PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

ATLANTIC MENHADEN MANAGEMENT BOARD

Crown Plaza Old Town
Alexandria, Virginia
August 19, 2009

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(AA = Administrative Appointee; GA = Governor Appointee; LA = Legislative Appointee)

Ex-Officio Members

Bill Windley, Advisory Panel Chair
Rob Latour, Technical Committee Chair

Staff

Vince O'Shea
Robert Beal
Braddock Spear
Kate Taylor

Guests

David Wallace, Cambridge, MD
Derek Orner, NMFS
Jeff Kaelin, Omega Protein
Frank Kearney, CCA-VA
Sean McKeon, NCFA
Arnold Leo, E. Hampton, NY
Charles Hutchinson, MSSA
Robert Geisler, MSSA
Ken Hinman, NCMC
Phil Kline, Greenpeace
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James Price, CBEF
Wilson Laney, USFWS
Pete Jensen, Wallace & Assoc., Cambridge, MD
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David Nobles, CCA VA
Tom McCloy, NJ DMF
David Frulla, Washington, DC
Charles Lynch, NOAA

The Atlantic Menhaden Management Board of the Atlantic States Marine Fisheries Commission convened in the Presidential Ballroom of the Crowne Plaza Hotel Old Town, Alexandria, Virginia, August 19, 2009, and was called to order at 11:15 o'clock a.m. by Chairman Patten D. White.

CALL TO ORDER

CHAIRMAN PATTEN D. WHITE: I would like to start the Menhaden Meeting. There is a sign-up sheet down back for public comment. We will entertain minimal public comment to things that are not on the agenda, which should limit it because about everything you can think is on the agenda. We will entertain some public comment during the meeting. I need approval of the agenda. Bill.

MR. WILLIAM GOLDSBOROUGH: Mr. Chairman, in view of what the state of Maryland sent around late last week to board members, I think it's clear that we view the ecological reference points discussion to be a little more action oriented than the final agenda item and that it follows naturally after the CIE Program Review. We would request that it be moved up to that point in the agenda, if that works.

APPROVAL OF AGENDA

CHAIRMAN WHITE: That works for me, and I would make an additional correction, if it's all right with the rest of the board, that we do the stock assessment and then the ecological reference points, and then go to the Maryland Proposal and hold the vote on the draft addendum until last. Does anybody have any objections to that sequence? Okay, I will consider the agenda approved.

APPROVAL OF PROCEEDINGS

Proceedings from the May 5th meeting; any additions or deletions to that? Seeing none, I will consider that approved. I will now entertain public comment. Ron.

PUBLIC COMMENT

MR. RON LUKENS: Thanks, Chairman White, for the opportunity to provide comments to the board today. My name is Ron Lukens, and I am the senior fisheries biologist for Omega Protein Corporation. I hope you recall in February I provided this board with comments with regards to operational and environmental improvements that we were making at the rebuilt processing plant in Reedville, Virginia.

I said at that time once we get some progress made I wanted to come back and update you on those changes, and this is a perfect opportunity to do that. This year we proposed to install two new state-of-the-art airless dryers in the plant. To date only one of those dryers has been installed, and the second one is scheduled for installation in October of this year.

The dryers remove moisture from the fishmeal; and by virtue of being airless, the combustion gases are separated from the processed gasses. This is important because the processed gases are the genesis of the distinctive fish odor that goes along with plant. These processed gases are pulled out of the dryer and sent to a condenser where it is all removed. Any remaining gases following the condensation are incinerated at 1,600 degrees Fahrenheit.

The dry furnaces also now burn a low – when the second one gets in, the furnaces will burn low sulphur fuel, reducing sulphur emissions from the dryer. The airless dryer also eliminates the need for air scrubbers, which eliminates a point-source discharge to Cockrell Creek, and this is important. This improvement also eliminates air emissions from processing, resulting in only emitting combustion gases, and those will be cut in half when the second dryer is installed.

A very exciting development is the water-soluble portion of menhaden being used. That water-soluble portion is called fish solubles. That process creates about 300,000 gallons of water per day when we're operating. Normally we would treat that into aerated ponds which would, after treatment, be discharged into Cockrell Creek.

However, now we are treating this water through a dissolved air-flotation device, and it crates water that can be reused in the plant. Currently we actually are treating about 300,000 gallons of

water, but currently because the second dryer hasn't been installed we're only using about half of that water right now.

Once it is installed we will be up to around 300,000 gallons of water per day savings. That's water that does not come out of the ground but gets reused. In addition to all the projects at the fish factory, that reduced water discharges, air emissions, and ground water withdrawals, our fish oil refinery or what we call our Health and Science Center also installed a dissolved air-flotation unit and is treating approximately 120,000 gallons of water per week.

Much of that treated water is then is then reused in the refinery itself and it further reduces our ground water usage. We believe these are important environmental changes, and what we're seeking is to become as emission and discharge free as we can possibly be, and we're very near that goal.

We're pleased, obviously, with these environmental improvements, but we also have seen good operational efficiencies through the changes that we've made. I just wanted to share these with you and I'll be glad to answer any questions if it's appropriate, Mr. Chairman. Thank you.

CHAIRMAN WHITE: Thank you, Ron. I also would like to acknowledge – and it's in your Briefing CD – that we did get public comment from Jim Price. I would like to next move on to Center for Independent Experts Program Review and Findings with Brad Spear.

CENTER FOR INDEPENDENT EXPERTS PROGRAM REVIEW AND FINDINGS

MR. BRADDOCK SPEAR: You recall that the NOAA Chesapeake Office funded an external peer review of the Chesapeake Bay Menhaden Research Program, and I'll provide to you a summary of the findings of the review panel. The table of the findings was included in your briefing packet.

This first summary focuses on the research and science findings and recommendations from the review panel. I will give another presentation right after this that focuses more on the management and localized depletion question. This summary and findings are also being reviewed by the Menhaden Research Guidance Group that was formed by this board. I have still yet to hear from a couple of those members, but once we finalize the conclusions from that group they will be making recommendations to the technical committee.

The summary is broken down into different areas. First, focusing on the current coast-wide assessment, the review panel suggested exploring different treatments of the juvenile survey data, different groupings of the different survey, different weightings of the surveys. This is something the Stock Assessment Subcommittee will do for the current assessment.

The review panel also recommended explicitly including predation by water birds and fish into the current assessment and also developing a bait-sampling regime. Regarding comments on the alternative coast-assessment – this is the one that was developed by the University of British Columbia – the review panel suggested further developing the model and comparing it with the current model.

They recommended using a tool called a management strategy evaluation. That's essentially a way to compare different models and how they behave differently under different known conditions. They also suggested modeling more years and uncertainty of the alternative assessment to get a better understanding.

Focusing on the Coast-Wide Adult Index, they recommended instituting an index or indices of adult stock size that is coastwide. They suggested that LIDAR or an aerial survey could be viable. Focusing on the Chesapeake Bay abundance question, they suggested that you need to establish stock structure in order to put localized depletion into context, and that can be done through a number of different techniques or a combination of different techniques such as body morphology of the fish, biological tags, genetics and then otolith microchemistry.

One of the reviewers suggested that is what has been done with herring species off the British Isles. They also recommended an additional stock size index for the Chesapeake Bay, whether it's part of a coast-wide index or not. They suggested again LIDAR is possible, but

there are some limitations. You have heard about those limitations in prior meetings from the technical committee.

They also said the spatially explicit model that had been proposed is desirable if in fact there is evidence of a sub-stock of menhaden. Looking at removal by predators, they made the point that systematic monitoring is needed, especially if there is a greater attempt at ecosystem-based fishery management, but caution that even then with systematic monitoring predictions into the future are highly uncertain because population dynamics of the complex are complex.

They also suggested using caution when extrapolating diet data from any survey to the entire population, and that's because it is often very area specific and season specific or time specific. Following this topic, they said it would be useful to know the size of the fish eaten by birds and the timing and also suggested exploring alternative explanations for the changes in striped bass populations, possibly looking into water quality as a factor.

On the topic of exchange between the Chesapeake Bay and coastal waters, they were able to determine from the studies that there is some site attachment in juveniles at the scale of the tributary and that the otolith microchemistry study is proving useful to identify young-of-the-year habitat utilization, but that longer study would be needed to get a better idea of specific habitat usage.

Looking at the larval ingress study, they said that it was informative, but an expanded survey may not provide a corresponding return in information, and that it is unlikely to provide an indication of recruitment and spawning stock size. That is due to the uncertainty in recruitment in the bay. They suggested exploring the fate of ingressing larvae to look at, again, areas that would be valuable habitat for the success of any given year class.

The last topic is recruitment to the bay. They recommended continuing studies again to identify essential habitat. They recommended exploring the effect of environment on changes in population fecundity of menhaden. Using the microchemistry work, they said it is possible to trace the origin of adults back to some estuaries.

One reviewer suggested that in order to better understand recruitment and movement and abundance of menhaden, they would suggest sampling outside of the bay and referencing the wintering grounds off North Carolina as a place to start. That's it.

CHAIRMAN WHITE: Questions or comments?

MR. PETER HIMCHAK: Brad, I guess I'll get this started. I guess this is a question for the Center of Independent Experts, but I guess you'll have to answer for them and give us an impression. It is good to see that they say that considerable progress has been made in determining the localized depletion; you know, whether it is occurring or not; and if so, what to do about it.

