

PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
ATLANTIC MENHADEN MANAGEMENT BOARD

**Crowne Plaza Hotel Old Town
Alexandria, Virginia
August 3, 2010**

TABLE OF CONTENTS

Call to Order, Chairman George Lapointe1

Approval of Agenda1

Approval of Proceedings1

Public Comment.....1

FMP Review and State Compliance4

Technical Committee Report4

Multispecies Technical Committee Report.....12

Presentation on Menhaden’s Removal of Nitrogen in the Chesapeake Bay.....20

Advisory Panel Nomination22

Adjournment23

INDEX OF MOTIONS

1. **Approval of agenda by consent** (Page 1).
2. **Approval of proceedings of May, 2010 by consent** (Page 1).
3. **Motion for approval of the plan reviews with granting de minimis status for Georgia, Florida and South Carolina** (Page 4). Motion by Pat White; second by A.C. Carpenter. Motion carried (Page 4).
4. **Move to initiate an addendum to consider a range of percent maximum spawning potential reference points, including the current level, 15 percent, 25 percent and 40 percent MSP** (Page 15). Motion by David Simpson; second by Ritchie White. Motion carried (Page 18).
5. **Move to appoint Donald Swanson of New Hampshire to the Menhaden Advisory Panel** (Page 22). Motion by Douglas Grout; second by P. White. Motion carried (Page 22).
6. **Motion to continue the Chesapeake Bay Reduction Cap for 2011 (Page 22)**. Motion by Bill Goldsborough; second by Pat White. **Motion to table until the November meeting** (Page 23). Motion by Pat White; second by A.C. Carpenter. Motion carried (Page 23).
7. **Motion to adjourn by consent** (Page 23).

ATTENDANCE

Board Members

George Lapointe, ME (AA)	Jeff Tinsman, DE, proxy for P. Emory (AA)
Terry Stockwell, ME, Administrative Proxy	Roy Miller, DE (GA)
Pat White, ME (GA)	Lynn Fegley, MD, proxy for T. O'Connell (AA)
Sen. Dennis Damon, ME (LA)	Bill Goldsborough, MD (GA)
Doug Grout, NH (AA)	Russell Dize, MD, proxy for Sen. Colburn (LA)
G. Ritchie White, NH (GA)	Steve Bowman, VA (AA)
Rep. David Watters, NH, proxy for Rep. Abbott (LA)	Jack Travelstead, VA, Administrative Proxy
David Pierce, MA, proxy for P. Diodati (AA)	Catherine Davenport, VA (GA)
Bill Adler, MA (GA)	Louis Daniel, NC (AA)
Rep. Sarah Peake, MA (LA)	Bernie McCants, NC, proxy for B. Cole (GA)
Mark Gibson, RI, proxy for R. Ballou (AA)	Mike Johnson, NC, proxy for Sen. Wainwright (LA)
David Simpson, CT (AA)	John Frampton, SC (AA)
Dr. Lance Stewart, CT (GA)	Malcolm Rhodes, SC (GA)
Rep. Craig Miner, CT (LA)	Robert Boyles, Jr., SC (LA)
James Gilmore, NY (AA)	Spud Woodward, GA (AA)
Pat Augustine, NY (GA)	John Duren, GA (GA)
Brian Culhane, NY, proxy for Sen. Johnson, (LA)	Jessica McCawley, FL (AA)
Peter Himchak, NJ, proxy for D. Chanda (AA)	Steve Meyers, NMFS
Tom Fote, NJ, (GA)	A.C. Carpenter, PRFC
Loren Lustig, PA (GA)	

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

Ex-Officio Members

Rob Latour, Technical Committee Chair

Staff

Vince O'Shea
Robert Beal
Braddock Spear

Kate Taylor
Genny Nesslage

Guests

Patrick Lynch, VIMS

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 3, 2010, and was called to order at 3:55 o'clock p.m. by Chairman George Lapointe.

CALL TO ORDER

CHAIRMAN GEORGE LAPOINTE: Good afternoon. My name is George Lapointe. I'm the chair of the Menhaden Board. We are scheduled to go until 5:15. For members of the audience, some people have signed up to speak. We'll get folks' comments during Agenda Topic 3 on public comment.

APPROVAL OF AGENDA

CHAIRMAN GEORGE LAPOINTE: Board members, we have an agenda. There is one addition between five and six, a Multispecies Technical Committee Presentation by Genny Nesslage. Are there any other agenda topics to add? Seeing none, is there any opposition to accepting the agenda? Seeing none, the agenda is accepted.

APPROVAL OF PROCEEDINGS

CHAIRMAN GEORGE LAPOINTE: We have Proceedings from the May 2010 board meeting on the CD. Are there any changes folks want to make to the proceedings? Seeing none, is there any objection? Tom Fote.

MR. TOM FOTE: It is something that I brought up at the Lobster Board about timing of meetings and what we're going to do next year where we're basically putting on the agenda for us to accomplish on menhaden, we should look at how that will affect the meeting schedule and whether we should have a special meeting scheduled sometime just in anticipation of things that might be done.

CHAIRMAN LAPOINTE: And you want that as an agenda topic at the end? All right, with that change to the agenda, we're on the proceedings. Bill, what do you want to do? Sorry, I'm trying to move this along to get to the substance. First, any objections to accepting the proceedings? Okay, now back to the agenda.

MR. WILLIAM GOLDSBOROUGH: Sorry, Mr. Chairman, I just realized something today and I failed to bring to bring it to your attention ahead of time. I recall that a year ago when this board made the

decision to extend the Chesapeake Bay cap for three years, we also decided to undergo an annual review for each such year ahead of time. This was supposed to be the meeting when we signed off on extending it for next year. It's probably just a detail at this point, but to be consistent I thought I should mention it.

PUBLIC COMMENT

CHAIRMAN LAPOINTE: Thank you. Other agenda topics? Seeing none, we'll go to public comment. We have five speakers who have signed up. First Charlie Hutchinson, Mr. Hutchinson. Brad reminds me that this section for public comment is for things that aren't on the agenda. For the other issues, alternative reference points and the issue of removal of nitrogen from the Chesapeake Bay, we'll take public comment at the appropriate time if the board takes action on those.

MR. CHARLES HUTCHINSON: My name is Charlie Hutchinson. I am representing the Maryland Saltwater Sportfishermen's Association today, a group of about 7,000-some-odd members. Just once I would like to come to one of these sessions and be able to be complimentary in my remarks. Unfortunately, today is not that day.

I will say that we are very gratified to know that the board has now publicly recognized that the present management methodology for menhaden is not working. We have not, however, great expectations that there will be a serious departure from the same rules, procedures and methods that got us in this mess in the first place.

We say this because having indicated that you want new standards to work with, no guidance was given to your technical committee in terms of an objective to be reached for abundance. The role they were asked to fill in 90 days was unrealistic and obviously would not be met. Whether your purpose was to wake them up to devise a plan or just exactly what you intended is not clear.

On June 19th of this year the Obama Administration released its report and resulting National Oceans Policy, which also included coastal waters. It was clear in that rather lengthy statement of facts and purposes that changes have to be made in the way we manage resources. Two credos were expressed

repeatedly; one, fisheries must be managed to be sustainable; and, second, ecological methodology must be employed.

We are experiencing an unsustainable fishery in menhaden. The chart of the radical shrinkage in abundance of menhaden shows us clearly the results of our present practices. Yet you turn to an advisory group who seem to be wedded to the continuation of single-species management and whose advice has contributed much to the demise of this forage fish. Just who is managing the store here?

If you have not gotten the message previously, I think our view represents what the public wants to happen. First, they want management for results and not for process. Second, and specific to menhaden, they want to manage for abundance. Third, use the scientific community to determine how to reach the objective and not to determine the objective. Fourth, put this whole exercise on a fast track. We really don't want to see another weakfish story where the result was held hostage to process. Thank you.

CHAIRMAN LAPOINTE: Thank you. Ben Martens.

MR. BEN MARTENS: Ben Martens; I work for the Cape Cod Commercial Fishermen's Association. I'm actually here not to speak on their behalf today, though. I'm quickly just going to ask you to look into the supplemental material at some point today. Several residents of Wellfleet, Massachusetts out on Cape Cod have written letters to the board. I know they were submitted a little bit late, but they just asked me to quickly remind everyone that there are people who concerned about menhaden up and down the coast, as far up as Maine and New Hampshire and especially on Cape Cod. I just wanted to please ask you all to take a moment to read through those. Thank you.

CHAIRMAN LAPOINTE: Thanks, Ben. Ken Hinman.

MR. KEN HINMAN: Ken Hinman, National Coalition for Marine Conservation. I just wanted to make a few points as you have a discussion about how you're going to move forward in a new way of managing menhaden. The first one is that the current management system has been designed to produce high yields to the fishery on a year-to-year basis, to maintain a population of menhaden that will sustain that level of catch.

Whatever is left over goes to the ecosystem, to predators like striped bass, bluefish, tuna, seabirds and the like. The second point is that this system has produced a population at all ages that is the lowest on record according to the last stock assessment. According to the peer review of that assessment, the spawning stock's productivity is less than 10 percent that of an unfished population.

This when the current thinking on managing forage fish like menhaden from the new National Standard 1 Guidelines, for the Magnuson Act, to the scientific literature and policies and practices elsewhere, as were described in our paper that we submitted last year, and most recently in new criteria developed by the Marine Stewardship Council for low trophic-level species like menhaden, all of which recommend populations that are at least above 50 percent and as high as 75 percent of an unfished population.

Finally, I want to emphasize that new reference points are not an end in themselves. They are a means to a new end. Your motion passed unanimously in May asked for new reference points to achieve higher abundance of menhaden and to better account for predator needs. These new reference points will be a tool to achieve these new management goals.

If there is any uncertainty on how to provide you with new reference points, ecological reference points in particular, it is because you have not made your management goals clear enough as to how high abundance level you want to achieve and how much you want to provide for predators; not because there is not enough information or enough models in order to produce these reference points. They can be produced.

Just to reiterate, the reference points come in the middle; management goals come first; the reference points are a means to achieve those management goals to get those targets and to sustain them and maintain them; and then they in turn will determine what management actions are necessary to achieve those goals.

