ATLANTIC STATES MARINE FISHERIES COMMISSION

Holiday Inn by the Bay Portland, Maine

ATLANTIC MENHADEN MANAGEMENT BOARD

June 7, 2000

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ATLANTIC MENHADEN MANAGEMENT BOARD

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Attendance

Board Members:

Niels Moore, NFMOA, Vice-chair
Dr. David Pierce, Massachusetts DMF
Bruce Freeman, New Jersey DF&W
Dennis Abbott, NH Leg. Appte.
Vito Calomo, proxy for Rep. Verga, MA Leg. Appte.
Susan Shipman, GA Coastal Res.
Michael Rice, proxy for Rep. Naughton, RI Leg. Appte.
Bill Goldsborough, MD Gov. Appte.
Jack Travelstead, proxy for William Pruitt, VA MRC
Jule Wheatly, Beaufort Fisheries
Damon Tatem, NC Gov. Appte.
Tom Fote, proxy for Sen. Bassano, NJ Leg. Appte.
Pat Augustine, NY Gov. Appte.
Sen. Gunther, CT Leg. Appte.
Melvin Shepard, proxy for Rep. Redwine, NC Leg. Appte.
John Connell, NJ Gov. Appte.
Jeff Tinsman, proxy for Andrew Manus, DE F&W
Brian Culhane, proxy for Sen. Johnson, NY Leg. Appte.
William Windley, proxy for Del. Ronald Guns, MD Leg. Appte.
Spencer Fuller, Resource Trading Co.
Gil Pope, RI Gov. Appte.
Lew Flagg, Maine DMR
David Borden, Rhode Island DEM
John Nelson, NH Fish&Game
Ritchie White, NH Gov. Appte.
Bill Adler, Massachusetts Gov. Appte.
Gordon Colvin, NYS DEC
Ernest Beckwith, Connecticut DEP
A.C. Carpenter, PRFC
Steve Jones, Omega Protein
Ray Rogers, Bait Fish
Richard Daiger, Bevans Oyster Co.
Preston Pate, Jr., NC DMF
Paul Pagak, USFWS
Paul Perra, NMFS
Eric Schwaab, MD DNR
Bob Palmer, FL FWCC
David Cupka, SC Gov. Appte..
Dr. Lance Stewart, CT Gov. Appte.
Catherine Davenport, VA Gov. Appte
Kathy Barco, FL Gov. Appte.

Ex-Officio Members:

Mike Street, NC DMF
Michael Bloxom, LEC Rep.

Staff:

Dr. Joseph Desfosse
Dieter Busch
Amy Schick
Dr. Lisa Kline
John H. Dunnigan
Tina Berger
Heather Stirratt

Guests:

Dr. Douglas Vaughan, NMFS
Gordon Birkett, PRFC
Mark Gibson, RI DFW
Russell Smith, CCA-ME
Brian Tarbox, ME
Dick Sisson, RI DFW
Tom McCloy, NJ DFW
Barney White, Omega Protein
Dick Brame, CCA-ASMFC
Dr. John Merriner, NMFS

There may have been others in attendance who did not sign the attendance sheet.

Atlantic Menhaden Management Board

June 7, 2000

SUMMARY OF MOTIONS

1. Motion to approve the minutes of the April 5, 2000 Board meeting.

Moved and approved by the vice-chair with no objection.

2. Motion to approve the year 2000 AMAC Report.

Motion by Mr. Travelstead, second by Mr. Adler.

Motion amended to change the language as it reads to "move to accept the 2000 AMAC Report".

Agreed to by the maker of the motion and second. The motion to amend passes. The (amended) motion passes with 1 no vote.

3. ***Move that we accept this document as part of the public hearing document, along with the AMAC recommendations and the PDT recommendations (staff: regarding overfishing definitions).***

Motion by Mr. Travelstead, second by Mr. Calomo.

Motion as read into the record:

"Move to accept the draft document, which is overfishing definition, Section 2.5, as part of the public hearing document, along with all of the AMAC and PDT recommendations. The PDT recommendations should include the current year average, as well as the three-year running average".

The motion passes by a show of hands.

ATLANTIC STATES MARINE FISHERIES COMMISSION

ATLANTIC MENHADEN MANAGEMENT BOARD

Holiday Inn By the Bay Portland, Maine

June 7, 2000

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The Atlantic Menhaden Management Board of the Atlantic States Marine Fisheries Commission convened in the Casco Bay Hall of the Holiday Inn By the Bay, Portland, Maine, June 7, 2000, and was called to order at 3:25 P.M. o'clock by Vice-Chairman Niels E. Moore.