Considering that we have the five-year cap, how much progress have we made relative to the five-year time period to come up with the answer on whether or not the cap has served its purpose?

MR. SPEAR: I don't think that's a question necessarily that I can answer, and I don't know that the CIE reviewers were able to answer that necessarily either. I did fail to mention that the overall tone of the CIE review was positive and that there was considerable progress being made. Maybe if I go through the next presentation, it talks a little bit more of progress made toward answering the questions of localized depletion. That might help with your question.

CHAIRMAN WHITE: Okay, still on this one, though, are there any other questions or comments before Brad goes on to the management?

MR. GEORGE LAPOINTE: I was going to say I've got a bunch of volunteers from Maine who will provide plenty of cormorants for that bird study when they're ready to do it.

CHAIRMAN WHITE: Any other valuable comments? (Laughter) Brad.

MR. SPEAR: All right, the other part of the summary again focuses on localized depletion and management. Some of the conclusions that were reached by the Peer Review Group is that site fidelity is a prerequisite for localized depletion. There was some question about the site fidelity of menhaden being that adults are migratory.

They did suggest that localized depletion is possible at the larval and juvenile stage and that likelihood may decrease as menhaden get older. Again, that's because adults are migratory. They suggest that localized depletion was possible within years in particular areas if the total mortality in that area was great. The evidence that was presented through some of the research was that localized depletion is possible at the scale of the tributary.

Some of their comments, kind of looking forward, they suggested without an operational definition, which is essentially without a quantitative definition, it is not possible to evaluate if localized depletion is occurring. They recommended that a time scale over which local depletion is occurring should be determined.

They made comments about reference points and said that if predators continue to increase, there is the high probability of menhaden biomass falling below reasonable thresholds in the future. They said that if predators increase F reference points should be decreased to allow for increased mortality.

Another comment, a fishing mortality limit is essentially a policy decision that amounts to an allocation decision, but said that this decision can be informed by estimates of ecosystem requirements of Chesapeake Bay. They commented on removal by predators, saying that time-and area restrictions of the Menhaden Fishery may provide a mechanism to mitigate the competition between the fisheries and predators, and that it would be a useful exercise to assess the present and future conflicts between the commercial fishery, recreational species and other predators of menhaden by time, area and size of prey.

The last comment about predators, it is possible that striped bass will become food-limited, but it is not necessarily valid to conclude that they are food-limited because some are in poor condition or others are diseased. Thank you.

CHAIRMAN WHITE: Thank you very much, Brad. It is a difficult summary if you did have a chance to read through all the report. Again, questions on the management and localized depletion issue? Yes, David.

DR. DAVID PIERCE: Well, I'm trying to draw a conclusion from what was just presented, that table that is on the disk that has been summarized by Brad. I mean, the question is, is localized depletion occurring in the Chesapeake Bay, and the conclusion is from the reviewers that they don't know.

They did a good job in their review of all the documents that they were provided, but they begin right away by politely chastising the board by telling us that in the absence of an operational definition it is not possible to fully evaluate the relevance of the research projects and determine if localized depletion is occurring. That was right out of the gate. We didn't give them an operational definition.

Then I think they then say, towards the end of their list of comments, it is timely to agree on a localized depletion threshold, which I think they're now telling us to provide an operational definition. So, again, good job on their part, very frank comments to the point, but we end up, I think, from my review of their comments with the conclusion that the research that has been done to date does not enable us to answer the question is localized depletion occurring in Chesapeake Bay; once again in part because we have no operational definition for us to make the judgment. That's my conclusion and if anyone disagrees with me, please tell me why and help me figure out where I've gone wrong with my interpretation of what they have provided.

CHAIRMAN WHITE: It's my impression you're right on track, David. Pete.

MR. HIMCHAK: Mr. Chairman, I agree with David entirely. I mean, from being on the Menhaden Technical Committee for 15 years and now being on the board for almost 4 years, we have this concept back and forth for a number of years. I mean, the CIE Report does talk about temporal and spatial components in a definition something that is objective and quantifiable. We still don't have those key elements to defining what we're trying to achieve. Yes, I agree with David 100 percent.

MR. GOLDSBOROUGH: Mr. Chairman, to me the most noteworthy outcome of the findings for our immediate purposes is the recognition or I should say the underscoring of the importance of forage that menhaden provides and the high predation and growing predation demands that

are put on them and that for our purposes that is not a Chesapeake Bay centric issue, a Chesapeake Bay only. That's a coast-wide issue that we ought to keep in mind. Thank you.

CHAIRMAN WHITE: Other comments? Seeing none from the board, Jim, I'll take a brief comment if it is not repetitious to your public comment that they already have.

MR. JIM PRICE: My name is Jim Price, Chesapeake Bay Ecological Foundation. At the presentation that I gave to the CIE, I clearly explained that ecological depletion is occurring in the bay, but there is a difference between ecological depletion and localized depletion, but it is still depletion. I think that's why this is very confusing to people, but striped bass are food-limited. I did present the data and it is part of the record. I would be glad to answer questions later if anybody has any. Thank you.

CHAIRMAN WHITE: Thank you very much, Jim. Seeing no other questions, I would like to move on to the Stock Assessment Update.

STOCK ASSESSMENT UPDATE

DR. ROBERT J. LATOUR: As I look around the room, I see some familiar faces and many that are not. Believe it or not, this is my first board meeting and why not do as it as the Chairman of the Technical Committee, right? I've been affiliated with ASMFC for about ten years in various technical capacities ranging from striped bass to multispecies to assessment science and now to menhaden.

I would like to acknowledge Alexei Sharov who was the previous Chair of the Technical Committee. I've now taken it over later this year and look forward to working with you for the next three years. Some of the heavy lifting will occur in year one of my term; that is, we're underway for a benchmark assessment. I have a few brief slides to provide where we are, updating you on the progress and some general comments about where we're going.

I thought I would start off in part with the stock structure question to at least inform you of how we interpreted it in light of the CIE findings, in light of the research that has been happening. For many years it has been argued life history does not warrant a stock structure question; that is to say there is no stock structure. It is a coast-wide unit stock and thus the notion of developing assessments on a regional scale is not possible.

Some of the arguments involve the notion that eggs are spawned offshore and are vectored into estuaries. Spawning occurs year round as adults migrate from southerly areas off Cape Hatteras to New England waters. Tagging studies in the seventies indicated that this migration pattern in fact did occur and that it does happen with older animals stratifying and traveling farther north.

I highlight in blue two recent genetic assessments which the CIE delineated as necessary to address the structure question and ultimately the localized depletion question; one conducted at VIMS and one conducted at the Texas Parks and Wildlife Department. Both concluded that there was no stock structure at least genetically, so the coast-wide unit stock assumption is thus warranted.

That does leave open the idea of sub-stock structure at the life history based kind of approach, and the otolith chemistry work that Brad referred to is probably the most definitive way to address that albeit it's in its sort of preliminary early stages. For the purpose of this assessment we continue with the assumption that we have a coast-wide unit stock. Without definitive evidence to suggest otherwise, we're moving forward with that assumption.

Here is an updated picture of the landings data that we have; a couple of changes relative to other figures you may have seen. On the X-axis we have years on the left panel ranging from 1873 to 2008. Both Y-axes are scaled as thousands of metric tons. The color on the left panel, the brown represents historical landings that Joe Smith, Doug Vaughan and his team in Beaufort were able to recover from U.S. Fisheries Statistics Books, which were recovered at the time from various sources of reporting.

Part of our effort here is to go back as far in time as possible to get as long of a catch history as we can. In the light blue on the left panel you see the reduction landings and in the red the bait landings. It's noteworthy that in 2008 we have the lowest landings record in the '55 to '08 time series and also the lowest effort exerted by the industry.

On the right panel I just blow up the 1940s onward to get a better characterization of the most recent time period. These are the primary data inputs for the assessment, as you all know, and in fact largely drive the assessments of the past. In terms of fishery-independent data we have a number of indices.

I will note that none of these programs are designed to sample age zero menhaden. Age zero menhaden indices are derived as bycatch from various surveys directed at either striped bass, alocines or other fishes. I want to bring that to your attention simply because the interpretation of the data rests on the proper design. Whether these data reflect abundance of year class strength is a question; and when you don't have a survey directed at sampling the species of interest, you have to make sure you consider that as an uncertainty in your assumption.

We have lots of years of data; Maryland being the longest time series, 1959-2008, so I wouldn't characterize it as a data-poor scenario. I've actually been tasked with reworking the juvenile data. I've spent a number of weeks already on this project. This was also brought up in the CIE Review, so we will be handling the juvenile index data differently than in past years, building coast-wide indices more from the group up rather than a composite approach that you may have seen in the past.

Here I blow up the Menhaden Juvenile Index. On the X we have 1950-2008; on the Y just the index values of relative measure. The same story that you've all seen is the high increase in juvenile abundance in the seventies and eighties followed by a precipitous decline and a consistent one up to the present.

The bottom panel I've just pulled out 1990 to the present to give an idea of the relative measures in the most recent ten or so years. We see strong year classes in '94 and 2055. We've seen other sources of evidence suggesting that those are in fact strong year classes both in the fishery landings as well as in predation by striped bass and other predators; and if you're willing to interpret it this way, a significant and consistent increase since 2006 to the present.