I do want to add one last thing. This is in regard to the notion that we keep hearing here that fishing has no effect on menhaden abundance, and I want to refer to the Menhaden Species Team Background and Issue Briefs Paper that was produced under the Ecosystem-Based

Fishery Management Effort for Chesapeake Bay by the Chesapeake Bay Program.

“Fishing mortality affects adult abundance, fecundity and egg production. In combination with natural environmental variability, fishing also potentially can contribute to temporal and spatial shifts in spawning areas or times that may affect survival probability of eggs and larvae.” It also says, “Even when environmental factors exercise the dominant control of a recruitment, other factors; for example, excessive fishing mortality, can reduce spawning biomass and shorten average lifespan, potentially eroding stock productivity and recruitment potential.” I think this last is exactly what we’re seeing the menhaden population right now. Thank you.

CHAIRMAN LAPOINTE: Thank you, Ken. Phil Kline, please.

MR. PHIL KLINE: Phil Kline, Greenpeace US. I’d like to echo the sentiments of Ken and Charlie that the board needs to take action and move forward with this and start managing for abundance. The new National Oceans Policy unveiled by the Obama Administration is just yet another call for maintaining the function of the ecosystem so that everyone can continue to have the benefit that we get from a healthy ecosystem.

As you have your discussions today, you need to be clear on your objectives and you need to I think ask the technical team not only to come to the November meeting with the reference points, but have applied those different alternatives to the current stock assessment. There is absolutely no justification to wait for more information when we have a very current stock assessment and you have the tools you need to be able to make a decision and move forward and stop the downward decline of the menhaden stock. Thank you very much.

CHAIRMAN LAPOINTE: Thank you. Jerry Benson.

MR. JERRY BENSON: Chairman Lapointe, distinguished commissioners, I appreciate the opportunity to speak with you today. I’m Jerry Benson. I represent 34 organizations whose members are alarmed at the precipitous decline in the population of Atlantic menhaden. These 34 organizations represent over 545,000 members. They consist of anglers, conservationists, concerned citizens and businesses both large and small.

According to your own data, the latest assessment of coastal menhaden has declined 88 percent in the last 25 years to the lowest point in over 50 years. Obviously, I don’t know what the optimal population of menhaden should be. I hope some of you have a good idea, but I can’t believe that being at the lowest point in 50 years is the place to be.

Many researchers that you have just heard from in fact have expressed concern that such a profound reduction in a key forage species threatens the ecosystems of the Chesapeake Bay and the Atlantic Ocean. In addition to the fish, bird and marine mammals that rely on menhaden for survival, how many other species are impacted as a result of predators being forced to turn to alternative prey?

Our marine resources do not exist in a vacuum. Their interdependencies must be acknowledged and accounted for through multispecies fisheries management. Many believe the striped bass is one of the species already being adversely impacted by the lack of menhaden. I think most of you know the recreational catch in 2009 was 65 percent below 2006, pretty dramatic.

We feel like this places at risk a coast-wide recreational and commercial fishery business, which contribute thousands of jobs to the economy. Those of you this room share a profound responsibility. You hold in your hands the future of a vast and vital public resource. Unfortunately, the story of fisheries management has not always been a happy one; not because managers didn’t have the facts to manage, but because they lacked the will to act.

Unfortunately for the resources and the public, the penalty for inaction has usually proved to be much more costly than the price of timely action. We implore you not to allow time-consuming processes to stand in the way of protecting the public’s marine resources. We ask that you take expedited action to restore the depleted population of Atlantic menhaden to a level consistent with the needs of the ecosystems.

There are a lot of smart people in this room. The average IQ is probably above 135. Rob, I know that’s low for you, but for most of us that’s pretty good. I know that you’re smart enough to figure out a way to make something happen. I saw in a recent memo a figure of 2016 with appendices and addendums and peer reviews. A lot of us may not be around six years from now;

so if we're going to do something, I hope you guys will try to figure it out and get something done in the next couple of years. Thank you again for the opportunity to speak to you.

CHAIRMAN LAPOINTE: Thank you, J.B. We will go to the board now. Agenda Topic 4 is the FMP Review and State Compliance. Mr. Spear.

FMP REVIEW AND STATE COMPLIANCE

MR. BRADDOCK SPEAR: In early June the plan review team got together over a conference call and reviewed state compliance. The report that we put together was put on the Briefing CD for your review. This will be a quick summary of that report. In 2009 the fishery landed – this is both fisheries, bait and reduction – a coast-wide harvest of just over 181,000 metric tons. You can how that refers back to historical landings on Page 9 of the report.

The reduction harvest was up about 2 percent, up to just over 143,000 metric tons. The bait harvest was down about 20 percent in 2009. Qualifying the bait fishery a little bit, in 2009 the largest decrease was seen in New England, but that was also from a fairly high number in 2008. In the Chesapeake Bay the regional landings were down but still the highest of all regions. The South Atlantic saw the largest increase in bait landings.

The Addendum III harvest cap was set in 2009 for over 122,000 metric tons and reported landings came in at about 85,000 metric tons; the same as it has been for the past three years now. When you plug that into the underage equation in Addendum III, it results in a harvest cap of 122,000 metric tons again in this fishing year.

The PRT found that all states were in compliance with Amendment 1 and Addendum III. South Carolina, Georgia, and Florida requested de minimis status for 2010 and the PRT recommends granting them that status.

CHAIRMAN LAPOINTE: Board members, questions for Brad? Bill Adler.

MR. WILLIAM A. ADLER: Mr. Chairman, two questions. First of all, you said 181,700 metric tons was harvested total. I thought I saw it somewhere here; do you happen to know what the biomass – estimate of biomass total out there in the ocean is of that? That's Question 1.

MR. SPEAR: Not offhand, but we can probably get that – I'll try and look for that information.

DR. ROBERT LATOUR: Not in 2009.

MR. SPEAR: Not in 2009; we don't have the abundance.

MR. ADLER: Okay, what was the most recent one?

MR. SPEAR: 2008.

MR. ADLER: It was?

MR. SPEAR: We'll look for that.

MR. ADLER: All right, thank you. The second question is Florida's request for de minimis. It's fine with me except for the fact that their harvest – I saw states that had less harvest and didn't want to be de minimis, and Florida's harvest seemed to be high. Is it still within the range of de minimis on their report?

MR. SPEAR: Yes.

CHAIRMAN LAPOINTE: Thanks, Bill; other questions. Seeing none, **I would entertain a motion for approval of the plan reviews with granting de minimis status for Georgia, Florida and South Carolina.** Motion by Pat; second by A.C. We have a motion before us; any questions on the motion? Any public comment on the motion?

Seeing none, I'll go back to the board. Any opposition to the motion? **Seeing none, the motion is approved.** Our next agenda is the technical committee report, which might take a little bit more time. Rob Latour, welcome.

TECHNICAL COMMITTEE REPORT

DR. LATOUR: Mr. Chairman, very briefly I just wanted to summarize I guess – I didn't realize this document would be distributed to all the members, but basically my report is simply to summarize this document, which characterizes sort of where we are following your motion from the May meeting.

In consultation with the chairman we boiled the motion down into basically five tasks; Task 1 probably being the most comprehensive. The terminology that was sort of captured in the

motion was develop a suite of alternative biological reference points. Sort of under that heading would be looking or thinking about developing a reference point for spawning stock biomass or population fecundity relative to an unfished level.

If you recall in the assessment, our abundance reference point was not linked formally to an unfished level; so following the peer review recommendations as well as the motion, this is where we are. Considerations to do so involved a spawner-per-recruit analysis. We discussed this at length as a committee; and noted that while it's a viable approach, issues to consider are the propagation and promulgation of error in these calculations, the notion that they require equilibrium assumptions when the menhaden stock may not in fact be in equilibrium, as well as some underlying characteristics of our primary workhorse, the assessment model; the notion that it may in fact have a tendency to overpredict stock productivity.

These are caveats to this approach or issues that we would have to think about with this approach. An alternative suggestion was brought forth to maybe use the assessment model to project recruitment under no fishing or unfished circumstances. Issues here come into play regarding the lack of a stock-recruitment function or a well-define relationship and uncertainty regarding future growth dynamics and natural mortality rates.

Basically, what we're thinking could be summarized in sort of reference points that are along the lines of percent MSP or percent maximum spawning potential, F values such that we achieve 30 to 40 percent are the usual standards there. Abundance-based reference points, as you recall we use mature over total egg production as our reference points or are the units of our reference point for abundance.

It was suggested and requested that we consider more formal actually literally numbers, so that will be done; no questions there. The F-based reference point appropriate for menhaden came from the possibility or the hypothesis – at this point I would consider that fishing has no impact on menhaden abundance.

I think some of the plots from our assessment exercises provide us with some counter-intuitive relationships regarding the relationship of harvest to catch or harvest – excuse me, harvest to abundance. We can do this. I'm warning you that it will take a while. Where we are is the thought of approaching this from a simulation point of view, structuring the

simulation to actually set up a basic menhaden population and menhaden fishery with known characteristics as truth and evaluate the performance of these F-based reference points under various harvest regimes.

Considerations include – and maybe you could perhaps provide some guidance – does fishing affect abundance such that the loss of recruitment does not allow us to detect whether overfishing is occurring or not. The other would be more from the ecosystems services point of views; does F affect abundance such that there is some compromise of the ecosystem services provided by menhaden.

There is sort of a disparate approach. You could argue one single species, one multispecies. Given that this is a significant workload, we would request some guidance as to what you're thinking from a management objective point of view to help us structure our thoughts here. The rest is simple; pros and cons of each approach.

We have discussed these or at least have begun to do this already or certainly a formal write-up of what we believe to be the pros and cons will be included in any reporting to you. Stock projections will not occur until Tasks 1 and 2 are completed, but those will be a part of the report.

Task 4 was getting into the predation reference point or the ecosystem reference point discussions where we might need to rely on expertise on the Multispecies Technical Committee. We as a group effectively, hopefully and appropriately charged the MSTC with the idea of helping us on this issue, helping us by taking the lead on the predation side of things and to work in parallel rather than consecutively so that we can be efficient with time.