WELCOME/INTRODUCTIONS

VICE-CHAIRMAN NIELS E. MOORE: My name is Niels Moore, I'm the Vice-Chair of this board. I'm sitting in today for Bill Pruitt who could not make it with us today. We'll go ahead and have Joe call the roll. (Whereupon, the roll call was taken by Dr. Joseph Desfosse.)

DR. JOSEPH DESFOSSE: You have a quorum.

APPROVAL OF AGENDA

VICE-CHAIRMAN MOORE: Okay, unless there are any objections, I'd like to go ahead and approve the agenda that you have before you. **Hearing no objections, we'll approve the agenda.** Item number 3, approval of minutes from our last meeting, April 5th. I'm sure we've all had an opportunity to read over these very closely and find any mistakes that are contain therein.

APPROVAL OF MINUTES

Does anybody have any additions or deletions or comments about the minutes? Hearing none, **if there's no objection, I'll go ahead and approve that.** We'll move to item 4, public comment.

PUBLIC COMMENT

Is there anybody in the audience at this time that would like to make a presentation or make some comments about Atlantic menhaden and the issues that are currently before the board at this time? Hearing nobody, seeing nobody move, I'm guessing at this point we have none, so we'll move to agenda item 5. Item number 5, review/approve the year 2000 AMAC Report, which is certainly in draft form before you. I'll go ahead and turn this over to Joe Desfosse.

AMAC REPORT

DR. DESFOSSE: Actually, you're going to turn it over to Mike Street after I make a comment. Most everyone has a draft copy of the AMAC Report for 2000. Those of you with briefing books would have gotten a copy. Some members of the Board may not have copies. We're having a difficult time finding the copies that were made at the office. The hotel is running off extra copies right now. If you need a copy, please raise your hand, and we'll get copies of the report to you.

VICE-CHAIRMAN MOORE: All right, we have Mike Street with us here today to review the AMAC Report. If you would please, Mike.

MR. MIKE STREET: Thank you. I am going to go over the highlights that are in the written report that you have. I have no figures or overheads. It's strictly verbal. I would like to point out this report is about 18 pages long. It has several tables and figures at the end, and some of the outstanding features of those tables are their length. The menhaden database goes back to 1955. It is one of the most extensive databases for any fish on the Atlantic coast.

Under the 1992 revision to the ASFMC FMP for menhaden, an annual review was conducted on three points: the condition of the stock and the fishery based on data collected from the fisheries-dependent data collected from port sampling by the National Marine Fisheries Service, and supplemented by other data. The second point for the report is allocation of menhaden for harvest under "Internal Waters Processing", under the Magnuson-Stevens Act; and then, finally, implementation of the FMP relative to other areas of concern, especially state management actions.

There are six of the so-called triggers, which are measures of the status of the stock and fishery. Three are measured directly from calculations based on the biological sampling. The other three are calculated from the VPA, and Doug will get into that later. I'll very briefly run through them.

The landings in weight was 171,200 (metric) tons for the reduction fishery, which was below the trigger of 250,000 metric tons. Therefore, this trigger was exceeded, this measure was exceeded because of the landings. However, it was expected to be exceeded

because effort was down so low. Only 15 vessels participated in the fishery last year, 13 in Virginia, 2 in Beaufort, North Carolina. Effort in the fishery was 382 vessel weeks, the second lowest on record. The lowest was 1986, a year in which one of the major plants did not operate at all. That year there were 377 vessels weeks. The fishery was greatly affected by weather this last year. In addition to the normal storms, things like that, there were three hurricanes last year along the Mid-Atlantic coast, and these greatly affected the ability of the industry to fish because of the impossibility of flying as well as muddy water in many areas so that schools could not be spotted. The Beaufort plant, for example, did not have any landings of menhaden from before the hurricanes in August until after Thanksgiving.

The next measure is the proportion of age-0s in the landings. It was about 18 percent, an increase from previous years, but below the threshold of 25 percent. A proportion of adults; that is, a mature fish, age-3+, in the landings was over 10 percent and did not exceed the threshold level of 25 percent.

The next three triggers come from the Virtual Population Analysis done by Doug Vaughan. We have a cautionary note that we always give with this, and I will give it, and that is that the last year of estimates for the VPA are the least reliable of the dataset. They are subject the most to error and to change as time goes by. By about the third year for a given type of data, it's pretty well set. But during the first year, it is quite uncertain, and this is most important for the estimates of recruitment to age one.