The only adult data that we have – and this I would characterize as a data-poor aspect of the survey. In fact, it provides the most heartburn for us – is a single pound net index from the Potomac River. A hundred pound nets, we derive an index of abundance for the entire adult coast-wide stock. This is the only data that we use; it's the only data that we have, so there is a precedent and a need for some other broader-scale adult survey.

The assessment models, without going into the equations, which is admittedly my favorite part, but I'll spare you, the primary model will have to remain simply for consistency and carry forward. It's a forward-projecting statistical catch-at-age model. I've listed six or so characteristics of it. Those that are in blue are areas that we are focusing our attention to improve or modify relative to past assessments.

I list here an age and time-specific natural mortality. In the '03 and '06 assessment you may recall we modeled natural mortality as age-specific but constant over time. The age-specific natural mortality vector came from the MS-VPA Model, which presumably reflected predation impacts by the suite of predators in that model; namely, striped bass, weakfish and bluefish.

Predation is being included. At the level lf the assessment, we're going to attempt at this go-around to make that a time and age-varying matrix now of Ms to account for temporal changes in predator abundance and thus perceived predation impacts. Relative to other assessments on the east coast, this is probably the most advanced and forward thinking. Short of doing it as a simultaneously modeling exercise, this is the next best thing.

It uses typical machinery, the Baranov Catch Equation. It relies on size at age. We're handling some of the size-at-age interpretation differently, modeling things as cohorts; that is, changes in sizes following those cohorts through time rather than modeling those changes in size as strictly a function of time.

Ricker and Beverton-Holt Recruitment Curve Selectivity, the reduction fishery presumably has a logistic or a saturating S-shaped selection curve. We can modify that to account for the range contraction of the fishery by bending that saturation curve down, making it more dome-shaped; that is to say, reduce the effect of fishing on older animals. That range contraction in the centering of the fishery in the Chesapeake Bay and near coastal waters is being handled through

the selectivity curves. The bait fishery is a dome-shaped, for sure.

I have already discussed the indices, how we're treating those a little bit differently than in the past. No real new data has come to us since the last assessment short of maybe a New York or Western Long Island Young-of-the-Year Survey that we may add into the mix, but I wouldn't consider it a significant new development in terms of data availability.

That sort of summarizes the machinery for the primary model, what has been used for the last two assessments. We are considering alternatives. Rick Methot from the West Coast National Marine Fisheries Service has championed stock synthesis, and the third iteration of that modeling package has hit the streets, and it is now taking over NOAA to some extent.

Given that the Beaufort Team is largely driving the assessment, it is pretty clear that we need to consider this an alternative modeling package. As you know, we have the MS-VPA. This is an ASMFC-stimulated and supported project, so that's still a viable alternative given the VPA characteristics and caveats that we all have dealt with.

Two others, a stock-reduction analysis, a program developed by – well, the modeling was developed in the eighties by Daniel Camaro, but a user-friendly software interface was developed by Carl Walkers a few years ago, and basically it allows us to quantify uncertainty, which I would characterize as a weakness of previous assessments. Given the National Standard 1 Guidelines, I think we're going to make all attempts possible to improve our characterization of uncertainties. This may be a major tool in doing so.

The last, as you've heard about, we list here as an alternative a coast-wide model, the Steven Martel Version. Brad made me put it on there as an alternative model. In my view it's basically the primary model with some subtle difference in the assumptions and how the data are treated. It's basically the same structure or the same approach. Steve turned some nons slightly differently than Erik did and got a different result.

I'm not sure if it is completely an alternative, but it is being considered and Genny Nesslage is heading up the effort to understand it more thoroughly. Our assessment and review schedule, we will be following the SEDAR Process; that is the Southeast Data Assessment and Review. The data workshop was held in May, a two-day workshop in Richmond, Virginia. We're currently finalizing the workshop report.

Our assessment workshop is scheduled October 19-22 in Beaufort, North Carolina. That will be where the heavy modeling and heavy status determination efforts take place. Following the new year, we'll have a full technical committee meeting the week of January 11th. The peer review will happen the week of March 8th, and we hope to have the report to you all by May of 2010.

Two more slides just listing the terms of reference; they are fairly boilerplate in my opinion. The first is to evaluate fishery-dependent data and fishery-independent data, the quality of the precision using the assessment. Number 2; evaluate models used to estimate parameters and biological reference points. That would include the primary model of the past as well as any alternatives.

Evaluate the potential for conducting assessments at a sub-regional level – I think that's going to be challenging given the lack of evidence suggesting stock structure. State and evaluate assumptions made for our models – that will be clear, and I think this also characterizes our need to better describe uncertainty relative to past assessments. Five also speaks to uncertainty for reference points. Six is a standard age-structured reference point; look at retrospective patterns and characterize their impacts. Seven is recommend stock status and reference points. Of course, we can't forget future research. With that, if appropriate, I will take questions.

CHAIRMAN WHITE: Thank you very much, Rob. Comments. Bill.

MR. WILLIAM A. ADLER: Could you go back for a second into your – you said something about pound nets; you have a few pound nets and that's where you get some of the data; is that where you get most of your data or are there other sources for your data?

DR. LATOUR: I apologize if I wasn't clear. The lion's share of the data or the richness of the entire data set is probably the catch-at-age matrix, which is fishery dependent, of course. The fishery-independent data that we have are these age zero indices from various states and a single pound net derived index of abundance for adults being age two to three fish. That comes from a pound net survey conducted in the Potomac River, so we about a hundred pound nets to derive an index of abundance for age two to three menhaden and apply that as representative of the entire changes in abundance of the adult component of the stock coastwide.

CHAIRMAN WHITE: Other questions or comments? Yes, Doug.

MR. DOUGLAS GROUT: Rob, I'm very encouraged by the technical committee and stock assessment committee's attempt to a time-variant M. I think that's going to be real exciting if you guys can pull that off.

DR. LATOUR: It hasn't worked yet.

MR. GROUT: Yes, I understand.

DR. LATOUR: We will try.

MR. GROUT: I'm glad you're trying; that is the important part. That is going to be great if it can work.

MR. G. RITCHIE WHITE: When you talk about the alternative models, about how much time does it take for you to run each of those models?

DR. LATOUR: A lot; much of the modeling has been going on for most of the summer. In fact, the assessment workshop will be a presentation of the results more than it will be actually modeling. We have assigned individuals to handle the alternative models. SS3 is being led by Doug Vaughan. MS-VPA is Matt Cieri. Others have been involved in its development. The Stock Reduction Analysis is being led by Behzad; and as I mentioned, Genny is handling the alternative Martel Version. All of that is ongoing now, in fact, so we will be looking at results more than actual model runs at the assessment workshop, I think.

CHAIRMAN WHITE: I'm looking for any additional questions or comments. Seeing none, we need a **motion to approve the Terms of Reference. Bill.**

MR. ADLER: **So move**.

CHAIRMAN WHITE: Pat Augustine seconds. Are there any objections to the motion? Seeing none, we will consider the motion approved and the **Terms of Reference are accepted**. I'd like now to go on to the Ecological Review by Brad Spear.

REVIEW OF ECOLOGICAL REFERENCE POINTS EXAMPLES

MR. SPEAR: Mr. Chairman, while we're waiting for the presentation to come up, at the last board meeting the board tasked the Management and Science Committee and ASMFC staff to do basically a literature review for examples of ecological reference points that have been put into practice around the world. This presentation is a summary of our findings.

Some general conclusions that the MSC came up with, there is substantial literature on how ecological reference points may be developed and implemented. Most of this is coming out of ICES in Europe. There are a number of scientific groups developing ecological indicators and guidance to help managers adopt ecosystem-based strategies.

They do point out that there are very few examples of ERPs actually in practice and suggested that to begin the process by incorporating multispecies or environmental influences into a single species assessments. The examples MSC and staff came up with are broken down into two examples where ERPs are actually applied in management and efforts by different entities that are steps moving in the direction of considering the ecological role or forage fish for reference points.

The first example that is in practice is Antarctic Krill. Their reference points are set with the goal of providing sufficient prey for fish, predators, birds and marine mammals. There is not much data available for this species, so the reference points are more based on theories and empirical data, but they have been established to ensure stable recruitment and stable ecological relationships.

The limit reference point is set at 20 percent of the virgin biomass or estimate of virgin biomass. Their target reference point for biomass is kind of a two-part decision rule. To achieve the goal of stable recruitment, the long-term projection of biomass should be such that the probability of biomass falling below 20 percent of virgin biomass in the next 20 years is less than 10 percent, so essentially a risk tolerance.

The second decision rule is to maintain the ecological reference points and kind of set basically an arbitrary biomass target of 75 percent of the virgin biomass. They came to that basically – many target reference biomasses are set at Bmsy, and they kind of split the difference between Bmsy and virgin biomass and came up with 75 percent of virgin biomass.

The second example is the Pacific Sardine managed by the Pacific Fishery Management Council. The objectives for management of that species is to prevent the Pacific Sardine from being overfished, to maintain high and consistent catch levels and to account for environmental conditions when setting catch levels.

The reference points that they have adopted, there is a biomass limit which is the lowest estimate at which harvest is allowed. They have also adopted, through their plan, a maximum harvest level in any condition. The kind of ecological reference points are in their annual catch limit process. They adjust their catch limit each year based on sea surface temperature averages for the previous three years. They use an equation that basically adjusts the catch limit based on temperatures.