I think Genny will provide more following my report. The fifth component of the motion, it is fair to say it gave us some pause. We are happy as the technical committee to provide science in support of particular management strategies, even possibly go out on a limb and perform a management strategy evaluation analysis if that was desired, but there is general consensus that we not develop management strategies. Under this I guess we would also ask for further guidance regarding which management strategies you may be contemplating so that we can align our analyses to provide you with the most information in support of a potential.

I guess attributed to some ambiguity here, we just weren't comfortable deciding for ourselves as a committee what those management strategies might be and felt that we might need more guidance. Timeline; we have assigned individuals to various parts of the Tasks 1a through c, initial write-ups on what has been done.

There has been some work already completed and what can be completed between now and September 10th is where we are. We're hoping to have a technical committee meeting the end of September. Incrementally I see this process unfolding. We should have some further results for you in November, some further results for you at the turn of 2011; and exactly when it will be formally completed, I can't say, but it is our primary focus and we will continue to work forward on this. I'll take questions. Thank you.

MR. DOUGLAS GROUT: Bob, can you go back to your slide where you were asking for input from I believe the board, the first slide. Either I missed something or I don't understand how we're going to provide input on does F affect N via loss of recruitment and low abundance. Were you asking the board for input on that or does F affect ecosystem services?

DR. LATOUR: If we were to set up a simulation to evaluate the effectiveness of an F reference point, what framework should we be considering; strictly from the point of view of F reducing adults therefore causing an impaired recruitment in the single-species stock dynamic turn, if you will, or is there concern about F affecting adults which will impair recruitment potentially but also the services that those adults provide to the ecosystem, a much broader perspective there.

MR. GROUT: So it's either/or?

DR. LATOUR: Both would be a lot of work, either/or is a lot of work. To focus our attention effectively, we would request guidance.

MR. GOLDSBOROUGH: Rob, with respect to the stock-recruitment relationship and the finding that – well, you couldn't find one, I guess. If I'm not mistaken, I think the peer review panel mentioned something along the lines of the possibility that natural variability might be obscuring a relationship.

I wonder have you all tried, whether it's the technical committee or the stock assessment subcommittee, tried some statistical manipulations. I'm sure you

have, but to try and find a stock-recruitment relationship; for example, maybe using data points during really low years, looking at the possibility that there may be no relationship when they're very abundant, but there may be one when they're not very abundant or looking at ways to filter out natural variability. I don't know what those manipulations would entail, but has anything like that been tried or is it just you look at the entire time series when you look for that relationship.

DR. LATOUR: First recall that we have no direct observations of adults or any proxy of adults, so the stock-recruitment relationship is based on model-predicted abundance of adults, model-predicted abundance of subsequent recruits. We have broken it down into various time periods in an effort to sort of, as you suggest, tease out natural variability or see if there is some masking going on. We haven't gone to the extent of time series analyses or these kinds of things, but this idea of we're in different regimes of productivity, we have looked at the more recent period.

We have looked at the middle period, we have looked at the whole thing. It seems like in every block of time there are relationships of high recruits-low spawners, high spawners-low recruits owing to either the model missing some of the dynamics and not being able to predict it or the true effect of the environment. I wouldn't characterize it as a comprehensive analysis but certainly something we have done to look at the different periods.

MS. LYNN FEGLEY: I'm not sure, Mr. Chairman, if this is the appropriate time to weigh in with this, but it strikes me that the two questions that you've framed, Rob, the effects of F on reproduction and also the effects of F on abundance, it seems that clearly because traditionally with this stock in the fishery management plan we identify stock health in terms of biomass.

It's related to eggs; it's not related to numbers. I think that is one of the issues that we get a little bit – potentially it muddies the waters or eggs. Predators don't eat eggs; predators eat fish. I would just weigh in that perhaps the second, how does F impact N, numbers, and how does that potentially impact ecosystem services would be a very interesting question to look at.

DR. LATOUR: So is that a vote for Option 2? The caveat that I think this element of the task was will take the longest and could be on the outskirts of nine to twelve months optimally. I mean, I'm not even sure – we're just beginning the thinking of how to construct the simulation and it's akin to a full-blown assessment, so I just want to caution your thoughts there.

MR. JACK TRAVELSTEAD: Rob, you just said that some of these analyses are going to take nine to twelve months. We've heard a lot from the public not only today but in previous months that – and I get the sense that they think we're dragging our feet on this. I guess I would be interested in your opinion as to what is the worse case scenario for the stock if in fact these analyses do take nine to twelve months.

Should we live in fear that something is going to happen? You know, when you look at the stock assessment, it is a 250-page document. There is something in there for everybody. When you look at graphs that show that the total abundance is down 80-something percent, should we be worried about that? Is the technical committee worried about that or is that something we can live with?

DR. LATOUR: I think the members of the technical committee are concerned about abundance, but I think the 88 percent figure goes back to what is your objective. In light of that decline, the reference points that we used, which may not have been the best I will admit; but based on the comments from the peer review, I will say that with that context. The base model was not overfishing and not overfished.

I mean, that's the determination from the single-species point of view. Now, is the loss of 88 percent – if our model projections are indeed correct – problematic from an ecosystem point of view; again, that goes to your objective; what is the purpose for managing menhaden? You could construct an argument and say yes, so I think it's difficult for us to say should you be worried because I think we need to have a better understanding of where you want to go. I'm not sure if that helps, Jack, but it is my sense of where the folks are on the technical committee. There is genuine concern based on the plots, but again our estimate of stock status relative to the reference point suggested not overfishing and not overfished.

MR. TRAVELSTEAD: Just to follow up, well, at the last meeting we outlined all of this additional work, which I hope begins to identify for the technical committee where we do want to go, so that

hopefully down the road we'll begin to hear from you on where your comfort level is relative to where the stock is.

DR. LATOUR: Yes, it does. I'm not trying to suggest that we have no idea, but on some of these issues we might need a little bit more clarification. Before I forget, the nine to twelve month comment was mostly derived at Task 1c, if you will. That's probably the most comprehensive analysis. Some of the others may come much more quickly.

MR. TRAVELSTEAD: One final question, Mr. Chairman, if I may; is there anything the board can do to speed up your timelines?

DR. LATOUR: Well, remove red snapper from the Gulf because our assessment team is currently mired down and conducting that assessment. Quite frankly, many of the federal service folks have allocated time. 2009 was the menhaden year; 2010 is the red snapper year. This was an unintended request, not unwelcome but intended in the scheduling of time, so I think part of what we're feeling is that issue, too.

MR. FOTE: I've been concerned for 20 years sitting here and looking at a stock that has been going downhill for 20 years and have basically listened to different technical committees over that time. I listened to other stocks where the technical committee, when they see this dramatic shift when a stock keeps going down, down and down, they come in here and say we have problems, whether it's weakfish, whether it's summer flounder and things like that and we take action.

For over 20 years I have been asking the same question that we have a low abundance on menhaden. We kept going downhill and is there a concern; and they've always got the same – well, no matter how many menhaden you have out there, if the conditions are right, we will basically get plenty of production.

Well, it's the same thing we had with weakfish and he found out how far that got. We keep waiting and I've been sitting here 20 years, and as the guy says I don't think I have another 20 years to wait until we come to a solution here. It's frustrating on all our parts to sit there and see the same conversation, whether it was John back 20 years ago at Bellford giving me the same

story, and I haven't seen any progress in 20 years. We're still in the same position.

I have asked the same questions. We could have put this thing up in 1994 and 1996 and 1998 because we did put it up back then, and the answers have never come out. I find it disconcerting when the technical committee comes to me and says, "Well, we're not sure what you want." I think of every other technical committee who has walked in here, when they've seen a decline like this going on – that has been at the lowest point in 50 years – I could not see any other technical committee come up and say we need to do something, and it should have been doing that along when they see the downfall. I have asked that all along, so I'm not feeling bad about making these comments because I've done it for the last 20 years.

CHAIRMAN LAPOINTE: Thank you. I think the course of action we want to have is ask questions of the technical committee, get the presentation by Dr. Nesslage and ask questions and then figure out what we need to do. People have asked good questions. The technical committee has asked for clarification because boards do this.

We had a motion that made sense to us, we passed it in May, and they need clarification on some of the easy stuff. On some of the other stuff like management options, they can't make that up. We either use the PDT or we can do it to get them started. Right now let's do the question of those reports and then we'll get into the next steps about how we tease that apart. Dave Simpson.

MR. DAVID SIMPSON: Hopefully, this fits; I can't find it myself. Could you remind me what the current target fishing rate is and what the current calculated F_{max} is from a simple yield-per-recruit perspective, which is used for many if not nearly all other species the commission manages.

DR. LATOUR: Addendum I established F_{target} at 0.75; $F_{threshold}$ 1.18; fecundity target in trillions, 26.6; fecundity threshold in trillions, 13.3.

MR. SIMPSON: Okay, so F_{target} is 0.75 and the threshold is 1.18. What is the F_{max} currently calculated at?

DR. LATOUR: I would have to just ask you to hold on that. I'm not sure where it is in the document. I don't believe menhaden has traditionally been managed according to F_{max} so that is probably why it's not part of the historical record is readily available as you asked.

MR. SIMPSON: No, I know it hasn't and it has always been fished at a much higher rate. What my question is leading to is that we might be able to save several months of analysis and think about moving toward the same kinds of reference points we use for most every other species, which would be much more conservative than is currently being used for the species.

DR. LATOUR: Brad may have found it here; hold on. In Amendment 1 the F_{target} was based on F_{max} . These reference points were 1.04 and 1.33 for the F_{target} and F_{limit} respectively. Maybe it doesn't give the F_{max} ; sorry.

DR. LOUIS DANIEL: What is M?

DR. LATOUR: M in the most recent assessment was age and time varying, so it is a matrix of Ms. I don't know the exact values off the top of my head, but above 1 I think for age zeros, declining down to like 0.45, 0.5 for the oldest age, I think.

DR. DANIEL: I guess what would be helpful for me – my understanding is that the percent spawning potential or the MSPs or whatever SPRs we use on this are set extraordinarily low, at a very low level; and so oftentimes when I hear that we're not overfished and we're not overfishing is because the bar is down on the ground as opposed to up a little bit higher.

Would it would be more reasonable from an ecological standpoint to have a higher threshold SPR to try to maximize that abundance level to some degree? I don't think there is debate around the table that we need to consider the ecological function of menhaden and their prey availability, but we also have to look at its benefits to industry as well, and there is a fishery for these things.