With that said, I'll go over those three. The recruits to age-1 was 2.7 billion menhaden in 1999, that's the 1998 year-class. That exceeds the threshold of two billion. This is the best recruitment that we have measured in a first year in several years.

Spawning stock biomass is estimated at 32,800 tons, and that does not exceed its threshold. It's well above that, but it is still somewhat below the long-term median, and a three-year running average of 58,300 tons is well above that median. We expect it to decline, and I'll get into that a little bit more.

The spawning potential ratio, or percent maximum spawning potential, they are mathematically identical; the estimate for 1999 of 9.7 percent is well above the threshold of 3 percent. It's among the highest levels in the dataset.

To give an illustration of what we mean by the variability, the table on page 3, which for recruitment shows the variability and the changes in that as time goes by with the same year-class; that is, recruitment of the 1993 year-class, excuse me, of the 1992 year-class as age-1 in 1994 was estimated at 3 billion. As you go across, you can see how it went up to 3.3, then down to 3.2, then up to 3.3, and finally settled at 3.2 after about five years. This is just an illustration of the inherent variability in the dataset.

For this upcoming year, 2000 season, which is just getting under way, we estimate that the fleet will be reduced further from 15 to 12 vessels; 10 in Chesapeake Bay, 2 in North Carolina. No change in processing capacity and the estimate is that landings will be about 185,000 metric tons. And that would, again, be below the threshold that's in the existing plan. But that doesn't bother us relative to the status of the stock. Fishing mortality on menhaden has declined since the mid-60's, when it exceeded F = 2.1 down to about F = 1.1 now. So, menhaden can take heavy mortality, heavy fishing mortality.

As I said earlier, we talked about recruitment a little bit, and it's effect on the spawning stock. Recruitment has been low for several years. It's been low, below the threshold until 1999, as recruitment to age-1. Apparently, the stock has held up in biomass because of increased survival of age-2 and older fish. Historical data collected throughout the dataset indicate that environmental factors have more influence in controlling recruitment to menhaden stock than it does spawning stock biomass. We, as a committee, believe that fishing pressure is not the cause of reduced recruitment. One of the possible reasons for the improved survival is the many closed areas along the Atlantic coast. A number of years ago, I did a quick back-of-the-envelope analysis of closed areas as they existed at that time, which was something more than five years ago, and somewhere between 40 and 50 percent of potential fishing areas, at that time, were closed.

Consistently, our AMAC Reports to the Board have recommended against additional closures, yet during that time, in the last couple of years, there have been additional closures in Long Island Sound and North Carolina. Closing various areas reduces fishing areas and has led to some other problems in the Chesapeake Bay area, and I'll get to that in a little bit. Concerns initially raised in '98 about declines in the overall forage fish base in the Chesapeake Bay continue and AMAC is concerned. The NOAA Chesapeake Bay Program and the ASMFC have initiated an effort to evaluate multi-species interactions, especially those involving Atlantic menhaden. The Commission is seeking funds to develop a program to evaluate the situation.

Since 1992, the AMAC has urged that coastal power plant impingement data be evaluated as a potential measure of relative juvenile abundance along the Atlantic coast for menhaden, and we passed that on to the Management and Science Committee, and they have recommended that it be done for menhaden and a number of other species under the Commission. However, unfortunately, nobody has jumped on these long-term datasets that do exist. We further recommend that research be conducted to determine environmental variables which may influence menhaden recruitment.

We are concerned that the harvest of age-0 menhaden increased last year. Though it was below the threshold level, it did increase quite a lot, and we urge the companies to avoid catching age-0 menhaden to the best of their ability. We do have one interesting note in some of the analysis that Doug Vaughan has been doing. I believe it is in Table 2, in his VPA estimate of total numbers of fish in the stock, his initial estimate of age-0 menhaden for the 1999 year class exceeds 13-1/2 billion individuals. This is the second highest estimate on record. However, remember this is the first year of an estimate in a VPA, and it's highly variable and subject to a lot of change. Another indication that we may have a good year-class last year is the fact that age-0 catch did go up. When you examine data in Table 1 and, I believe, in Table 2 as well, the landings, relatively large catches of age-0 menhaden have often been indicators of larger year-classes. In addition, there has been quite a bit of anecdotal information from fishermen and scientists along the Atlantic coast who have seen large schools of juvenile menhaden last year, including even here in Maine, which has not been seen for a long time.