Now getting into the examples that are not necessarily ecological reference points but kind of moving towards considering ecological impacts. The first one is a multispecies modeling effort, and this is in the North Sea. It is very similar to the MS-VPA effort that the commission is involved in and looks at predator-prey interactions and the population dynamics of the suite of species, and similar to the MS-VPA it is very data extensive.

One exercise that they have conducted is coming up with a theoretical biomass target of a suite of their predator species. They say that the proportion of predator fish in the model should be greater than – no, proportion of fish greater than 40 centimeters should be greater than 0.3. That is, again, taking into account the multispecies interactions. The model can actually predict how long it would take for each of those species to get up to this biomass target.

The North Pacific Fishery Management Council has taken a number of steps to move in this direction. Their Groundfish FMP prohibits the directed fishery of over 50 forage species and essentially allowing a bycatch fishery of forage fish that is limited to 2 percent of the target species weight.

Another example with the North Pacific Fishery Management Council, the Aleutian Island Fishery Ecosystem Plan has been developed and essentially provides an early warning system for fishery managers. There are no reference points in that document, but it does kind of put their research and modeling and management decisions into an ecosystem context.

The third way that they have been moving in this direction is by putting together an Annual Ecosystem Considerations Report on the status of a number of different ecosystem indicators. Similarly this provides early signals of direct human effects on ecosystem components that might warrant management intervention. Some of the indicators that they include in this report are environmental, productivity, looking at different nutrient levels, habitat and forage fish.

The last effort – and this was brought up, I believe, in the past is the Maryland Sea Grant effort, which ASMFC staff at a couple of levels – or a couple of different species have been involved with. Basically, the overall goal is to develop ecosystem-based fishery management plans for a number of key species in the Chesapeake Bay area, and considering, again, a suite of ecosystem factors, including primary production, habitat, human impact and forage fish. This is in the relative early stages of development, but the ultimate goal is to identify reference points to ensure a healthy menhaden population. Thank you.

CHAIRMAN WHITE: Thank you very much, Brad. It is difficult but anybody have questions or additional comments to make regarding this? David.

DR. PIERCE: I think it's a good summary and what we have in writing is going to be very useful certainly to me. There are some great

websites that we can reference enabling us to delve a little bit deeper into these issues. One I'm going to look into is the one on the Pacific Sardine. I find it rather interesting if not completely fascinating that the managers in that part of the world, the West Coast, have been able to factor in the sea surface temperature in their reference points, bring in sea surface temperature as a way to trigger specific management decisions.

Again, sea surface temperature makes sense on the West Coast because they deal with El Nino. All of this reminds me from, what was said and from what I've read, reminds me that there must be a wealth of information stockpiled in the Northeast Fishery Science Center regarding sea temperature, surface bottom and in between, information collected over decades that might be of use to us, ASMFC, in enabling us to perhaps better understand the influence of this key environment parameter, temperature, on the distribution of our fish, effects on migration up and down the coast, sea bass distribution, scup distribution, menhaden movement – certainly, menhaden movement – North Atlantic oscillation.

I haven't got a motion to make but I certainly wish that there would be some opportunity down the road for our technical people to deal with their federal counterparts to acquire that information that would enable them and enable us to better understand what has been going on over the decades, certainly recent times with sea temperature and that might have affected the movement and distribution of menhaden.

DR. LATOUR: Valid points and I agree with you there is plenty of data for sea surface temperature, et cetera, available. What is missing is an independent sampling program for adult menhaden. We have no idea and we have no monitoring program in place to determine if lumens are correlated with temperature positively or inversely. There is just nothing available on a coast-wide scale, for sure. That is our major limitation.

MR. ADLER: It seems like years ago when the menhaden science reports were given, there was a comment that the rise and fall of the menhaden populations was mainly due to ecological environmental factors. Is that still thought to be a viable statement?

DR. LATOUR: Because of its nature as a forage fish broadcast spawner requiring eggs being vectored into estuaries and nursery zones, that is absolutely a correct statement. We expect the environment to play a significant role in structuring year-to-year abundance of age zeroes, et cetera.

You need two pieces of information to be able to understand the relationships. Those are measurements of the environment conditions and measurements of the animals themselves. We have those data for age zeroes across a number of states in state surveys, so we can perhaps do a better job there in relating menhaden abundance to temperature and other things at the age zero level. What we don't have is that at the adult level so we're really unable to proceed on that front.

MR. HIMCHAK: I know that the states were tasked to go back and look at their bait landings. We have been doing to that come up with CPUEs going back to the 1990s. I don't know if that exercise has been finished and giving you an adult CPUE over the time series for the next assessment. Probably not, but, I mean, there is some hope there in maybe a few of the bait fisheries that target bigger fish, maybe Virginia and New Jersey. Could you comment on how those data are being developed by the states and where you're at with it?

DR. LATOUR: The short answer is yes. I know Doug Vaughan and Joe Smith went through extensive thought – and I think Joe is here and if it's appropriate he can comment – on looking at developing a CPUE or a fishery-dependent-based measure of abundance both within the reduction landings as well as the bait landings. What I'm not recalling, unfortunately, is the conclusion.

It is not moving into the assessment, and there was a rationale at the time that has been captured in the data workshop. I just don't admittedly remember it off the top of my head right now. The exercise has been attempted and completed as far as I understand. There was some concern about the level of uncertainty I think that was too great to move forward with it.

MARYLAND PROPOSAL AND DISCUSSION

CHAIRMAN WHITE: Additional questions? If there aren't, Maryland has a proposal they'd like

to bring before us. Do we all have copies of that? Go ahead, Lynn.

MS. LYNN FEGLEY: Mr. Chairman, I wanted to start first by introducing myself. My name is Lynn Fegley, and I'm sitting here on behalf of Tom O'Connell today. I also wanted thank Brad for the review of the ecological reference points, which was a monumental task and really does feed into the proposal that Maryland put on the table.

Thirdly, I want to thank the chairman for changing the agenda because it is the perfect order, and I'm really glad that we got to hear the update on the assessment and the discussion of the CIE Review and Brad's summary of ERPs before we get into this. At Tom's request I sent around a short preamble followed by some motions late last week so that everybody would have a little time to think about it, and it wouldn't be a surprise.

I really wanted to start by clarifying our intent a little bit with this. First of all, I'll start by saying we really are going at this with a coast-wide perspective. It's just to step back a little bit from the Chesapeake Bay, but we see this as a coast-wide issue. Also, the intent is to kick the discussion – the board has been deliberating on ecological reference points now for nearly a decade, and it would be kind of nice to kick that discussion down the road in an incremental way and maybe take it out of the ether a little bit and put something on the table that the board can really chew on.

As a result of that, what this motion would do for now is narrow the focus to really look at the impacts of predation on menhaden and menhaden's role as the primary forage fish for several species out there. It has been highlighted over repeatedly and certainly ending in the Center of Independent Expert's review that predation on menhaden has not been explicitly accounted for in the assessment models. That is not meant to cast stones at what is excellent assessment work.

I was really happy to hear Rob acknowledge that they're going to try for a time-varying M on this, which will help that situation, but the reality is that right now there is this rising abundance of predators that is not explicitly accounted for. The CIE reviewers were consistent and clear that it will be difficult to know whether your reference points are reliably and adequately set until we start examining the impacts of that predation.

Our thought was that we would recommend that the Policy Board charge the Multispecies Technical Committee with some pretty specific tasks that would allow for evaluating some methods to look at impacts of predation and to provide to the board some scenarios and options as to what we may be looking at when predation is accounted for. With that, Mr. Chairman, should I go ahead and make the motion?

CHAIRMAN WHITE: That would be appropriate, Lynn, thank you.

MS. FEGLEY: **Our motion is we move to recommend that the Policy Board charge the Multispecies Technical Committee with the following tasks to be completed in time for a discussion at the February 2010 meeting. The first task was to evaluate methods for incorporating external variables such as predation, multispecies effects and environmental influences into the menhaden management framework.**

The second was develop alternatives or additional reference points that would account for the ecological role of menhaden, and the development of these reference points must consider information that is currently available. Three, based on alternate reference points developed under Charge 2, provide the management board a range of options for allocating menhaden to ecological functions.

CHAIRMAN WHITE: Thank you, Lynn. We need a second to the motion.

MR. R. WHITE: I second it for the purposes of discussion.

CHAIRMAN WHITE: Second by Ritchie White. George.

MR. LAPOINTE: A couple of things; I think first just from a timing perspective, the Multispecies Technical Committee and the Multispecies VPA folks are a lot of the same folks who are on the Menhaden Assessment Group, and so I'm concerned. As I understand it, the current assessment is moving forward, the assessment will occur this fall and the peer review will be in March, I think.

I would like some comment on whether we'll be double-teaming them if this motion went forward. I think that's just a timing-and-process question and workload question. I want young Mr. Cieri to survive another year so I can use him some more. Then under Number 2, development of reference points must consider information that is currently available, I struggle with this one because as I read the CIE Report it said we don't have enough information to make reference points for some of the things we're asking for because they said we don't have – you know, the impacts of cormorant predation will vary over time, and so we need a lot of additional work. So are we asking for a point-in-time reference point that has been recommended we don't do? That's just a specific question and so I think I'm struggling with this at this point.

CHAIRMAN WHITE: Rob, would you like to address the interrelationship with what we're tasking you, as a board, relative to the Multispecies Committee?