I think it would be helpful for some feedback from the technical committee on what you all think a reasonable reference point is, recognizing that Tom is not going to get his 20-year wish if we're looking at ecosystems management, in my opinion. Now, we may get there, but certainly not in the near term are we going to have an ecosystems model for menhaden, I don't think, and so we need to move and act quickly.

It is a very contentious issue down in North Carolina particularly, and so having some focus on what those reference points should be – is 6 percent reasonable or should it be more like 15

or 20; should F equal M , those types of reference points that we deal with in other stocks; are those some reasonable things for the technical committee to look at?

DR. LATOUR: Yes, absolutely, we are considering other clupeid fishes, other forage fishes. I want to say Alexei quoted a meta-analysis maybe by Sissenwine of upwards of 40 percent as sort of where you should be. This was discussed at the peer review. Recognize that although we discussed reference points for a long time during the assessment process, we did not arrive or select one that was tied to unfished spawning stock abundance.

Well, F_{med} is kind of in that family, but it's not formally tied in that way. Now we're getting to those. Based on the results of the peer review, your suggestion here is in line with what our thinking is and where we're initially targeting it's more like F_{40} or F_{35} percent, which is way more conservative than where we appear to be at the moment.

MR. MARK GIBSON: I don't have any questions at this point. I'm just trying to understand where we're supposed to give them feedback on guidance and then we move on to board activities. I don't have a question, but it seems like they need some input from us on things. I'll give it if I can figure out where it is.

DR. LATOUR: Under Task 5, what management strategies might you consider; a coast-wide harvest cap, a time area closure, a full-blown allocation of menhaden for predatory demands of all fishes and birds and mammals that may require them as prey; you know, some guidance on this scale of things so that we can at least set up our analyses in order of most useful to least useful or short term to long term.

MR. GIBSON: Well, I don't think you can do that until you have the task that Jason McNamee is working on.

CHAIRMAN LAPOINTE: And which one is that?

MR. GIBSON: That is on the simulation model of the menhaden population. Until you have one of those that you can throw the what-ifs into, I don't see Task 5 doable until that happens.

CHAIRMAN LAPOINTE: I have Lynn and then Vince and then Bill and then Lou again.

MS. FEGLEY: Just to follow up with what Jack said and Lou in terms of level of concern as of the stock assessment that we're not overfishing, I just want to

get a little more feedback. We're not overfishing and we're not over the threshold, but we are above the target and we have been over the target and we have been over the threshold many, many times according to the newest assessment in the last 30 years. One question would be what would be the benefits of reducing the fishing mortality rate to the target, which is arguably why the target is there?

DR. LATOUR: Correct on the first couple of points; we are over the target but below the threshold as a limit, so my definition of not overfishing is based upon that interpretation. If you did plot the relationship over time, you do – I don't remember the exact proportion, but a significant proportion of the time you would consider yourself over the threshold, over the limit.

The effectiveness of reducing F to the target relies on the relationship and the response of catch and population, and maybe it will happen and maybe it won't. You can try to experiment, but there is ambiguity in the data regarding that relationship.

EXECUTIVE DIRECTOR JOHN V. O'SHEA: I was just wondering, following up on Dr. Daniel's question and Dr. Latour's answer, what we're talking about with menhaden, how would it compare to what standards we're using for sea herring?

DR. LATOUR: Somebody help me on sea herring. Is it F_{max} ? So it's not in comparison then if it is an F_{max} based reference point.

MR. GOLDSBOROUGH: Just one quick comment on a point that Rob made; I certainly sympathize with the assessment team being overloaded and having other responsibilities. I hope we can take to heart Jack's question about what can we do to help relieve that. I think that's key. To underscore that point, I just want to remind everybody that a year ago Maryland put forth at this table a motion to develop new reference points and were told that with the upcoming assessment the technical committee and the assessment folks would be very busy and it would be better to take that up after the assessment was in in May.

We did so at this board, and so it's a little disconcerting at this juncture to hear, well, there is no time built into the technical folks'

schedules to address this issue when we put it off until now specifically for this reason. I hope the agencies involved can take that to heart and try to find a way to relieve the pressures on the assessment team so they can focus on menhaden to some extent. Thanks.

CHAIRMAN LAPOINTE: I'm going to take the prerogative of the chair to jump in. One of the ways we may alleviate the workload of the technical committee is to simplify the tasks we're asking of them. It seems like we layer on more and more and more and maybe we aren't ready to do the ecosystem-based reference points and we need to settle back to something like Lou was talking about and Rob of something more conservative from a reference point perspective and have them work on that with the veneer of the different management options we might consider. If we simplify in that way, we may get to management actions on the part of the board in a more efficient way. Louis Daniel.

DR. DANIEL: I think conservative but reasonable is the key. Certainly, from our perspective in North Carolina, we've worked very closely with industry. We've tried to support that fishery, but we've also tried to support conservative measures for this resource, which is a critically important fishery. From a bait perspective and from a recreational fishing perspective, it has lent itself to great successes in the last two years.

We've seen increasing numbers of bait balls that are acting as habitat and they're acting as fishing opportunities that have been very popular in North Carolina over the last couple of years. I would like to see that continue. For that reason and that said, I agree with George, I think some simple approach, what are the proper biological reference points for menhaden, number one, based on longevity, M, et cetera, but then also some kind of a coast-wide cap, what is the coast-wide amount of menhaden that can be reasonably extracted and maintain a sustainable harvest?

We know what that is in the Bay; but if circumstance arise that the Bay is no longer available for menhaden fishing or Omega Protein comes up, whatever the name of that place is down in the Gulf, decide to come up because of the oil spill; you know, what level of control, what level of protection do we have for the Atlantic stocks in the ocean if we have no cap and no idea what it can withstand. That to me is the number one most critical issue that the technical committee could address for me.

MR. PATRICK AUGUSTINE: Mr. Chairman, I'm almost afraid to say what I'm about ready to say because I'll be outside the box and you can shut me off. It seems like we're skirting around what the issue is. The issue is there is a major concern in the Chesapeake Bay and the menhaden that are there or not there. All of the dancing around that we've done with 120 pages of technical information and all say the same thing; if we look at the overall status of the stock, it has been declining for X number of years.

However, the technical committee still states overfishing is not occurring and we're still okay. If we have – I want to call it local depletion, because I don't know what else to call it, in a given area and it turns out to be all of the Chesapeake Bay or for that matter all of Long Island Sound, as the case may be, we continue to skirt around the issue, and maybe the issue is we have to start looking at area closures, but maybe we have to look even a little deeper outside the picture if – and, boy, somebody is going to be mad at me, but I'm going to say it, anyway.

If reduction vessels are the vessels that are taking the major amount of menhaden, or whatever vessel they are, out of that body of water and they're being used for international purposes as opposed to domestic purposes, maybe that's a concern as opposed to domestic consumption, meaning a forage species and food in the food chain for our predators.

I don't know how we focus on that, Mr. Chairman, accepting the fact that if we approved of the alternative reference points that the technical committee came forward with, we still haven't solved the problem. I just put it out there for what it's worth. I think before the day is over somehow we have to take a harder look at – either skirt the issue and say, hey, guys, we'll talk to you at the annual meeting and we'll have this same dialogue again, or someone put something on the table that says, well, maybe we've got to look at a specific area closure as one of the ways to solve the problem.

The other point that came up was what happens when those vessels do arrive from the Gulf of Mexico? They're going to come and we're going to be faced with it, and then it's going to be an emergency action and will it be too late? Those are my personal concerns, so, Mr. Chairman, I don't know where we go other than

I thought I'd voice them. If we have to talk about area closures, is that reasonable, is it one of the tools that we might want to look at putting on the table?

CHAIRMAN LAPOINTE: You've never been shy about voicing your concerns. I talked to staff and I'm just going to jump in for a minute about the concern about shifts of effort from the Gulf of Mexico, particularly with the oil spill, and concerns about how the oil spill may impact the menhaden productivity there and cause an increase in effort here.

I'm less concerned for a couple of reasons. One is Brad has talked to folks. The vessels in the Gulf aren't suited to Atlantic fishing, so I don't think we're going to see a big number of vessels coming over. I think the company has considered that and rejected it already. My understanding is because the peak in spawning of menhaden in the Gulf is in November, that in fact that animals that – the young of the year were peanuts and so they could move away from the areas that were coated with oil, for lack of a better term.

What might happen in a couple of years is a question, and so I'm less concerned about that now. I think we do have to, again, try to tease these tasks apart. I think the area of a coast-wide cap, time area closures have come up, there may be a number of items – I hope not too many, keeping in mind your comment about the ten options for sharks that was too many – and I think that's what we need to concentrate on.

Again, I think we can help the technical committee and multispecies technical committee, who want to help us, by refining our tasks to them and trying to simplify. We will get to that as quick as we can. I think it's important, before we jump into that, to listen to Genny's comments about the multispecies technical committee.

We're going to have to talk about a schedule for them reporting back to us. They're both talking about an interim report at the annual meeting and then something more concrete – not finished because I think this is one of those things that will never be finished – for the March meeting. Then we can talk about how as a board we may accomplish that through addendum or whatever.

MR. FOTE: One of the things that always concerned me about menhaden, going back to when John Merrick was on there, was I always asked the same question of unlike the Gulf where the menhaden only last one or two years and then they basically get

harvested and die, the menhaden on the east coast can basically last to ten years old.

There is ten or eleven years old they've been out there and historically there was those fish. We don't see those fish anymore. If we were dealing with other fisheries, we would look at age class distribution. Shouldn't that be one of the things we should be looking where there is the larger fish that should have the more egg fecundity and everything else.

You know, I've been asking the same question for ten or fifteen years and still have not gotten an answer or looking at that as far as why don't we have good – I'm talking here of summer flounder, I'm talking about scup, we're talking about other species where you look at age class distribution. We never did that with menhaden. We're still fishing at twos and threes. I mean, if you look at the catch stats and where we're fishing at, I basically look at those monthly reports and I basically look at the concerns.