We recommend that the National Marine Fisheries Service Beaufort Lab continue to collect and maintain the bio-statistical datasets on menhaden, and that they continue to collect and maintain the Captain's Daily Fishing Report Series. This is one of the best datasets of actual performance of a commercial fishery in the United States, and they are being used extensively for analysis. We further recommend that the Captain's Daily Fishermen Reports or something similar to it be used by all purse seine vessels, not just the reduction fishery, but by bait vessels as well for providing data for analysis at the Beaufort Lab.

Item number 6, I'll just take care of right now, if I may. You will vote on an action later. No written requests were received for internal waters processing, and we recommend that there be none for this year. So that is our recommendation on that.

The only state management action underway right now is consideration by the New Jersey Marine Fisheries Council of the issue to prohibit reduction purse seining totally in all marine waters in New Jersey, and that is an issue that has not been decided yet.

For public information, we recommend that after Amendment I is adopted and implemented, that the fact sheet be revised and published by the Atlantic States Marine Fisheries Commission.

For about ten years, we've been supporting and promoting improved data on the bait fishery, which although it's not a large share of the menhaden fishery, it's still, when you compare it to most other fisheries along the Atlantic coast, one of the largest landings of any species. About 36,000 metric tons of menhaden were recorded as bait last year. There are still probably extensive landings that are not recorded. All fishermen who operate their own pound nets or traps, gillnets to catch their own bait and use it themselves, recreational harvest for bait, that is totally unrecorded.

Total landings of menhaden for bait, recorded landings for bait and for reduction were about 207,000 metric tons last year. About 17 percent of that total was bait, 36,000 metric tons. Virginia and New Jersey purse seine bait fisheries accounted for about 78 percent of that bait catch, and we recommend that sampling efforts on the bait catch concentrate on the purse seine fisheries in those two states in the year 2000.

We expect that the importance of menhaden as bait will continue to increase for several reasons, one of which bycatch that formally has been used as bait for lobster and blue crabs, bycatch in trawl fisheries, pound net fisheries and other fisheries is decreasing as fish reduction strategies are implemented. Bait is still needed. And so menhaden is available for bait, and so it's use for bait will grow, and grow in importance and value.

For many years, the National Marine Fisheries Service conducted research to try and develop a young-of-the-year index for menhaden. They gave up the field sampling, but have continued to analyze data. From their sampling and within the last couple of years, they have acquired data from a number of states along the Atlantic coast, from their various juvenile indices.

The SEAMAP dataset from Florida through southern North Carolina is one of the datasets, several different indices from North Carolina. The Virginia/Maryland data were combined into another dataset, and finally a couple of different states, southern New England provided data. Doug Vaughan has done all the analysis and don't ask me to explain the mathematics because I cannot do that, but Doug has developed an initial coastwide index for juvenile abundance that is well correlated with recruitment to age one. So, we urge the states to continue to cooperate with Doug and provide that data. This could be a real breakthrough. Doug will continue to do the analysis.

For research, the final South Atlantic Bight Recruitment Experiment Report has become available. It's still not very easy to get copies of. There's over 265 pages, something like that; about 20 some reports, oceanographic, biological oceanography, the effects of currents and many other physical factors on the movement of larval fish, primarily menhaden, into South Atlantic and Mid-Atlantic estuaries. Among the findings are that physical factors are probably primary determinants of recruitment of Atlantic menhaden, and that the factors act primarily during the period when menhaden larvae are nearing the coast and going through the inlets. They could be physical as currents, storms, and the like, or possibly predation by everything that is out there eating any larvae that's near its mouth. I didn't really answer that question very well. But, it appears that the year class formation is governed by factors which

occur at that point in its life.

I'll take a few minutes to discuss some management recommendations. First, based on the data presented in this report and in the supplemental report, which you have in your notebooks from Doug and Joe Smith, we recommend that there be no additional restrictions on the menhaden fishery for the 2000 fishing season. As I said before, because of the increased harvest of age zero fish in 1999, we encourage the industry to avoid, to the greatest extent practicable, the harvest of age zero menhaden.