DR. LATOUR: I'm trying to do the numbers of cross-membership. I want to say it's probably on the order of 50 percent. The majority of the Menhaden Stock Assessment Subcommittee are also members of the MS Technical Committee; so, that being the case, the Menhaden Stock Assessment, first and foremost, is on our minds. This would be an additional workload of some sort, but I can't quantify how much.

MR. JACK TRAVELSTEAD: Mr. Chairman, I share all of George's concerns about this as well. I think, first, based on my conversations with a number of the technical committee members, we really don't have the information that we need to fulfill what this motion is asking for. I think a couple of years ago I was told that the board essentially asked the technical committee to comment on the availability of information and science to do these kind of reference points, and the answer back then was we don't have it.

I think that's still the same answer today. My first concern is we would be sending the Multispecies Technical Committee off to do work that is going to end up in having them spin their wheels. Because so many of the members of the technical committee serve on the Multispecies Committee, that would detract from getting this benchmark assessment done.

We spent a lot of time talking at our last meeting about the importance of this benchmark assessment and how much we're relying on the new information that will come out of that and how that might influence other decisions down the road. I'm afraid it's going to be – you know, it's supposed to be here in May, and I'm afraid that won't happen if we now distract the technical committee members with a new task.

The CIE Review that we just heard pointed out that if we're going to make a greater attempt at ecosystem-based fishery management, that we need much more systematic monitoring of the stocks, and we don't have that now. We heard Rob point out the data-poor condition that we have relative to the independent assessment of the adult population.

The CIE Panel went on to say that even if we had a lot of this information, our predictive capabilities are going to be very uncertain, and they recommended a use of caution when we extrapolate a lot of this data. Now, the good news is we just heard from Dr. Latour that the benchmark assessment is going to look at other models.

The MS-VPA is a lot further along than it was two years ago, and it's going to provide some good information and the predation issue is going to be assessed to some degree in the benchmark assessment that we will get in May primarily through variations in how we look at natural mortality rather than reference points.

I think we need to put this motion off until we actually get the results of that benchmark assessment and see where we are. Worse case scenario it comes back and tells us we've got a problem with the stock, and that's where we'll have to focus our efforts at that point. Best case scenario it comes back and tells us the stock is still in very good condition and that recruitment patterns have changed, perhaps gotten better, and that they have a new way of addressing predation through the MS-VPA and estimates of M.

Lastly, I would say that I heard Brad when he summarized some of the other attempts around the world at ecosystem-based assessment that in some cases arbitrary decisions were made, and that is something obviously Virginia is interested in avoiding. I think these types of decisions on ecosystem parameters are best made first at the scientific level, and I think that's what the

benchmark assessment is attempting to do. Rather than presenting a bunch of numbers to the board and having them make some type of arbitrary decision. Thank you.

CHAIRMAN WHITE: Thank you, Jack. Can you hold off on a motion, then? There were two or three other hands; and then if you want to make one, I'll come back to you. Bill.

MR. GOLDSBOROUGH: Mr. Chairman, I don't think there is a conflict between what is proposed in this motion and the CIE Review; quite the contrary, actually. The thought that we ought to develop more quantitative information about predation by various predators is something that we've already accepted and we know we need to do for the purposes of better understanding the whole trophic system toward some ecosystem-based management at some point in the future.

But, to think that we're any time soon going to understand in a quantitative way with low uncertainty how that ecosystem works such that we can adopt highly refined quantitative reference points any time soon is highly unlikely. I think what we're proposing in the Maryland motion is that we take a cue from some of these other approaches that are less quantitative in other fisheries and evaluate them and see if in the short term it doesn't make sense to apply some of those reference points as we continue to develop the more quantitative approach in the longer term.

I think if we put this in the context of some of the other species that we're dealing with and the interactions that are clearly causing issues – we just spoke at length about weakfish in the previous board meeting – then we recognize that there is quite a lot of urgency to going down this road and evaluating whether or not in the shorter term it makes sense to adopt a safeguard, if you will.

If timing is an issue, if we're looking at the benchmark assessment coming back in May and that being an appropriate decision point, maybe that's what we ought to look here as the adjustment in this motion; and instead of trying to do it by February, do it by May, and then we'll have the benefit of both of those pieces of information for that decision point. Thanks, Mr. Chairman.

CHAIRMAN WHITE: I would ask, then, if you're doing that as a friendly amendment, again to hold off until we see if there are further comments, and then I'll come back to you, if that's okay, Bill. David.

DR. PIERCE: The motion, of course, is taken from the memorandum that was sent to all of us well beforehand, so thank you very much for that advance notice. You indicate in the memo to us a number of things, and one is the results, of course, of the review by the Center of Independent Experts. You lead into that with reference to a white paper on "Ecological Reference Points for Atlantic Menhaden" submitted to the board by the National Coalition for Marine Conservation.

A copy of the bulletin from the Coalition was made available to all of us. Certainly, it was on the table for distribution. It seems to me that what you're asking for – and correct me if I'm wrong with this assumption – what you're asking for is a logical movement forward to have the technical committee take a look at and consider the suggestion offered up by the Coalition for reference points that would deal with our concerns that you echo in your memo. So, I guess where I'm going with this is are you simply looking for the technical committee to take a look at that particular strategy, that reference point strategy that has been offered up by the Coalition?

MS. FEGLEY: Can I respond to that, Mr. Chair? Yes, certainly, when the Coalition distributed that white paper to the board, one of the things that was clear was that they had come up with some pretty clear examples of more ad hoc approaches – they used the Arctic Krill example, I believe – to come up with an ecological reference point.

Yes, we were very interested in saying, okay, here is the college try; and if somebody could evaluate that, that would be really helpful, but I think that the point is really broader in that there are likely – you really have two choices in a scenario like this. We spent the morning listening to the Weakfish Stock Assessment Report, which is fascinating in that they have opened the door to including multispecies effects, and it's difficult.

So, I think that you have two choices. One is you can wait and get the perfect, you know, the

parameterized model with all the data in the world and get a very quantitative answer with quantified certainty, or you can approach it with some very defensible and more ad hoc approaches, recognizing that the results of those more ad hoc approaches are going to have to be adaptive.

But I think it would be interesting to know what we could be looking at, and so the short answer to your question is, yes, that the white paper by the Coalition certainly inspired the state of Maryland to say, okay, well, if they can do, maybe we can, too.

DR. PIERCE: If I may, Mr. Chairman, just as a followup, perhaps if the board concludes after further discussion that this motion is too aggressive, that it can't done in time, that an alternative would be for some action that would direct the technical committee to deal with the reference points offered up by the Coalition to see whether they have merit and should be considered by this board. It's just a suggestion.

MR. LAPOINTE: I was talking to Matt about this earlier today, and he said if we're not asking for quantitative reference points, why involve the technical committee because they'll be, by their nature, arbitrary, and so it would be a management decision to take a big chunk of something and save it for ecological reference points. We probably don't necessarily need the technical committee's advice on that if that's the way we want to go that I'm not advocating we do right now.

I think my inclination is to get the benchmark done and then have the technical folks look at these kinds of questions, perhaps, and other questions that come to their mind and say if we were going to do something in logical way and a doable way what that might be rather than directing them in this kind of prescriptive way.

MR. HIMCHAK: Mr. Chairman, I have a lot of compassion for the Atlantic Menhaden Technical Committee. There was tremendous investment by the commission into the Multispecies VPA and it did bear some fruit in the Menhaden Assessment in identifying age-specific natural mortality components attributable to predators; not all predators but some pretty serious predators out there.

The impression I'm getting from reading about examples of ecological reference points or ecological modeling is that not only is it taking – in the case of menhaden it's not only taking natural mortality, just overall disease, whatever, environmental conditions, and the M2 Component, which is natural mortality due to predation, but it seems to, again, and then take an arbitrary amount and essentially this is a forage fish and we need to put this in the bank.

To me that's not the complete picture of ecological management. I don't know what it is. I mean, it is ecological reference points – I know we were dumbfounded initially at the technical committee level. The examples that I've seen so far, they're improvements over single-species management; no doubt about it. In fact, the menhaden with, you know, the MS VPA is a great improvement. I think sending them down with another chore at this point detracts from their already – their workload that already have to work on.

MR. TRAVELSTEAD: Mr. Chairman, I think George hit on a course of action that would be more appropriate for us to take today rather than the motion at hand. He also raised a concern about arbitrary reference points, and that is precisely what Virginia wants to avoid. I mean, it should be plainly obvious to everyone around the table; you know, 99 percent of the fishery occurs in our state or at least the landings do, and we need to avoid arbitrary decisions.

Now, do we need the absolute perfect quantitative reference points? No, I don't think so, but we need to give the technical committee time to work there. With that in mind, **I'd like to offer a substitute motion that we direct the technical committee to complete the benchmark assessment on the schedule that they have provided here today; and that upon completion of that and presentation to the board, that they provide us with another schedule of how and what types of ecological reference points they would have to recommend for us.**

CHAIRMAN WHITE: While that's being typed, do I have a second to that motion? Seconded by George Lapointe. Louis, do you want to make a comment while they're working on that?

DR. LOUIS DANIEL: Yes, I'm a little torn on this one, but I do think Jack's suggestion is a good one, but I thought it was a little easier than this from what I recall in our discussion because I brought up an issue, I know, where we talked about re-examining the reference points and looking at any opportunity to take into some consideration the ecological importance of this stock.