As far as the concerns about what is going on and Louis' concerns, we have that off New Jersey right now. I mean, basically the day boats that told me – George, maybe you're not worried – told me ten years ago and twelve years ago is they couldn't operate in the ocean, they were designed for Raritan Bay, and now are now 15 and 20 miles offshore netting for the reduction boats because they can't basically do that in state waters, but they can do it in federal waters, and letting them pump out of the – because they're only allowed to bail in state waters – are pumping out.

I do have those concerns. We have seen our bait industry now turn into a catch industry for the reduction boats off New Jersey and basically bring in their one load of bait at the end of the day after they allowed them to suck out all day long. This fishery is starting to change. Again, when we look at historical figures, the last one I can remember – and I haven't looked at it in the last couple of years – 95 million pounds of the reduction industry was coming in federal waters off New Jersey's coast.

I would like to see some age class distribution and looking at that as one of the factors, how do we get those eight- and nine-year-old and ten-year-old menhaden into there. That's one of the things I look at. I also would look at if we're going to manage this, why shouldn't we manage

it like F_{max} as we do for other species, whether it's sea herring or something else, and look at a model to do that.

We have plenty of models. Remember, this is a model that was designed when it was five members of industry and five board members that had reduction boats or that kind of heavy fishing industry depending on the reduction or the bait industry basically on the board deciding what formulas and what figures were used. It is a changed climate and we need to look at it differently and that's all I'm talking about.

CHAIRMAN LAPOINTE: It's important to say I did not say I wasn't concerned about effort on the east coast. I said my concern for the impacts of the oil spill and a shift from the Gulf are lessened from what they were. When my concern was higher, Brad and I and staff had talked about taking emergency action. Again, my concern is lessened. I didn't say I wasn't concerned about effort levels overall on the Atlantic Coast. I think that's an important distinction. Are we ready for Genny's report before we move along?

DR. LATOUR: To the age class distribution question, as you recall we have no fishery-independent data on adults for menhaden, so we have no sampling program that gives us the information on relative abundance of adults or even age structure of adults throughout the range. We would normally rely on the fishery to provide those data. The fishery has contracted to a portion of the range where only twos, threes and maybe some four-pluses reside.

The notion that there are no more eights or older fish in the population, yes, they're absent from the data, but we don't know if they're absent from the population. We just don't have sampling in those habitats offshore in New England in the summertime when they would be. I just wanted to clarify that. The other point was for Mr. Simpson – F_{max} 1.04.

MR. SIMPSON: I guess what confused me – that does sound right reading the review, but there is one point where F_{max} gets defined in the assessment as the point at which recruitment overfishing begins to occur, which is not the definition of F_{max} . I think that's just a misstatement in the assessment. When I look at how F_{max} , it was asymptotic and so forth, it does sound like it's higher than – it is still a pretty high rate because it doesn't turn over. It isn't going to do for me what I thought it might and what it does for Atlantic herring.

DR. LATOUR: Yes, F_{target} is actually lower, right, 0.75.

MULTISPECIES TECHNICAL COMMITTEE REPORT

DR. GENEVIEVE M. NESSLAGE: The Multispecies Technical Committee actually held a conference call last Friday to familiarize themselves with the task that the board gave them, which was to work with the Menhaden Technical Committee to develop menhaden reference points that account for predation.

About half of the group is in common with members of the Menhaden Technical Committee and about half aren't, so part of the purpose of the call was to familiarize those folks with the background on the issue and also to see if they understood the task and if they had any questions for you. As you've already heard today, we do have some questions for you, but I'll get to those in a moment.

I just want to give you an idea of what their initial impression of the task was and what the expected products they thought they could deliver to you might be and what timeframe that might be. The group brainstormed a bit about what the potential range of ecological predation-based reference points might be that they could produce.

It is a very complex issue. They recognized that, but they also know that you're looking for something on a shorter timeframe. Depending on the rigor and the level of detail that you would like in these reference points, the group thought they could produce some short-term, quicker – I don't want to say back of the envelope, but something along those lines, something perhaps not as complete and rigorous as a full-blown multispecies model, fancy approach, in the short term; the short term being perhaps by the March meeting of next year.

They also felt, though, that those short-term reference points would be developed using tools that we already have in our hands and data that are already readily available. We could give you some idea of what might be possible. There are also some tools that could use a little refining, a little bit more work, and over kind of the medium term we could produce some slightly more sophisticated reference points for you in that context.

The group, of course, automatically wants to go to the most technical, most rigorous, most complex multispecies ecosystem-based model they can think of, so there is an interest in developing a longer-term plan for getting at these really complex, really difficult issues. The compromise was to perhaps present to you at the November meeting a suite of options, short-term, medium- and long-term ecological reference points that you could consider.

The idea is that we could provide something quickly to you that might be useful and then continue the work in the background on some of these larger, more complex modeling and reference point approaches. The idea would be, of course, also that we would include with all of these options the caveats and the pros and cons of any of these reference points that we present to you. Just to review, the timeline that they were considering was to essentially try and get some clarification from you regarding this task and what you might be thinking so that we can focus our efforts most efficiently today.

On August 16th we're planning to hold a more in-depth conference call to really hash out and brainstorm what those short-, medium, and long-term options might be and then assign tasks to the members of the Multispecies Committee; the idea being that during the technical meeting week in September, the Menhaden and the Multispecies Technical Committees would meet jointly to discuss these issues and proposed plans so that we're kind of moving in parallel and we get feedback between the two groups.

We're hoping that we would be able to provide a suite of options or a plan, if you will, at the November meeting; and then the initial results from the short-term ecological reference points that we might – we hope we'll be able to produce would be available at the March meeting next year in 2011. That's the timeline. Do you have any questions on that timeline?

CHAIRMAN LAPOINTE: Questions for Genny? Does the timeline sound logical? David.

MR. SIMPSON: I just wonder if we're going to be any better able to make the hard decision we have to after you've done all this work. I think there is a general feeling around the table that we need a target that is more conservative than the one we have now, and six or eight months of analysis isn't going to make our decision any easier.

While Fmax doesn't do what I was hoping it would do, I think following something along the percent MSP route that was offered up makes sense, and something in the range of 30 or 40 percent MSP gives you a fishing rate of 0.4 or 0.5, something like that. We would have to look it up, but I think we need to just move to that level of discussion.

What that does is it still provides for a very substantial fishery but also leaves a lot more fish in the ocean for the ecological function. This is a very resilient species. If you look at the stock-recruitment curve, those highest recruitments occur at the lowest abundance, so they definitely have a really buffer to prevent a collapse of the stock due to low parent stock size.

There are other mechanisms in there. I noticed that the average weight of a young of year increases dramatically when the year class is small. These are some of the mechanisms that keep them chugging along and able to sustain these high fishing rates, but we have other objectives we're trying to serve.

I think the board needs to look at a small range of targets that I think are available now in a percent MSP category of 30, 40 – in the 30 or 40 percent range. I can't see asking the technical committee to spend another eight or ten months to study it further.

CHAIRMAN LAPOINTE: Thanks, Dave. I have Tom Fote and Mark Gibson and then Lou. I'm mindful that it is now 5:05 and we scheduled until 5:15. My thought is to take a few more questions and probably take a five-minute pause so we can all think about how these various things tease apart and we can give the clarification to both the technical committee and the multispecies technical committee to move ahead.

MR. FOTE: I remember those presentations that were made for a couple of years in row about ecopath. We spent a lot of money basically researching how we basically would basically manage menhaden and other species with the ecosystem. Have we looked – you know, and that stopped about four or five years ago because we were relying on that to basically start doing the ecosystem management. I know the commission put in a lot of money. We were getting presentations every year over that. Where has that effort gone?

DR. LATOUR: I see Derek here; maybe he can comment on it. It is still ongoing. An ecosystem model of that scale is a humongous undertaking. It takes years and years and years to get it going and it is still being refined. It is still being worked on and updated. I believe there have been numerous presentations and even publications, peer reviewed and otherwise, that have come from it for specific identified management objectives. Striped bass and menhaden may be one of them, Derek, I'm not sure. It is still available; it is still a tool at our disposal. It is still a resource that we could use.

MR. FOTE: I remember specifically that menhaden was looked at, and I'm trying to remember the exact terms because my memory is not as good as it used to be, I admit to that.

DR. NESSLAGE: I just wanted to make the comment that the – correct me I'm wrong, Derek, but the ecopath model is for the Chesapeake Bay only at the moment; so if you're interested in coast-wide ecological reference points for menhaden, it would be a major undertaking. He is nodding his head that to expand that to the coastwide – perhaps you're referring to the MS-VPA because that was more coastwide. It was Maine to the North Carolina Region, and that was commission driven. Is that what you're referring to?

MR. FOTE: I guess that is the one I was referring to because we did do presentations. We tried to figure whales and everything else in that years ago, and I just wondered where we were because that effort stopped for some reason.

CHAIRMAN LAPOINTE: Let me jump in. We had a lot of presentations about the MS-VPA, and the technical committee, as Genny said, is entirely willing to advance that work. Our question today will be, kind of going to Dave and Lou's question, is there a simpler way of moving ahead on the question?

My question of Genny and of Rob is because it's an overlap of the group, can we address the simpler issue on a parallel track with the multispecies stuff, because it's coming and we know it's coming. We want to use it, but can we advance it to be in a more usable form at the same time as we do this nearer-term stuff? Mark.

MR. GIBSON: The slide before I think had a question for the board or something or asked a question of the board to clarify tasks. It seems to me that the Menhaden Committee's task of developing

what Jason McNamee has of the simulation model, that is where that intersects with I think the Multispecies Committee.

In order to simulate, they're going to have to put in natural mortality values by age or by time or they're going to have to link those to predator abundance, so it seems to me that's where this task, if it's further developed, gets traction; that the Multispecies Group could assist Jason in the task he has to build more natural mortality rates in there because that's the key piece or the key tool that this body needs to look at long-term issues relative to reference points.

They're going to be able to simulate a population and see what F does to age composition in the population, in the spawning stock. That will in part determine how fish are distributed geographically because the older fish are distributed northward. That is a key tool to develop, and I think that's where the Menhaden Technical Committee needs to intersect with the multispecies in that simulation process.

Having said that, that is a longer-term tool and I suspect in my discussion with Jason and hearing, that's going to take a long time to do. I agree entirely with Dave Simpson. We need to cut to the chase here and adopt or start the process of adopting some conservative reference points. If this resource is 20 percent of what it formerly was, nobody should be kidding themselves that can continue to sustain a fishery and ecological services in the short term.