As I said, there have been a number of important issues raised. The recruitment problems, the total stock has declined in numbers and in biomass, and we have been informing the Board in our annual reports that this is happening and it will continue to happen because of the relatively poor recruitment, especially during 1996 through 1998. All three of those year-classes, recruitment to age-1 is below the threshold level. Because of that poor recruitment, the overall stock has declined in number and biomass. Because those fish are now moving into the spawning stock, it will continue to decline in numbers and biomass until larger year-classes come along to begin to rebuild. Again, fishing is not the cause. The conclusion of examining the data is that the spawner/recruit relationship in Atlantic menhaden at levels observed on the dataset of the last 45 years is weak at best.

Another issue is the concentration of purse seine fishing for reduction in the Virginia portion of Chesapeake Bay. During the '85 to '96 period, about 52 percent of the catch and fishing effort was in the Chesapeake Bay. Preliminary analysis of data for 1999 indicates that about 70 percent of the coastwide purse seine catch of menhaden for reduction came from Chesapeake Bay. As I suggested earlier, one of the reasons is that so many areas along the coast are closed.

The data from various research and monitoring programs within Chesapeake Bay indicate that the forage fish base in Chesapeake Bay as a whole, including menhaden, bay anchovies, juveniles of various sciaenids has declined in recent years, even as the stocks of some of their primary predators, striped bass, weakfish have recovered and grown in size. Other Chesapeake Bay research shows that water quality has declined. The composition of phyto- and zooplankton communities has changed in recent years, and because menhaden eat phytoplankton as adults, zooplankton as larvae, these changes have probably impacted menhaden and other forage fish. There has been considerable concern expressed by citizens' groups about the current dependence of the reduction fishery on Chesapeake Bay, and that it may remove menhaden that might otherwise serve as forage for the predators.

The goal of the current FMP is to protect the resource and its users. The proposed goal for Amendment I is very similar, to protect the resource for those who benefit from it. The management dilemma is how to maintain a viable menhaden reduction purse seine fishery while examining the issue of the concentration of fishing in Chesapeake Bay. Under the Interstate Fisheries Management Program, the Atlantic Coast States Marine Fisheries Management Agencies cooperatively manage the coastal fisheries. Most Atlantic coast states have increasingly restricted purse seine fishing for Atlantic menhaden in the last decade, with almost all new restrictions based on social, not biological concerns.

Based on the information presented in this report, Vaughan and Smith Supplemental Report (2000), and this discussion, the Atlantic Menhaden Advisory Committee recommends inclusions of the following management option in Amendment I:

"All Atlantic coastal states should open to menhaden purse seine fishing those state marine waters now closed to such fishing, which extend beyond one nautical mile from the shore line. Those states should not close additional marine waters to menhaden purse seine fishing for at least five years. During that interval, scientific research and analyses should be accomplished to evaluate the effects of this action, relative to: (1), the forage base in Chesapeake Bay; (2) health of the Atlantic menhaden stock; and (3) recruitment of menhaden to age-1. This management option, if adopted, should be a compliance issue. This implementation date for this measure should be March 1, 2001 or at the earliest practicable time following approval of Amendment I".

We feel the following benefits would occur: relative concentration of fishing effort in Chesapeake Bay would be reduced; relatively more menhaden should be available in Chesapeake Bay for ecological functions, including forage for predators, filtration, and growth of the stock; and fishing restrictions among the coastal states will be more uniform. That completes the report.

VICE-CHAIRMAN MOORE: Thank you, Mike. I suppose at this point we need a motion to -- before we can have discussion, **if we could have someone make a motion to approve the year 2000 AMAC Report. Jack Travelstead made the motion, Bill Adler the second**. Discussion? Bruce.

MR. BRUCE FREEMAN: I have several questions, Mr. Chairman. I'm looking at Figure 1 of the report, this is on page 16. I'm looking at the first two graphs at the top. One is the landings data, and the second one down is the percent of age-0 menhaden in the catch. As indicated in the report, the reason for the decline in the catch has been a decline in the effort for the industry, which apparently is shown in Figure 1A. In Figure 1B, we see a tremendous increase in the catch of the age-0 fish at the same time we are seeing a decrease in effort. The question I would have is what is the reason for that?

VICE-CHAIRMAN MOORE: I'll defer to Mike Street on this.

MR. STREET: At the end of last year, as the age-0 fish were migrating, they were captured for about two weeks, I believe, by the industry, primarily the Chesapeake Bay vessels. And then they stopped. It's not a huge amount of fish. If you go back and look at Table 3 -- no, excuse me -- Table 1, if you look at Table 1 on page 12, under the column zero, that's the estimate of actual numbers of individuals. It shows for '99 an estimated 194 million individuals. This is considerably higher than the previous several years, but considerably lower than a number of other years of record. If you follow some of those years across, going down one each time you go to the right, you also go down at a diagonal, you will notice that they are generally indicators of a large year-class; not always, but generally. Look at 1979, 1,492.5. That's one point -- almost 1.5 billion individuals. You go over at age-1, that is over and down one, 1,478, 1,811, over to the right one. It suggests that you have a large year- class. They were more abundant and more available.