I think we even talked about the possibility of a coast-wide cap as opposed to just a bay-wide cap. Those were going to be discussions that were going to be entertained once we got the benchmark assessment or the new benchmark assessment. I don't know how much this second part adds to it because I think what we're going to get from the technical committee, when they come back to us in May, is going to be probably some of this information, anyway. I would recommend supporting the motion.

CHAIRMAN WHITE: Jack, point of clarification; in your motion are you directing the Menhaden TC at this point?

MR. TRAVELSTEAD: Yes, and I think there is enough overlap between the two that the TC can handle this. Again, what I'm looking for in the second half of that motion is tell us what we know, tell us what we don't know, and what kind of schedule would it take to get you what types of ecological reference points. I'm not convinced that we have the kind of information we need to produce what some want so we need more advice from the TC. That's simply what I'm asking for, more advice.

DR. LATOUR: Mr. Chairman, I'm feeling compelled to put on my Mid-Atlantic Council SSC hat and think about some of the discussions we've had there. The basic gist is where is the uncertainty? Is it in the scientific assessment of the stock or is it at the management level and implementation?

If we go to great lengths to include predation for as many species as we have reasonable data into the assessment at the scientific level, which my personal view is that is where it should be placed because that is the closest to the data and closest to what we know about the status of the stock, then we are allocating biomass for predation.

Now you can make the argument not all predators are included; fair enough; if there is great uncertainty in the data of the predators we are including; fair enough, but the allocation has been made quantitatively, and a biological reference point that comes out of an assessment out of an assessment like that gives us the status of the stock determination for fisheries management.

The other alternative is to do it at the back end at the management level, but then we're into these arbitrary reference points that aren't grounded in reasonable data, in my view. I would ask Maryland to think this through some. I would ask Jack to contemplate it as well. What you're getting, if we can pull this age-varying and time-varying matrix of Ms, short of a full-blown MS VPA style simultaneously modeling exercise is an accounting for losses due to predation. Thank you.

MR. GOLDSBOROUGH: I think Dr. Latour makes a really good point there, and we certainly agree that the best case scenario in the long term is to have good data to be able to account for as much of the predation needs as possible. I guess we're under the impression, from all that we've heard, that we're still years away from that, and also that we need to attempt to adopt measures sooner because of what we see in a number of our fisheries.

Not being sure of how much information we have now, as was mentioned, is exactly the point. Let's task the people that know and the people that are organized under this commission to evaluate multispecies interactions with looking into that and coming back to us and saying here is what we think we may able to do with available information in the short term, even as we continue in the longer term to develop a more quantitative and perhaps more preferred approaches.

As far as timing goes, I think we have to also remember the commitment we made to the public three and a half years ago when we began this five-year cap and research program. When we told the public who had – if many of you will recall, in large numbers, I believe on the order of 20,000 e-mails and letters that they weren't satisfied with a cap. They weren't satisfied with some similar measures that were on the table.

They wanted to shut down the whole fishery, but this board saw, through its wisdom, that was not appropriate step at the time, that we had in fact

the coast-wide assessment that said the stock was not overfished, but recognized that we did have a lot of ecological warning signs in the Chesapeake Bay and elsewhere and thought that we should generate more information about it.

Unless we conclude this is a sudden step to go down this road, I also want to remind us that in view of the recognition last year that we were halfway along that five-year period and really didn't know what we were going to have to show the public at the end of it, which is at the end of next year, this board decided by motion a year ago to evaluate ecological reference points, and we really haven't gotten anywhere yet.

I think what we've seen in some of the work that's been done by the National Coalition for the Marine Conservation and by staff in pulling together available information on how ecological reference points can be and have been developed with available information and less quantitative approaches, that that serves as a basis for taking short-term, conservative action, precautionary, if you will, while we continue to develop longer-term more quantitative approaches.

MR. GROUT: I guess I have a little bit more positive viewpoint than Bill about the technical committee's abilities. I know the people on those technical committees; and if anybody is going to be able to include this concept of a time-variant M, it's these folks. As you can probably tell from the last time I spoke, I'm pretty excited about this, and I think why would we want to even consider an ad hoc method when we potentially within the space of about nine months might have a quantitative method that can account for these things?

I also understand the need to not sit here and spin our wheels. I think if we can do this in a sequential event and say, "Okay, do the best you can, Technical Committee, over the next nine months in trying to produce these time-variant Ms." If it doesn't come up, then we've got another direction to go, which I think would be appropriate, the entire Maryland Proposal, task the Multispecies Technical Committee with those three subjects that Maryland is doing. But right now I would rather have them focus their efforts on something that could be far better than an ad hoc method for our management of menhaden and the ecosystem.

MR. TRAVELSTEAD: Mr. Chairman, back to Dr. Latour's point that he made earlier, again I'm in complete agreement with that approach, and that's why I've offered the motion to make sure that the technical committee is not distracted in getting that work done. That's how important I think it is.

There was one piece of my motion that was left out and I think it gets to that very point. After the word "today" on the third line, it should say "and after its completion". Again, my point has been let's let the TC complete the benchmark assessment and present it to the board, and then at that point have them tasked to move on to these other questions.

CHAIRMAN WHITE: Okay, the seconder approved that. George, you also had your hand up for a comment.

MR. LAPOINTE: I'll ask a question. Rob mentioned the question of uncertainty. He said in his role as a member of the SSC of the Mid-Atlantic Council that the handling of uncertainty kind of frontloads some the questions we're addressing here today. Is our assessment taking into account some of those uncertainty determinations, adjustments, whatever in the current assessment that we're undertaking?

Because, if that's the case I think we can say to the members of the public that Bill has mentioned that in fact we're doing it; maybe not in the way that we thought we would a year ago, but we're taking into account the ecological function.

DR. LATOUR: In past assessments, which I'll point out in '03 the M vector went to age-varying driven by the MS VPA, in '06 as well, and now we're going to time and age. In past assessments I think a fair criticism would have been the poor treatment of uncertainty. Stimulated by National Standard 1 Guidelines and this whole ACL framework, I think we're all falling in line with paying more attention to this, and I hope – it is my intention, anyway, to suggest to the remainder of the committee that we do a better job characterizing uncertainty associated with various input parameters, various datasets as they manifest to various potential stock status determinations.

So, the answer to your questions is yes. It has not been an element of our past, but I'm hoping

it becomes much more significant in the future, and the idea being that we would be able to provide a range – hopefully, as a committee understand the range of possible outcomes as a function of uncertainty in the data that we're using or relying on for the assessments.

If we stop there at the scientific level, there may or may not be – and this is what the Mid-Atlantic Council wrestles with – an additional level of uncertainty associated with implementation. I would just point that out for the purpose of keeping those two separate because they are very, very separate.

MR. R. WHITE: Mr. Chair, I seconded the original motion for the purposes of discussion, which I think we've had a really good discussion; and after listening to all of it, I think the original motion is probably premature, **and I withdraw the second**.

CHAIRMAN WHITE: Lynn, you had a comment.

MS. FEGLEY: I would just like to say that it was a good discussion, and I thank you, Mr. Chairman and the board for that. I do want to go back to, again, what I said at the beginning on what Maryland's intent was. This board has debated this question of ecological reference points for a very long time now. We do have this predation elephant in the room.

I completely agree with Doug that the assessment, including the time-variant M, is going to be a really important improvement if they make it work, but I also would just like to leave this with the board's consideration again of what we're committed to in Amendment 1 of the FMP with the menhaden we will protect and maintain the important ecological role of menhaden.

And also really to again with Doug, we do have some of the best stock assessment scientists in the world supporting our management. These people are good, they're smart. There are people on the Multispecies Committee who are I think very capable of taking a task like this on and providing very good information to the board that would not be ad hoc and useless and arbitrary. I think it would be a very good platform for discussion to move this thing down the road; and that giving the committee a chance to take a whirl at it would be worthwhile. I just wanted to leave it at that for the record. Thank you, Mr. Chairman.

CHAIRMAN WHITE: Thank you, Lynn. Procedurally we will continue on, if people wish, for anymore comments on this substitute motion and then we will go back to see if there is anybody else who wants to second the original motion. Are there any further comments currently on the substitute motion? Yes, Bill.

MR. GOLDSBOROUGH: Mr. Chairman, just two points. First, I need to echo what Lynn just said about the quality of our technical support given what Doug implied about what I had said, and I don't want the board to left with the impression that I thought otherwise; certainly not.

The second point was wondering within the substitute motion, which may become the main motion, whether or not we have to have those actions stop and start one right after the other, why we can't have a little overlap, and whether or not the Menhaden Technical Committee is the proper body to make recommendations back to the board on the ecological reference points; I'm not sure.

We had proposed the Multispecies Technical Committee because we thought that made the most sense. But, then, finally, I just want to echo what I said before about timing, too. If I'm hearing, as Dr. Latour was suggesting, that we're on a much faster track than we had been led to believe in the past on more quantitative approaches, then that's, of course, great, and would urge us to keep in mind that we have this commitment to the public.

If we can make measurable progress and have some alternative management regime that accounts for menhaden's ecological role well under way or under development by the end of next year, then we at least can hold our head up high to the public that we've given it our best effort and are on our way to completing what we actually committed to eight years ago in the current amendment, which includes objectives as cited in Maryland's preamble here, objectives to maintain and improve menhaden's ecological role, and, in fact, that we haven't done anything on the ground to do that.