I think we need some action to adopt some short-term conservative reference points while this larger tool is being developed that helps us look at strategies down the road and management objectives relative to fishery yields, predator, ecosystem services, age composition and the spawning biomass, geographic distribution, all those things, but in the short term I think we need to do something. I'm looking to understand what the apparatus is to make that happen and how we do that.

CHAIRMAN LAPOINTE: The apparatus is after Lou and Ritchie and Bill, I'm going to call a five-minute recess so I can talk to Genny and Rob a little bit about can we do parallel tracks, and we'll Dave and Lou together about two or three more conservative reference points to look at and see if that gives useful guidance to the technical committee. If we make that more

confused, we'll be back in November and Charlie and J.B. will be criticizing us, and none of us wants to be there. Lou.

DR. DANIEL: I agree completely with Dave and Mark. I think that the multispecies stuff is going to raise more questions than it's going to answer in the short term and that it's not going to get us anywhere. That's just my personal opinion and I may be wrong, but I guess we have more money than I thought we did because I think there are other things that we could be focusing on rather than spending so much effort and energy constantly dealing with these menhaden issues. I think there are much simpler tracks that we can take that have been discussed earlier with the technical committee that will get us there, so I'm willing to work with you and do whatever I can to help.

MR. GOLDSBOROUGH: Echoing Louis's thought there, I really like Genny's very pragmatic report that we need to look at the short-term and interim goals while we continue to develop the more technically intense ones. That brings to mind a point at this board many times over the last couple of years that there may be examples out there in the management of other forage fisheries around the world that we can use perhaps for setting short-term or intermediate goals.

I remind us that a year ago Ken Hinman provided a white paper to the board that actually included a fair amount of literature research on the subject that we might find useful at this juncture. We also have just learned that the Marine Stewardship Council is now changing their criteria for certifying forage fish or shall I say low trophic-level fisheries as sustainable based on the work over the last year of an expert working group. We may find the work of that group also to be useful at this juncture. Thank you.

CHAIRMAN LAPOINTE: Let's take five; I want to talk to Rob and Genny and try to tease apart some tasks and wrap this up.

(Whereupon, a recess was taken.)

CHAIRMAN LAPOINTE: I want to express my appreciation for people's indulgence. We're going to get started and try to wrap this up. Mr. Simpson, you have a motion for us.

MR. SIMPSON: I do. **Move to initiate an addendum to consider a range of percent MSP reference points of the current level, which is believe is about 10 percent, of 15 percent MSP, 25 percent MSP and 40 percent MSP.**

CHAIRMAN LAPOINTE: We have a motion; do we have a second? Ritch White. Questions on the motion. It is to concentrate on traditional single-species management kind of issues because I think we're all getting confused with how to advance some multispecies management, so that's very important. It would come back to us at our annual meeting for further consideration. Board members, do you have questions about the motion? Ritch White.

MR. G. RITCHIE WHITE: Timeline?

CHAIRMAN LAPOINTE: Can this be done by November?

DR. LATOUR: I believe it can be ready for November. I know we've started some of this stuff already. I'm not the lead analyst on this project so I don't want to speak too far out of turn, but I'm reasonably confident by November.

CHAIRMAN LAPOINTE: Thanks; good question, Ritch. Other questions. Because of the motion on the board, I will take some limited audience members and remember that brevity is right under cleanliness and godliness. Jeff Kaelin.

MR. JEFF KAELIN: I'm Jeff Kaelin for Lund's Fisheries. We're actually in the menhaden bait fishery. Let's see where this goes. I wanted to comment, though, that we've been really engaged in the last assessment process. The staff has been excellent in terms of allowing the industry to participate.

Mr. Adler's question after the presentation about, well, okay, we're taking 180,000; how much could we take? That's the missing link here and that's a logical question for a manager to ask because for the most part we're looking at Fmsy based reference points, and I think that's what we're using with herring rather than Fmax.

The assessment group looked at trying to develop an MSY proxy that would give us an answer to the question that Bill asked, but the fact that there is not this usual relationship between effort and recruitment, it is missing. I just wanted to make a comment that we in the industry realize that we're vulnerable to public concern obviously because we don't have a number like that that we can apply like we do in the other fisheries.

I don't know how we get there, but obviously the board is in a situation where the public wants to know where we are on that line of we're taking this much now, how much more can we take? I just wanted to make that comment. I don't know if we can to an MSY proxy in this fishery, but it seems to me as an observer of fisheries management for long time the fact that is not there makes our future – creates some vulnerability for our future whether we're in the reduction fishery or the bait fishery. That's all I wanted to say. Thank you.

CHAIRMAN LAPOINTE: Thanks, Jeff. Other comments? Shaun Gehan.

MR. SHAUN M. GEHAN: Mr. Chairman, Shaun Gehan representing Omega Protein. I guess I would echo a lot of what Jeff had said. The idea of analyzing new reference points, using maximum spawning potential probably has value. I think the problems that may be encountered and the concerns we have is that the fishery has never really had a great ability to judge abundance, particularly since the fishery has contracted significantly throughout the centuries.

We're not getting a lot of great information from what is really an age-structured stock from the northern ranges where we're expecting to see the older and the more prolific spawners, which in part is good because we're not really targeting those as part of the fishery, and their spawning potential remains out there.

I think as we move down this road one of the concerns I guess is going to come up is how you relate spawning potential to biomass, however measured, because there is not a strong stock-recruit relationship here. It appears from work that the Chesapeake Bay Program has done a myriad of environmental factors, including the Azore High or the Bermuda Low or whatever it is, currents, salinity in the estuaries, things like that.

The way this stock has always been managed has been to maintain fecundity to make sure there is enough eggs out there and when the conditions are right, boom, you get a lot of fish. I think that's probably why we're seeing times when you've had very low spawning stock but very high recruitment because survival of larval eggs into young fish, the recruit to age one, are due largely to environmental conditions, which despite the august body that the commission is it can't manage.

Obviously down the road we're concerned about the management implications of all these things. I think the exercise is warranted and worthwhile to understanding this. I would point out that it's probably going to be important to get more fisheries-independent information on this stock, and the Omega and others have been participating in this idea of trying to get up an aerial coast-wide survey which will provide more information for management.

In a world of limited resources I don't know where that stands, but we would sure like to see that come to fruition. Finally, because it has come up and there has been a lot of talk about what Omega will or will not do with respect to its Gulf Fleet, it's structured the way it's structured because most of its processing capacity is located in the Gulf; a plant in Mississippi and Louisiana.

We've had some difficulties with the oil spill. We've had to relocate some vessels, but I would point out that we've gone through the worse of the oil spill and we've not relocated one vessel here. Not only are they not well suited, despite Commissioner Fote's concerns – and I under the concerns – but we are mindful of public perception.

I would point out as we move down this there are ten vessels in the Atlantic Reduction \Fleet. That's down from twelve and Jewel had two vessels or three, but let's be mindful of that as we do it. If you want to cap effort, let's look at the history there. If any effort were undertaken like that, you can be assured that we would consult with the executive director and the commissioners and others on the board, and there are no imminent plans to do so. Thank you.

MR. HINMAN: Ken Hinman, NCMC. I think I have questions and not comments. I came back in the room and that was up there. I have a question both about this motion and also about the intent of it. First of all, I see it has what seems to be a large range and certainly options much higher than where we are now.

My understanding of MSP is that upper number there is really what corresponds to an MSY-based strategy for a lot of other fisheries. We know that for fish like menhaden the recommendations are to be more conservative

than MSY, so I think you'd need higher options in this particular motion.

What is the intent; to go through right now and present this kind of range of options now on the many that have been identified by the technical committee and others as far as an abundance index, say an F, a total mortality reference point, all those kinds of things or is it to try to focus in the short term strictly on this one particular reference point.

If that is the case, that seems to me – I don't even think an MSP one might be the best reference point for a forage fish where we're looking at the numbers of fish that we need out there and not the spawning potential. I'm really just concerned that if you want to focus in the short term just on this one thing, I think that sort of pushes all the other work that has already been started aside in favor of this one approach. I don't really don't know where this is going and I'm concerned.

CHAIRMAN LAPOINTE: Well, I'll answer from my perspective. All the other good work that was done was becoming more and more complicated. We heard many people in the audience say we want to take action to start dealing with what you've described as a stock that is 10 percent of its unfished abundance.

We could take the approach of working on the multispecies technical committee and making that more and more complex and it would take a lot of time, and then we wouldn't be in a position to take action because we wouldn't know what we need to do. The intent here, I believe – and the motion maker and the seconder can correct me if I'm wrong – is to take a simpler approach that in fact we can then discuss how we're going to implement that. At the same time – and we still have some discussion to take place -- is to have the multispecies technical committee work on a parallel track on the questions they were being asked.

MR. HINMAN: Just in response to that, I definitely support and have the beginning a simpler approach, and we have said from the beginning that an interim strategy towards ecological reference points is nothing more than your standard biological reference points but being much more conservative based on the critical role that these fish play in the food web.

We, in our paper, focused on the traditional targets and thresholds of biomass and fishing mortality, and so we definitely think – but those are missing here from this particular motion. I think that should be

part of this simple, short-term approach because we can do those reference points with the assessment we have right now and with the information we have right now.

CHAIRMAN LAPOINTE: Thank you. Other audience comments? I'll come back to the board. David.

DR. DAVID PIERCE: To calculate those reference points, 15, 25 and 40 percent MSP, don't we need to have a spawner-recruit curve for menhaden? We don't?

DR. LATOUR: You need unfished biomass and fecundity at age or unfished abundance by age and then fecundity at age, so basically you calculate a hundred percent spawning potential and then you back down to figure out the fishing mortality rate that leads to 40 percent realized, 25 percent realized, et cetera.

DR. PIERCE: My understanding was you did, but obviously I'm glad we can.

MR. TRAVELSTEAD: Mr. Chairman, I just have an additional question to sort of get at your response back to Ken, and I would ask it this way. If this motion passes, is the technical committee and the multispecies technical committee absolved of all the other assignments that we gave them last month and they identified for us today?