MR. FREEMAN: Well, I'm looking at the graph, and, again, it shows in 1997 the catches are, it looks like less than 5 percent.

MR. STREET: Yes.

MR. FREEMAN: '98 they've gone up to, it looks like 8 or 9 percent, and 1999 they've gone up to close to 19 --

MR. STREET: It's 18.4 percent.

MR. FREEMAN: And yet, these are age-0, and you're saying, you're predicting the '99 year-class, I don't know what you predict it to be, but --

MR. STREET: It's historically a large catch, and it's over the last 20 years or so. A large catch of zeros has generally, though not completely, been an indicator of a larger year-class. And that we will have to wait as that year-class moves into and through the fishery to see how good an indicator it was.

MR. FREEMAN: Is, in fact, a directed fishery occurring on those fish? Is that the reason for this?

MR. STREET: It hasn't for several years. I'd have to defer to the companies whether or not they were trying to catch them.

MR. FREEMAN: Well, the point here is that in the report it indicates that, indeed, biomass has been declining. Year-class or recruitment has been very poor. There seems to be an advantage of increasing the biomass, and then when there appears to be better than average year-class, there seems to be an increase catch of those fish, which, in fact, if they were able to move through the first two years of life, it would greatly facilitate what we're trying to accomplish. Yet, this seems not to be occurring. I'm just curious as the reason why?

VICE-CHAIRMAN MOORE: Further discussion? Steve Jones.

MR. STEVE JONES: I will try to clarify the effort we were putting forth. We caught smaller fish, I guess, for two weeks and basically that was due to these northeast storms. When they come through, the fish scatter and then when they start forming back, they have all different sizes because there wasn't enough time span there for the bigger fish to congregate in the smaller fish. There was just a major concentration of smaller fish last fall, and that's why the numbers went up rapidly.

MR. FREEMAN: I have just a couple other questions to complete my part here. It indicates under the management recommendations, the first point, Mike, that you mentioned, the statement deals with recruitment and the relationships between recruitment and other factors, and it indicates that poor recruitment is related to environmental conditions rather than fishing effort. It seems a relatively broad and brash statement. You're certain there are no biological factors preying upon larval fish; that, indeed, it's only environmental conditions that are controlling the success of the particular recruits?

MR. STREET: Predation is part of the environment.

MR. FREEMAN: So, environmental factors includes biological factors?

MR. STREET: Yes, yes.

MR. FREEMAN: I mean, my interpretation of environmental factors are physical factors and not biological.

MR. STREET: Part of the environment is what eats it and what it eats.

MR. FREEMAN: All right, so your inclusion here is different then -- I mean, your use of the word is very broad. You're saying everything but man-induced; is that correct?

MR. STREET: Well, man is part of their environment as well, but it's not the natural environment. So what I included in the environment would be predation as well as the physical, chemical factors that affect it.

MR. FREEMAN: Then one other point, further on in the conclusion report or recommendation part -- this is on page number 10 -- the second paragraph talks about various closures in state waters, and your recommendation to have states open waters beyond one nautical mile from shore. In all our other plans, we look at biological implications as well as social implications, and yet the argument here seems to deal only with biological. I think, certainly, the course of history and the management plan is very clear and that there are social implications.

I mean, one of the great difficulties faced by the menhaden fleet today is the very large size of the vessels close to shore. That, in itself, creates a problem even if they took no fish. Just having large vessels close to the shore tends to generate considerable concern from the public, as I think we all experience. It would probably be much easier -- if you could have much smaller vessels, I suspect many of the social issues would disappear.

But nevertheless, that's the way the fishery operates. I can indicate that so far as New Jersey is concerned some of the regulations that we have restricting the fishery close in state waters or territorial waters is related to the operation of the fishery. It's a very highly mechanized large volume, large vessel, fishery. We have a very large coastal population, a very large use of coastal waters by various users, including small boats, and the experience we've had in the past, at times it's impossible to accommodate all these users at one time.