So, I do think it's important to keep that sense of urgency with the commitment we made to the

public; and if we can make measurable progress by then, that's great. Whether or not the Menhaden TC is the right way to try and go down the ecological reference point road or not, I'm not sure. I just toss that out. Thank you.

CHAIRMAN WHITE: Well, I think in response to that – and I'll let Jack speak to it, but I think the discussion that went around, as I understood it, that at this point in time the Menhaden TC had the qualifications and the ability to do it; and the Multispecies at this point in time, it would be detracting from where they went. If I'm speaking incorrectly, then someone please correct me, but I think that's the way it was left on that, Bill. Any other comments to this motion? Do you want time to caucus?

EXECUTIVE DIRECTOR JOHN V. O'SHEA: I think the point here is that you need to deal with not having a second on the original motion. If you don't have a second to the original motion, you don't have an original motion.

CHAIRMAN WHITE: All right, I stand corrected; in the interim we need a second. Jaime Geiger is the second to the original motion, so we have an original motion, but we're voting now on the substitute motion. Is this on the substitute motion? Go ahead.

MR. TOM FOTE: I would like to hear from the public.

CHAIRMAN WHITE: Would you state your name and affiliation, please.

MR. CHARLES HUTCHINSON: My name is Charles Hutchinson. I am associated with the MSSA, and I work with a number of other groups. I've been watching this ballgame you've got going here with menhaden for eight years. I think I can fairly say that the public's view of your performance is not very good.

In many of these meetings we see a lot of this technical stuff thrown around but we see no management. Today this motion was put forward by the Maryland Group to accelerate some meaningful action before we see another weakfish thing facing us is right on target. It is very disturbing to me to see how we dance around the business of managing. That's what you people are paid for and it's not what you're doing.

That leaves the public with not many alternatives. Basically, we've got two things left to us if you don't begin to get with it. One is, as we've seen recently with actions on governmental agencies who don't perform, to take them to court and make them perform. Another is federal legislation which takes you out of the loop. Now, those are not very pleasant things to think about nor are they easy, but you have a chance today to stop the public feeling that strongly about this. Thank you.

MR. LUKENS: My name is Ron Lukens, the senior fishery biologist for Omega Protein. Thank you, Commissioner Fote, for allowing the public to have a word. We're certainly anxious for the stock assessment process to reach its conclusion. It's the science that drives what we know, and it is I think going to give us the information that will allow us to move forward in a scientific and defensible way.

We would definitely support – well, let me say it this way, we don't in any way want to derail any kind of good debate about ecological management, ecological reference points. This is the direction management is moving it and we support that. I think this is one of timing, and we certainly support the notion of tasking the technical people to look at this in more detail once the stock assessment is complete. Thank you, Mr. Chairman.

CHAIRMAN WHITE: Thank you, Ron. Any other comments from the public? Ken.

MR. KEN HINMAN: Ken Hinman, National Coalition for Marine Conservation. Mr. Chairman, the first thing I want to do is thank the state of Maryland for a valiant effort. I know they've read the paper we submitted. I don't know how many others did. I can't summarize it. It was eight pages long and it has about 30 citations, and we do conclude with ecological reference points, our recommended ecological points, but not is not a single reference point cited in that paper that is not taken from the scientific literature or the policies and practices of other governments, our own government and fishery management councils, other forage fisheries.

We did not make any of them up and I think the characterization of any of these kinds of things as arbitrary is unfair and I think ultimately unscientific. I'm going to keep this brief,

though. What I see happening here – oh, I wanted to make very clear, though, one point that we made in our paper and I think was clear in all the other information that has been presented is that the current reference points are not adequate. I think everybody has to agree with that.

Just measuring spawning fecundity and a fishing mortality rate that is designed to achieve sustainability of the fishery does not take ecological matters into account. The reference points that have been recommended, the ones we cite in our paper – and there are many and I hope you will read it – are based on single-species assessments. They are using information that is available now in single-species assessments and in the Menhaden Assessment.

They deal with biomass and they deal with fishing mortality in relation to natural mortality. These things are ultimately management decisions. This is something that goes all the way back to the first peer review in 1999 and again in 2004. When the ecological reference points' questions came up, they recommended that it required management goals that allocate prey to the predators.

They specifically focused on abundance, biomass levels and fishing mortality in relation to natural mortality. These things can be done, and they are management decisions, though. As a member of the public, I think this is just another example of the ping-pong game that has gone on between the managers and the scientists for the last ten years.

You're hitting it back to the technical committee and I have no confidence that they aren't going to be coming back – I mean, I'm sure they're going to be coming back ultimately with asking you to make the decisions you're being asked to make today. Thank you.

CHAIRMAN WHITE: Thank you, Ken. Any other public comment? Yes, Jim.

MR. PRICE: I've listened to all this discussion today, but I'd like to make it very clear to the board that contrary to what you heard, there is plenty of data that could guide the board and the technical committee in making the decisions that Maryland DNR suggested that we go down the path to decide on the ecological reference points. My program, the Predator/Prey Monitoring Program, has examined over 6,000 striped bass since 2004.

That data has been given to DNR. It's in their computer base. The gentleman who spoke earlier about we need to look at a lot more striped bass stomachs, well, I don't know how may more than 6,000 you need to look at, but these fish have been examined in the Bay and off the coast of Virginia and North Carolina. We've published one paper on our findings, so I have the data if anybody ever wants to use it. Thank you.

MR. SEAN McKEON: Sean McKeon, North Carolina Fisheries Association. I just want to go on record as supporting this substitute motion. If they opened up the EEZ to striped bass fishing, we will be very happy to supply more striped bass stomachs.

CHAIRMAN WHITE: Back to the board, George.

MR. LAPOINTE: I just want to respond a little bit. I went up and asked Rob, and it strikes me – well, first of all, I'll make a comment that the Maryland motion ping-pongs the question back to the technical committee as well, and so we're just talking about one side of the table versus the other, because they're asking the technical people to make recommendations.

Then, again, going back to Rob's questions or comments on how the evaluation of uncertainty will address the issue from the back, I'm hoping that he can work with our scientific staff to put something in the newsletter to say, you know, we're doing what people are asking for, but not in the manner they're asking for.

So, if we accomplish the same end, I think that it is responding to the questions that this board has asked and this commission has asked. I think if we can be faulted, because I don't understand it entirely, it would that we haven't talked about what this will do for us. I think the newsletter would provide a good start for doing that.

CHAIRMAN WHITE: Thank you, George; anymore comments on the motion. Do you want time to caucus? Let's take 30 seconds.

(Whereupon, a caucus was held.)

CHAIRMAN WHITE: Okay, I'll read the motion while they're caucusing. Substitute motion to direct the Menhaden Technical Committee to complete the benchmark assessment within the schedule presented today; and after its completion, have the Menhaden Technical Committee present another schedule on how and what types of ERPs to recommend to the board. Motion by Jack Travelstead; seconded by Mr. Lapointe. Go ahead.

MR. GOLDSBOROUGH: Sorry, Mr. Chairman, but we're wondering. It seems rather unclear when that would take place; the technical committee presenting another schedule?

CHAIRMAN WHITE: Do you want to clarify that, Jack?

MR. TRAVELSTEAD: After the benchmark assessment is completed and as soon as they are able to present another schedule. I don't know how long it will take them to lay all of that out, but the intent of the motion is as soon as possible thereafter. The intent of the motion is not to have that process slow up the benchmark assessment. We're going to, hopefully, see the benchmark assessment in May, so it won't happen before then.

CHAIRMAN WHITE: But I think that's why it would be difficult, Bill, to have a time certain at this point in time, but I understand his intent. Are you okay with that? Thank you. All right, all those in favor of the motion please raise their right hand; all those opposed, like sign; null votes; abstentions. **The motion carries**.

EXECUTIVE DIRECTOR O'SHEA: That now becomes the main motion.

CHAIRMAN WHITE: Okay, comment.

MR. BILL COLE: Mr. Chairman, I believe there were two opposed, for the record.

DR. PIERCE: Right now on the main motion, with regard to the benchmark assessment that we will be getting; can we anticipate in that benchmark assessment the possibility of there being some revised targets and thresholds for biomass and fishing mortality? In other words, that would be part of the benchmark assessment work; correct?

We may end up actually having some fishing mortality rate targets that could be lower than what they are right now, which would ostensibly factor in the assumption that natural mortality is higher for the purposes of – is that a correct statement, that is part of the benchmark assessment, to consider whether or not the targets and thresholds should be realized?

DR. LATOUR: You are correct in that we will get a revised characterization of the stock status through the eyes of the benchmarks. First of all, what I thought you were referring to is will we have different types of benchmarks. Although we have discussed this amongst the committee, I'm not certain – my feeling is that we won't deviate from them drastically.

In other words, if we have a F fishing mortality rate benchmark that we will compare the estimated fishing mortality rate to and determine whether we're overfishing or not, if we have an egg-based productivity as a proxy for biomass, then we will point out that change in benchmark went through the last benchmark assessment and through peer review and it was accepted as more appropriate for the species. We will have a revised characterization of where we stand with respect with that; however, additional benchmarks of other types at this point I'm not optimistic will be included.

