available data used in the assessment).
2. Evaluate the adequacy, appropriateness and application of models used to assess these species and to estimate population benchmarks.
3. Evaluate the adequacy and appropriateness of the Technical Committee's recommendations of current stock status based on biological reference points.
4. Develop recommendations for future research for improving data collection and the assessment.
5. Draft a report summarizing the Peer Review Panel's evaluation of the stock assessments. (Drafted during the Review Workshop, Final report due two weeks after the workshop.)
6. Draft a summary stock status report including research considerations. (Drafted during the Review Workshop, Final report due two weeks later.)

It is emphasized that the Panel's primary duty is to review the existing assessment. In the course of this review, the Chair may request a reasonable number of sensitivity runs, additional details of the existing assessment, or similar items from the technical staff. However, the Review Panel is not authorized to conduct an alternative assessment, or to request an alternative assessment from the technical staff present. To do so would invalidate the transparency of the SEDAR process. If the Review Panel finds that the assessment does not meet the standards outlined in points 1 through 3, above, the Panel shall outline in its report the remedial measures that the Panel proposes to rectify those shortcomings.

The Review Panel Report is a product of the overall Review Panel, and is NOT a CIE product. The CIE will not review or comment on the Panel's report, but shall be provided a courtesy copy, as described below under "Specific Tasks." The CIE product to be generated is the Chair's report, also discussed under Specific Tasks.

Specific Tasks

The CIE shall provide one member of the SEDAR Stock Assessment Review Panel: a Chair. The Review Panel will convene at the **Holiday Inn Brownstone Hotel in Raleigh, NC, during the week of October 6-9, 2003.** The Panel meeting will begin mid-

day on October 6, and conclude early afternoon on October 9, 2003. The Panel will review stock assessments provided for Atlantic menhaden and Atlantic croaker in the area of jurisdiction of the Atlantic States Marine Fisheries Commission.

The NMFS-SEFSC/ASMFC SEDAR coordinator shall provide the CIE with copies of the following documents for distribution to the Chair. Individual Panel members will receive the same documents.

Report of Atlantic menhaden stock assessment.
Report of Atlantic croaker stock assessment.
Other reports and documents that may follow (to be finalized).

Chair's Tasks

It is estimated that the Chair's duties will occupy a total of 17 working days – several days prior to the Review Panel meeting for document review; four days at the SEDAR meeting; several days following the meeting to ensure that the final Peer-Review Panel Report and Summary Stock Status Report are completed, and several days to complete the Chair's report for the CIE.

Roles and responsibilities:

1. Prior to the Review Panel meeting the Chair will be provided with the stock assessment workshop reports. The Chair shall read and review these documents to gain an in-depth understanding of the stock assessment itself and the resources and information considered in the assessment.
2. During the Review Panel meeting, the Chair shall control and guide the meeting, including the coordination of presentations and discussions, and document flow.
3. The Chair shall facilitate the preparation and writing of the Review Panel Report (item 5 above) and a Draft Summary Stock Status Report (item 6 above). Review panel members, ASMFC/SEFSC staff, and stock assessment scientists present will assist the Chair as needed. The Chair shall be responsible for the editorial content of the two review workshop reports. These reports shall be drafted during the Review Workshop, with the final reports due to the recipients listed below in item #4 two weeks after the workshop. These reports are products of the Review Panel meeting, and are not CIE products.
4. The Review Panel Report and the Draft Summary Stock Status Report, which are not CIE products, shall be provided to Dr. Nancy Thompson, NMFS-SEFSC, 75 Virginia Beach Drive, Miami, FL 33149 (e-mail, Nancy.Thompson@NOAA.GOV); Dr. John Merriner, NOAA Beaufort Laboratory, 101 Pivers Island Road, Beaufort, NC 28516 (e-mail, John.Merriner@NOAA.GOV; and Dr. Lisa Kline, ASMFC, 1444 Eye Street NW, Sixth Floor, Washington, DC 20005 (e-mail, lkline@asmfc.org); Dr. David Sampson of the CIE shall also be provided a courtesy copy of these documents via e-mail at david.sampson@oregonstate.edu.

5. The ASMFC assessment workshop Chairs and SEDAR Coordinator will assist the Review Panel Chair prior to, during and after the meeting to ensure that final documents/results are distributed in a timely fashion.
6. No later than October 24, 2003, the Chair shall submit a written Chair's Report[1] addressed to the "University of Miami Independent System for Peer Review," and sent to Dr. David Sampson, via email to David.Sampson@oregonstate.edu, and to Mr. Manoj Shivlani, via email to mshivlani@rsmas.miami.edu. Contents and outline of the Chair's Report are summarized in Annex I.

[1] The written report will undergo an internal CIE review before it is considered final. After completion, the CIE will create a PDF version of the written report that will be submitted to NMFS and the consultant.

Appendix 2.

Bibliography

Anon. 2003. A preliminary assessment of Atlantic croaker on the Atlantic coast of the United States. Report for the Atlantic croaker technical committee, Atlantic States Marine Fisheries Commission. 81 pp.

Atlantic States Marine Fisheries Commission. 2003a. Atlantic Menhaden 2003 Stock Assessment Report. Draft Document. 159 pp.

Atlantic States Marine Fisheries Commission. 2003b. Atlantic Croaker 2003 Stock Assessment Report. Draft Document. 146 pp.

National Marine Fisheries Service. 1995. Instructions for menhaden sampling program. National Marine Fisheries Service, Beaufort Laboratory, 101 Pivers Island Road, Beaufort, North Carolina. 20 pp. (Supplied on CD).

Vaughan, D. S., M. H. Prager and J. W. Smith. 2002a. Consideration of Uncertainty in Stock Assessment of Atlantic Menhaden. *In* Incorporating uncertainty into fishery models. J.M. Berkson, L.L. Kline, and D.J. Orth (eds.). American Fisheries Society Symposium. 27: 83–112.

Vaughan, D.S., J.W. Smith, E. H. Williams. 2002b. Analyses on the Status of the Atlantic Menhaden Stock. Report for the Atlantic Menhaden Technical Committee, Atlantic States Marine Fisheries Commission. 60 pp.

Appendix 3:

Summary Reports.

These will be sent to CIE once final copies are available (expected 27 October).