CHAIRMAN LAPOINTE: My answer would be, no, they're not absolved of that. My sense from talking to people is – and if I look at Genny's list and her questions, we still need to answer a couple of those questions, but it would be for the multispecies technical committee to continue that work in what I think she described as short and medium term so that in fact we'll get that information to use in the future.

MR. TRAVELSTEAD: So the effect of the motion is to hone their activity toward this in the near term while continuing to work on the other issues we've identified?

CHAIRMAN LAPOINTE: That's my understanding, yes. Mark.

MR. GIBSON: If I understand this correctly, this is a very easy task. The Woods Hole toolbox has canned software that it will take about one hour to keypunch the life history

parameters into and push the button and it will go, boom. Now they may have some debate which life history parameter should go in there and sensitivity runs and all that, but this is a real easy one. I'm pretty confident that 40 percent MSP is going to be a fairly dramatic change in the fishing mortality rates, so I think we've fairly well covered the concerns of the audience at least in the interim.

CHAIRMAN LAPOINTE: Other comments or questions? Do the respective delegations need time to caucus? Yes, a minute for caucus.

(Whereupon, a caucus was held.)

CHAIRMAN LAPOINTE: Does anybody need more time to caucus? I will read the motion into the record, and it is move to initiate an addendum to consider a range of percent maximum spawning potential reference points, including the current level, 15 percent, 25 percent and 40 percent MSP. Motion by Mr. Simpson; seconded by Ritch White. All those in favor please raise your hand, 16; opposed; abstentions; null votes. **The motion carries.**

Before we leave, Genny presented in her Multispecies Technical Committee discussion some questions. She had presented a timeframe for the work on the multispecies technical committee reference points. Do you have that timeframe on the computer somewhere? There is the timeframe; does that look logical to people? I see no heads shaking no, so I'm going to assume that's good.

Her second question was are the reference points to be developed for the entire menhaden stock, and my sense of the conversation, given the fact that we have a unit stock, is, yes, it is going to be coastwide. Is that agreement? I see heads shaking yes. Then on the third question, what suite of predators is the board most concerned about, I understand Ms. Fegley has something to offer.

MS. FEGLEY: I do. It seems as though this would be an opportunity to link the outcome of the motion that was just made to the work of the multispecies VPA, because the multispecies VPA gives us an estimate of what the suite of predators that we know has historically consumed. What we'll get from the output of the MSP exercise is we'll have varying levels of fishing mortality that will produce varying levels of menhaden abundance that can be compared against abundance of menhaden historically consumed by the suite of predators.

Perhaps it can be taken one step further and some projections could be done on the populations of those predators so that the abundance of menhaden resulting from a fishing mortality rate can be compared against various projections of growing predator populations. That would allow the board to see how these varying levels of MSP place abundance of menhaden in context with the predators we have currently modeled.

CHAIRMAN LAPOINTE: Genny, is that direction logical enough so that you won't have to come back and ask us questions because we're being too vague?

DR. NESSLAGE: It is definitely much more direct. There is still a lot of work to do, but I think it will definitely give us some direction.

MR. AUGUSTINE: To that point, Genny, does that mean that you could actually identify the number of fish or pounds of fish that would be in each of the predator species? It's a very simple question. For instance, if I said to you could this task bring back to the board an approximate number of striped bass that we should have, either the spawning stock biomass or what, in the population? It is a very big question.

I'm making it a simple question because we have a target and we have a threshold, and no one has been able to tell me what is the cap above the threshold of each of the stocks that we have rebuilt and how does that relate to menhaden. It's philosophical as hell, but sooner or later we've got to decide how do we bring back the stocks we fish in these other species of fish that are being eaten by those same predators.

If you're going down that line of ecosystem management and if you're going to worry about it with menhaden, I'd throw in there lobsters, I'd throw in winter flounder, I'd throw in weakfish, and I'd throw in those other species that now have well over a hundred percent above the spawning stock biomass. While you're going down that road, please keep your mind open as to how we develop that measure above how much spawning stock biomass do we need above. Thank you, George, for letting me get that in there.

DR. DANIEL: I guess my question would be what is the suite of predators; that would be the first question I would have? My overall question would be is this really going to mean anything?

I can just see it now; we're going to poke holes all in this stuff. Are you going to include king mackerel; are you going to include red drum? What are you going to do about the fish inside that are feeding on little menhaden?

This sounds like a natural mortality exercise more than anything. It just seems like you're spending a lot of money, time and staff effort on something that I just don't – and I just want to be on the record as saying I have concerns about focusing all this effort on something that I really just don't feel like there is going to be a whole lot out of it until we have a better sense of what these multispecies VPAs do, what this ecosystems' management does. That's an academic exercise for the academics.

CHAIRMAN LAPOINTE: I guess my sense is that we've identified more work on the multispecies VPA and with the multispecies technical committee as part of our action plan. I think I share your caution about big it gets, and so I think we'll want to hear back from the multispecies technical committee to see what those logical steps are so that in fact we don't commit them to working on a space program, but we take incremental steps. Rob.

DR. LATOUR: To Lynn's suggestion, I think we can work it out and probably do something along those lines, but I just want to remind you – and I don't know what this means from your point of view, but the MS-VPA was peer reviewed and passed successfully, but there is strict language in there that suggested it be used for heuristic kind of academic type inquires but not necessarily for full-time management.

To the degree to which we go down this road using that as a workhorse, I just remind you to keep that in the forefront of your mind, and does that undermine our need to go down this road to some extent or do we need to think about bringing that further into primetime through more resources being R&D, and then more peer review.

CHAIRMAN LAPOINTE: Lou, if we have the science staff talk to Rob about some of those kinds of questions and come back to us at the November meeting with respect to the multispecies technical committee work and the work that Lynn has outlined, we can take incremental steps and ask that question again, I think, without saying we aren't going to do any work on it.

DR. DANIEL: I want to support the science and I think it's a good approach. I just know, based on my

background and history – I mean, look at the work Ed Hood has done and CVL for 30 years trying to model the Chesapeake Bay. I mean, come on, we're talking a huge ecosystem here, and I don't want to pooh-pooh it, but I just don't think we're ready to apply it to management where we're going to be impacting folks' livelihoods, impacting recreational fishery businesses, that kind of thing.

I would be scared to death to make a decision based on that at this particular point in time with my understanding of it. Now, if the science folks can get together and provide the board or provide any of us with the comfort level that the results of this type of exercise are going to be meaningful for management purposes and we can all be happy with that, great, got it. It's a lot of staff time and effort where I just don't feel convinced that we're going to have a usable product at the end that's anymore than just an academic exercise that's fun to see.

MS. FEGLEY: I guess I just felt some need to clarify the point to Genny and to Pat and to Lou, I'm not sure that the intent of this exercise would be absolutely to drive management decisions, but I think that there is a peer-reviewed MS-VPA. It has a limited suite of predators within it right now, but they're the predators we know. In my mind it would be a somewhat informative exercise to place a projected abundance of menhaden in context with what these known predators would consume. That's all it's about in my mind is context. Clearly, the board should discuss it more, but context was the intent.

CHAIRMAN LAPOINTE: Thank you. Other discussion? Agenda Topic 7, we have an advisory panel nomination. Vince.

EXECUTIVE DIRECTOR O'SHEA: Mr. Chairman, I was trying to catch your eye before. I did have a question about the motion and the timing that you passed, if you would. I think it's important to get everybody on the same page in terms of expectations with this motion. The board is expecting that a draft addendum will appear down in Charleston at the annual meeting potentially for the board to send out for public comment, hearings and such, which would set the board up for March to make a decision on potentially adopting these reference points, which would then trigger another discussion about what the board wants to do relative to management action to those reference points.

My question to you, Mr. Chairman, is do you have a sense of what the time is to make that decision and when folks are going to expect something coming out of the other end of the pipe in terms of an actual expectation for regulation? I guess where I'm going is it looks like 2012.

CHAIRMAN LAPOINTE: I think your questions are good ones. I think at the November meeting we should begin the discussion on what it means from a management perspective. I have talked to many people in this room about it. If we talk about a coast-wide cap, here is this "A" word; it's called allocation between bait and reduction. If anybody in the room thinks that is going to be easy, they're drinking something else in their glass than I'm drinking right now. I think 2012 will make for a busy year with menhaden and some very difficult discussions.

EXECUTIVE DIRECTOR O'SHEA: And just to follow up, keep in mind, Mr. Chairman, historically what we've learned from this board is that from the time you make the decision to the time the states say they can implement the regulations is not always by the next meeting. There is a considerable amount of time depending on which state you're talking about and which process they have to go through.

CHAIRMAN LAPOINTE: Absolutely, but it is to initiate that process and keep our hand on the throttle. Brad, the AP nomination. We did skip the presentation on menhaden's removal of nitrogen in the Chesapeake Bay. I apologize, Patrick.

PRESENTATION ON MENHADEN'S REMOVAL OF NITROGEN IN THE CHESAPEAKE BAY

MR. PATRICK D. LYNCH: This is the paper that came out in MEPS this year and funded by the Bay Program and the Campbell Foundation. We're here discussing filter feeders that consume plankton, zooplankton, phytoplankton, detritus. Their biggest direct impact on water quality would come through ingestion of phytoplankton, which could reduce phytoplankton biomass but then excretion and recycling of nutrients could enhance phytoplankton biomass, so the question is the interplay there.

In our study the purpose was to measure rates of phytoplankton ingestion and nitrogen excretion for young of the year and age one-plus menhaden and then use those two to generate some nitrogen removal. We also had the aim of characterizing that across the range of phytoplankton concentrations.

All this was in support of a much larger project on which Rob is the PI. The goal of this project was to directly evaluate menhaden in relation to water quality and nutrients. This study while it supports those types of evaluations was not designed to do that. It was not designed to be an assessment of menhaden and water quality, but using the results we had some rough estimates that we could make those assessments.

I will focus on the water quality impacts and then just a brief outline, methods, results and discussion. We collected menhaden in 2007 and we ran our experiments in circular tanks, 90 gallons. We'd use six at a time, three with fish and three without fish. This was run on ambient York River water, so we just had a natural prey assemblage.