Based upon the experience, we've moved to exclude menhaden vessels based upon many of those social impacts. Yet, there's no consideration given here. The argument is made only in biological, and I'm just curious as to why the social aspect has been ignored.

MR. STREET: There are no social scientists yet who have shown up at any of our menhaden AMAC meetings. There was an economist appointed, but he's not been there.

MR. FREEMAN: Well, this is not a new issue, and I know it's an issue that everybody has to deal with, and it seems this has been completely ignored, and I find that very disturbing.

VICE-CHAIRMAN MOORE: I think Jule is going to address Bruce's issue, then I have Tom Fote, then I have Bill Goldsborough.

MR. JULE WHEATLEY: Jule Wheatley, Beaufort Fisheries. Bruce, to address some of your comments about going to smaller boats and such stuff as that, of course, it would be unseaworthy for us to go to smaller boats.

But you do have smaller boats fishing up there for menhaden, your bait fishery. But yet, you keep forcing them off, so the size of the vessel apparently doesn't have anything to do with the state of New Jersey's decision to run the boats offshore, because those are small boats. So, your comments for us to go to smaller vessels would make a less input aren't really exactly accurate, because those, like I said, those bait boats are smaller.

MR. FREEMAN: Well, they're smaller relative to the vessel 200 feet or so or even more in length. There are restrictions on the size of the purse seine, how, in fact, the fish are removed from the net. There's no pumping allowed, it has to be done by braille because of the problems associated with highly mechanized fishery and the gurry that ends up overboard from that.

There are many factors, and what we tried to do, Jule, is to come up with a system that we could have multiple use of the area and not eliminate the purse seine fishery. We've gone to great extreme to do that. I think, as you know, our bait fishery does exist. There has been quite a few boats involved. They are restricted in where they can fish relative to distance from coast, but it's less of a restriction than for a larger vessel using a larger net.

So, it's really predicated on several factors. What's disturbing here is this is something that all states deal with at one time or another. I mean, it's just a fact of life, and I understand the need to use the vessels you do because of the way the fishery is prosecuted and the carrying capacity.

I'm not telling you how to run your business, but I just think that in a plan we need to look at various aspects, and this is one aspect that seems to be ignored in this report.

VICE-CHAIRMAN MOORE: Thank you, Bruce. Tom Fote, do you have any comments to this issue?

MR. TOM FOTE: Well, I had a comment or two earlier that Mike brought up. Mike, I'm just trying to find out where did you get that definition on environmental? Is that the Management and Science Committee definition of environmental?

MR. STREET: No, it's what I was taught in ecology from Eugene Odom's book back in school.

MR. FOTE: But it's not what the other committees use of what is the environmental factor. So, as a member of the Management and Science Committee, at least we should be using the same when we use the terms for all the committees, not just your committee. I mean, I've never heard that approach used in other committees, so let's be consistent on how we use it. As a long-time member of the Management and Science Committee, maybe you should look at what a definition of environmental factors are, because of the way you loosely interpret it, you even considered man.

The second question I had was on the two weeks. I can understand if it took three days before you realized you were catching a lot of small fish, which you're not supposed to be targeting, but two weeks and have that amount of fish, I find truly unacceptable.

We're worried about age-0 fish. That should have stopped after three or four days, and not two weeks. When you're having that large a percentage of small fish being caught, why didn't it stop being harvested in a shorter period of time?

MR. STREET: Are you asking me?

MR. FOTE: No, I was asking through the Chair.

VICE-CHAIRMAN MOORE: I'll defer to Mike.

MR. STREET: No, that's company fishing decisions. In North Carolina the season was open. In certain areas, they're able to fish.

VICE-CHAIRMAN MOORE: Jule.

MR. WHEATLEY: In answer to that question, I think it has already been stated once. We're not talking about any sizable amount of fish. It's just the percentages went up. We got a size of percentage of fish that went up from the previous years, but we're not talking about any great volumes of fish.

Secondly, you know, it's not a smorgasbord out there. We just can't go out there, we have to take what we can catch due to the weather factors. You know, that time of year, around Cape Hatteras isn't the most ideal situation you want a vessel in, with the northeasters and everything and your southwesters. No, we're not talking about -- I

mean, we're making a lot to do about nothing because we're not talking about that many fish. We prefer to catch the big fish, because the yields are higher on the fish meal and also on the oil. We don't get any oil out of a zero-to-one-year-old fish. The percentage of fish compared to a million fish is down 5, 6, 8 tons per million. So, we don't target those fish, because we lose money on them.