DR. PIERCE: Okay, perhaps I wasn't clear. With other benchmark assessments, frequently we have new reference points, biomass reference points, fishing mortality rate reference points. Therefore, with this benchmark assessment for menhaden, might we get new reference points for biomass and fishing mortality?

DR. LATOUR: I guess what I'm trying to say is that we will have the same type of reference points as we had in the past, but the values in where we are currently with respect to them will be whatever the assessment tells us.

CHAIRMAN WHITE: Any other comments on the main motion? Does anybody need more time to caucus? Okay, all those in favor of the main motion please their right hand; all those opposed, like sign; null votes; abstentions. **The motion carries.** Jaime.

DR. JAIME GEIGER: Mr. Chairman, is it possible to have Dr. Hinman's paper appended to the minutes of this meeting?

CHAIRMAN WHITE: I guess the short answer is yes. George.

MR. LAPOINTE: I don't want it appended to the minutes because it is not part of the record – I mean, it is verbatim record, but it will be part of the record from the meeting. At the end of Joe's verbatim record there is not going to be a stapler with this on it, but it will be part of the record of today's meeting. I just wanted to correct that from the perspective of what is technically in the verbatim record.

CHAIRMAN WHITE: Is that all right, Jaime, because that would be proper.

DR. GEIGER: Dr. Hinman indicated that the paper was distributed to the board. It was part of the public record. I think there is nothing against making sure that is appended to this part of the discussion. It's already part of the public record. I'm requested it to be appended to this discussion.

MR. LAPOINTE: We don't disagree. When you first said it, I thought the minutes are really the verbatim record of the meeting, and so we don't disagree.

DRAFT ADDENDUM IV

CHAIRMAN WHITE: Okay, moving on to Draft Addendum IV. I have a request, and I can't read his writing, but it is Daniel Nobles. He wanted to make a brief comment prior to the discussion on the amendment.

MR. DAVID NOBLES: My name is David Nobles. I'm here on behalf of the Coastal Conservation Association of Virginia. The original cap of five years was supported by our organization and we continue to support continuation of that. We hope that you will continue setting the Chesapeake Bay and the menhaden in it even past that date.

Currently we are opposed to the three-year extension if the extension only is that, an extension of the status quo of what is going on right now. What we would like to see added to the addendum are three issues. The first is that at the current time I believe the ASMFC Menhaden Board suggests that as far as much as possible the industrial fleet refrain from fishing on age two and under fish.

What we would like to see in this addendum if the prohibition of harvesting two year and younger age class fish in the Chesapeake Bay. The second thing we want to see is that if we extend the cap for three years, to use a new average catch within this cap. I think currently with the three years that we know of the records from right now of about 65,000, 84, 000 and 85,000 metric tons, you have about a 78,000 metric ton average for those three years.

For whatever three years you use, the latest three when this addendum finally goes through, we would like to see that cap reduced to what is currently being caught in the bay. The last think that we would like to see added to this is a requirement allowing independent on-board observers on these ships when they are fishing in the Chesapeake Bay.

One is to monitor the age-class restriction we're asking for and the other is to monitor bycatch. There have been questions about bycatch throughout the past. We want some independent observers to carefully look at this. The main thing – and this is what I'm told through the grapevine, most of the time when observers have been on board the fleet has taken them to deep water sections of the bay, a hundred foot or so.

They drop their nets and that's pretty much a clean fishery right there. It is quite different when they get in shallow water, so included in this requirement for our on-observers, they need to be able to be on these boats at any time in any depth of water; so when the nets are dropped in shallow water areas of 40 feet or less, which occurs quite frequently in the bay, they need to observe what is going on there as well.

Get these provisions added to this and the CCA will go to bat for you at the state legislature where this thing will still have to pass. We know the repercussions if the state doesn't pass that, but our organization worked hard to get the first cap in place, and we will hard on this one if we can get these things added to the amendment. Thank you.

CHAIRMAN WHITE: Would you stay a moment, Tom Fote had a question.

MR. FOTE: Yes, when you recommended the prohibition on the catching of peanuts, the small

bunker, did you make that for the reduction or for all harvest.

MR. NOBLES: Right now we are only concerned with the reduction industry. From what we see in the records, the catch that the bait fishery is taking right now is miniscule compared to what the reduction industry takes, so at this time we're talking about the reduction industry only at this time.

MR. HIMCHAK: Perhaps I can allay some of the gentleman's fears on the three-year extension of the cap. I had an administrative question for the board. On the bottom of Page 4 it says that this harvest cap is subject to annual review by the management board; so that after the 2010 fishing season, which is the fifth year of the cap at 109,000 metric tons, prior to the 2011 fishing season the board has the opportunity to essentially review what the cap should be for 2011. I believe I have this correct.

The other aspect that is playing into this is that the extension of the cap, while it applies to seasons 2011, '12 and '13, after we get the full-blown stock assessment in 2010, we may be charting another course of action entirely. I just wanted you to understand that it was essential that we have annual review by the board of the cap.

Just administratively, do we have to specify – I guess that would take place at the Winter ASMFC Meeting, just prior to the fishing season. I would imagine all the landings data would be complete for the prior year at that point. Thank you.

CHAIRMAN WHITE: Thank you, Pete; and getting back to order, then, I would like Brad to go through the addendum.

MR. SPEAR: A summary of the timelines that have been proposed for this draft addendum, it is currently under review by the board and will be voted on to bring it out to public comment at this meeting. If it is approved for public comment, the next couple of months it will be out for public hearing and comment. We will get the advisory panel together as well.

We will bring that package back to you November, at which point the board will again review public comment and vote on final approval. The addendum is driven by Virginia's legislative process largely, which would allow for implementation July 1, 2010. The statement of the problem; the Addendum III Chesapeake Bay Cap is set to expire at the end of 2010.

Virginia requested that the board initiate the new addendum to accommodate its legislative process and to ensure that management through ASMFC continues without a gap. Option Number 1 in the addendum as drafted is status quo, in which case, again, the Addendum III cap would expire at the end of 2010.

After 2010 management would revert back to Amendment 1, in which there is no Chesapeake Bay harvest cap. Option 2 is the cap extension, which would effectively extend the Addendum III reduction harvest cap provisions from 2011 through 2013. To remind you, that's 109,020 metric tons annual cap. There is the overage provision for any landings above the cap would be reduced from the next year's cap; the underage rollover from one year to the next at a maximum of 122, 740 metric tons.

As Pete mentioned there is the provision of annual review by the board. To be clear, that is simply a review. If the cap was to be revised it would require another addendum. Compliance for this addendum would be by April 1 we would ask states with the reduction fishery to submit implementation programs, and, again, those states to implement the addendum by July 1, 2010. Thank you.

CHAIRMAN WHITE: Thank you, Brad. Jack.

MR. TRAVELSTEAD: Just on the issue of annual review, Brad has correctly said that the annual review that is mentioned in the addendum is relative to whether the cap was met or not. All the board members understand that at any time, if there is new information available that warrants a review of this addendum, that it can occur.

As Peter has pointed out, if the new benchmark assessment suggests something different, then that's always available to the board. **With that, Mr. Chairman, I would move approval of the addendum for public comment.**

CHAIRMAN WHITE: Thank you, Jack; seconded by Bill Adler. Comments on the motion.

MR. GOLDSBOROUGH: Mr. Chairman, I just want to echo something we heard from the public, Mr. Nobles, because I think it is representative of the public in general about where we are and we've been heading with menhaden, and that is that he would support the extension of a cap only if we're making good progress on more precise, more long-term management measures for menhaden that account its ecological role.

In other words, we have to not be satisfied with a cap as the end point. It was never designed that way. It was always just a temporary backstop. I think the public will be justifiably frustrated if after five years of a cap we don't have measurable progress on an alternative, but that's the important message that we just heard that I think we need to keep in mind even as we extend the cap. This is no reason to sit back.

OTHER BUSINESS

CHAIRMAN WHITE: Very valid comments. Any other comments to the motion? Time to caucus? Okay, all those in favor of the motion please raise their right hand; all those opposed; null votes; abstentions. **The motion carries**. I have one other order of business, AP nominations.

MR. SPEAR: At the beginning of the meeting staff handed out a memo for an AP nomination for Jeff Kaelin for the New Jersey.

MR. ADLER: Can make a motion that Jeff Kaelin be approved?

CHAIRMAN WHITE: I will accept that if you want to make that as a motion.

MR. ADLER: **I will make such a motion**.

CHAIRMAN WHITE: Pat Augustine seconds. Any objections to the motion? Ken.

MR. HINMAN: I had a question. I welcome Jeff to the advisory panel. I'm wondering are there any plans to convene the advisory panel in the near future. I know it has been quite some time, and I think there are a lot of things starting to happen now. Has there been any thought to that, Bill or staff, getting us together soon?

MR. BILL WINDLEY: Not to my knowledge.

CHAIRMAN WHITE: But Brad is shaking his head yes, so that may be in the near future. Anyway, without any objection, we will accept Jeff as the new member. Tom.

MR. FOTE: Do you want to ask who wants a public hearing on this addendum before we adjourn?

CHAIRMAN WHITE: Yes, we could do that. Will everybody that wants a public hearing on this get in touch with Brad; and raise your hand now would make it simpler probably. Okay, Jack and Tom.

ADJOURNMENT

Any other business to come before the board? Hearing none, I have a motion to adjourn and will accept such.

(Whereupon, the meeting was adjourned at 1:28 o'clock p.m., August 19, 2009.)