We wanted to run this, as I mentioned, across phytoplankton concentrations. We used a Chesapeake Bay diatom culture to spike concentrations and simulate bloom-like conditions. Then we just sampled chlorophyll for phytoplankton biomass and we'd count and identify species and sample nitrogen throughout to see the rate of change.

We were able to estimate a phytoplankton ingestion rate, a nitrogen excretion rate – and that is simply just dissolved nitrogen – and we could convert chlorophyll ingestion to nitrogen ingestion using a relationship of carbon and chlorophyll and carbon and nitrogen in phytoplankton; and then simply subtracting ingestion in terms of nitrogen – or excretion in nitrogen from ingestion to get a nitrogen removal.

We were able to expand our estimates to a population level just by using an average from the stock assessment, age-based average coast-wide population, but without any indication of how many menhaden are in Chesapeake Bay we ran it across three scenarios of 100, 50 and 10 percent of that coast-wide population in the Bay.

Using that population, we could estimate a daily net removal rate in terms of tons of nitrogen per day, and then we estimated a daily load to the Bay for comparison, 247-585 tons of nitrogen. For young-of-the-year menhaden, we have chlorophyll ingestion on the left. We saw an increasing ingestion rate in response to increasing chlorophyll. On the bottom for age one-plus fish, we did not see that and in fact

most chlorophyll ingestion for the age one-plus fish was roughly zero.

Similarly, for nitrogen excretion rates we saw an increase for the young-of-the-year menhaden at different chlorophyll concentrations but not an increase for age one-plus menhaden although the age one-plus excretion rates were much higher on a per-fish basis than the young of the year. When we combined and calculated net nitrogen removal, we ran under two scenarios of carbon and chlorophyll ratios and came up with a range of net removal from zero or actually negative to roughly 140 on per fish per minute basis micrograms in nitrogen.

Then when we expand that to the population level, these figures actually aren't in the paper but we captured the range, you can see net nitrogen removal in terms of tons of nitrogen per day ranging from negative for all population scenarios to up to around 400 tons of nitrogen per day. The secondary Y-axis reflects what percentage of the total nitrogen load to the Bay that would represent.

You can see at a hundred micrograms per liter of chlorophyll in the top graph, if we had 50 percent of young-of-the-year menhaden in the Bay, they would remove roughly a hundred tons of nitrogen per day. That's something around 20 percent of the daily load if you're assuming it to be 585 tons.

If we put this in context with some other studies, we notice differences between young of the year and age one-plus ingestion rates, and the point there is that size of menhaden matters and size of plankton matter. Friedland in '84 identified a young-of-the-year minimum threshold around 7-9 microns, and Durbin and Durbin in the '70s identified an adult minimum threshold higher of 13-16 microns, indicating that young-of-the-year menhaden can feed on smaller particles than adult menhaden.

Then in a study by Friedland in 2006 of functional morphology of the gill rakers, we can see that the spacing within the gill rakers increases with size of the fish. The cutoff, what we used for age one-plus fish was 150 millimeters. That corresponded to a minimum spacing of roughly 16 microns. All of this corresponds or corroborates the studies and what we saw in our ingestion rates.

If you look at the initial phytoplankton composition of our experiments, it was largely dominated by small phytoplankton, and that is what was available in the waters that were passing VIMS at that time. If we talk about nitrogen excretion, age one-plus also

exhibited no response although their rates are higher. This gets a little bit murky, but we did some comparisons with the Durbin and Durbin study. We had to do some conversions of our rates.

Essentially we see that for adult menhaden the range they measured was wider in that they measured a lower baseline and higher maximum. The baseline measurement, theirs was taken after 36 hours where ours was taken after 24 hours, so there is a difference in how long they let menhaden starve.

What is appropriate for wild conditions, it's difficult to say how long menhaden go without food in the wild. Their higher maximum feeding – or maximum excretion rate corresponds with a higher maximum feeding rate. Our maximum feeding rates that we measured were not as high because of smaller particle sizes.

What came from this study was a predictive relationship between chlorophyll and the nitrogen removal that could be predicted for young-of-the-year menhaden, and it allowed some flexibility in the composition of phytoplankton. If you specify a chlorophyll concentration, you could predict what amount of nitrogen would be removed by young-of-the-year menhaden in the presence of that chlorophyll.

This just shows some carbon to chlorophyll ratios for the Chesapeake Bay on average throughout the year. The mean levels kind of bracket our range from 50-200; but if you look at the time when young-of-the-year menhaden are abundant and feeding in Chesapeake Bay, it probably corresponds better with a lower carbon to chlorophyll ration of 50.

If we look at our nitrogen removal graph, that corresponds to the lower trajectory of carbon to chlorophyll of 50. Then we actually calculated mean chlorophyll throughout the Chesapeake Bay using Bay Program data to be roughly 9.0 micrograms per liter. If you highlight that on the figure, you see that nitrogen removal would be close to zero in that circumstance if we were just looking at a bay-wide average.

In fact, nitrogen removal doesn't become positive for young-of-the-year fish until chlorophyll exceeds 30 micrograms per liter, which is somewhat of a higher concentration. Then you relate that 9.8 micrograms per liter to

the population level, you see that under all scenarios of population size under average chlorophyll concentration there would be a negative or a net input of nitrogen available to phytoplankton. That is without considering time and space in this.

Some of the assumptions here are that menhaden would feed continuously throughout the day at a constant rate of ingestion and excretion and on a constant concentration of phytoplankton. We can do some quick comparisons with some of the results of our study with other filter feeders. If we follow our 50 percent of the population in Chesapeake Bay, we used some rates of filtration that we estimated and see that under that population scenario menhaden would be half an order of magnitude or so less important in terms of filtration than oysters and approximately on the order of magnitude less than zooplankton.

That kind of would put them in order. These are pretty rough estimates. Then there has been concern that some of these findings are different from those of other studies and this is just a handful of studies that have measured menhaden in terms of their impact on water quality. All these studies, we used a bioenergetics modeling approach, and they measure different variables, some primary productivity, some nitrogen and finally a recent study in May on algal biomass.

There is some difficulty in comparing these studies because of different methods and different assumptions. Many of them didn't consider excretion, some didn't consider size structure of phytoplankton, but in general they either showed a fairly small impact on water quality for, say, Ripato, Durbin and Durbin and the most recent paper which showed primary productivity can increase in the presence of menhaden, but algal biomass can slightly decrease – essentially account for their increase. You have our study and Gotley which provides a pretty wide range.

In both of those cases, if you took the most likely scenario, we would be on the lower end. There are some limitations to highlight in the study. It was an experimental setting, so there is concern of well that represented natural feeding behavior. The plankton compositions that we saw may or may not be representative of plankton compositions on average throughout the Bay or the variability might be higher than we could capture.

Zooplankton and detritus were excluded from our impacts on water quality. We didn't consider fecal

nitrogen, which would be a negative feedback. We were reflecting average rates and not time and space considered. We did capture some uncertainty in phytoplankton concentration, carbon to chlorophyll relationships and young-of-the-year population size. I sped through that and that's about it.

ADVISORY PANEL NOMINATION

CHAIRMAN LAPOINTE: Thanks for your presentation. Questions for Patrick? I apologize for having you do it late in the day because people are near their limits. We have an AP nomination, Donald Swanson from New Hampshire. His package was in your briefing CD.

MR. GROUT: **I would like to move that Donald Swanson be nominated to the Menhaden AP.**

CHAIRMAN LAPOINTE: Second by Pat White. Any opposition to the motion? **The motion carries.** Our next agenda topic is meeting schedule. Tom.

MR. FOTE: I think right now what I would do is wait until November and see where we are and see what we need for next year. I think that's the appropriate way to look at it.

CHAIRMAN LAPOINTE: Bill Goldsborough, you had an agenda topic.

MR. GOLDSBOROUGH: That's right. A year ago when we decided to extend the Chesapeake Bay cap for three years we decided that each annual extension would be preceded by an evaluation of whether it was appropriate to do so and that would take place at the August meeting, which means hear and now we need to make the official decision to extend that cap for next year.

I think the original intent was that we would perhaps choose not to if we had some alternative regime ready to be put in place, and I think it's quite clear that we don't. I think it's kind of a moot point, but I think to be consistent with the plan we laid out we need to make that official.

CHAIRMAN LAPOINTE: Is that a motion?

MR. GOLDSBOROUGH: Consider it so.

CHAIRMAN LAPOINTE: **All right, Bill has a motion to continue the cap for another year and Pat White has a second.** Discussion on the motion? The motion is to continue the Chesapeake Bay Reduction Cap for 2011. Motion by Mr. Goldsborough; second by Pat White. Questions on the motion? Vince.

(Whereupon, the meeting was adjourned at 6:10 o'clock p.m., August 3, 2010.)

EXECUTIVE DIRECTOR O'SHEA: Maybe I'm confused here, Mr. Chairman. The current cap runs through this year, correct?

CHAIRMAN LAPOINTE: I believe last year we did an extension; did we not? Jack.

MR. TRAVELSTEAD: The current cap runs through 2013 as of action that we took last year.

CHAIRMAN LAPOINTE: And Bill's motion is because of his recollection that we need an affirmation of continuing from year to year.

EXECUTIVE DIRECTOR O'SHEA: I guess my question is, Mr. Chairman, wouldn't that kick in as a condition of the extension of the cap which doesn't start until 2011?

CHAIRMAN LAPOINTE: Can we do this in November so we can tease it apart; is that all right? Good! **Because we have a motion, I need a motion to table until the November meeting.** Motion by Pat White; second by A.C. Questions on the motion. All those in favor raise your hand; opposed like sign. **The motion carries.** Pete.

MR. PETER HIMCHAK: I've been very quiet; I'm burned out on spiny dogfish. Just as a point of information, there was legislation that passed both the House and the Assembly in New Jersey. I don't know if the governor has signed it. They were planning for a signing event that will put in a limited entry program in our menhaden bait fishery in 2011; so if you did not have a permit in 2002-2009, you're not in the fishery next year. It's just a matter of time before the governor signs this.

ADJOURNMENT

CHAIRMAN LAPOINTE: Thanks for that information, Pete. Other information before the board? I want to thank everybody for their forbearance because it is late in the day. I also want to thank everybody for the good discussion following Rob's and Genny's presentations and discussions because I think it focused us a lot more than we had been. We are adjourned.