But we have to take -- when we go down to catch the fish, we can't come back empty handed expecting to keep a crew either when you drive 24 hours away from your plant.

VICE-CHAIRMAN MOORE: Thank you, Jule. Bill Goldsborough and Paul Perra.

MR. WILLIAM GOLDSBOROUGH: Thank you, Mr. Chairman. I have two comments, but first I have a question for you, I guess, about process. Are the options before this Board, under the motion that's on the floor, simply to accept or reject this report as is, or is there an option to develop amendments or edit to the report and adopt it as edited?

VICE-CHAIRMAN MOORE: The way the motion stands right now, it would be accept or reject the report as a whole, as it reads.

MR. GOLDSBOROUGH: Thank you for the clarification. My first comment has to do with Management Recommendation Number 1 again, and the same statement that was mentioned earlier, but from a different standpoint. The second sentence -- this is on page 9 -- the second sentence, again, it says, "because recent poor recruitment is related to environmental conditions rather than fishing effort".

I feel like that it's an awful definitive statement to say that the recruitment is related to environmental conditions rather than fishing effort. It's a stronger statement than you find elsewhere in the text, and it's a stronger statement than the AMAC Chair used verbally when he presented it. The word "primarily" was used in both cases, and the Chair also used the phrase, "that it appears to be related". So, if I had the option, I would have suggested the edit of putting in the word "primarily", and it would more closely mirror the text earlier in the document.

I think it's a misleading statement the way it's written now. But without that option, I'll go on to my second comment, which is Management Recommendation Number 2. I think this is a very good recommendation. I'm glad to hear that coming from AMAC, but I guess I'm left with a question of how would industry avoid harvest of age-0 menhaden, and I mean this from a productive standpoint. I mean, perhaps industry can comment on this, but as a practical matter, can we expect that there will be any effective actions taken to avoid the harvest of age-0 menhaden?

VICE-CHAIRMAN MOORE: Thank you, Bill. Anybody care to respond or add discussion to either one of those subjects that Bill raises? Yes, sir.

MR. ERIC SCHWAAB: Well, Bill raised a question I was going to raise as well, particularly in light of the concern that on page 4 in the report, at the bottom, this concern about the increase in age-0 menhaden in '99 is viewed as problematic, especially since the company sought to avoid catching them in recent years.

I would just simply raise a question as to whether the committee considered any kind of a stronger action or stronger management recommendation given the fact that they had already, at least in the body of the report, apparently attempted to avoid that turn of events already.

I also had a question for Mike Street. Mike, you indicated that these relatively high age-0 harvest indicated a strong year-class, and yet when you look at that table, the observation I would make is that there are also years where there are relatively modest or even low age-0 harvest that were followed in subsequent years by fairly strong age-1 and age-2 harvest.

What, I wonder, is happening there if, in fact, your previous statement is accurate as it relates to indications of the strong year-class by high age-0 harvests.

MR. STREET: If you look at Table 1, the ones that you're looking at particularly are in the earlier part of the dataset, when there was a fishery with plants from Florida through Maine. The only plants now are in North Carolina and Virginia, one plant each. Therefore, the fishing does not take place throughout the whole range of the stock.

MR. SCHWAAB: Well, if I could just follow up, you pointed out 1979 -- and I just simply looked at 1980 -- a relatively low age-0 harvest there, and then in '81 and '82', age-1's and 2's are fairly strong harvest.

MR. STREET: 1980 was a relatively low catch, and if you go over to the right one, and down one, you're following then the same year-class.

MR. SCHWAAB: Right, well then go over to the right two and down two, and I see a fairly strong age-2.

MR. STREET: Yes, it's just that that was the way it was. I said if you looked at the top of page 4, have often been correlated as in 1979, '81, '83, '84, but not in 1988.

VICE-CHAIRMAN MOORE: Yes, sir. Paul.

MR. PAUL PERRA: Mr. Chairman, I'm in agreement that we should accept the report, and I also agree that the Chairman of the Committee and the staff should have final editorial license on how to, you know, adjust the report appropriately. But I don't think we should make any substantive changes to the report, because basically AMAC is a group giving us advice. We don't want to be seen changing the advice that we've asked people to give us.

I believe, by accepting the report, we are not accepting all of its recommendations. There are certain things in the report I probably won't agree to, but I don't want to rewrite, you know, the recommendations of the committee.

With that being said, I have a couple of questions on the recruitment. I guess we got some good news that we're getting recruitment. My question was, though, that it was primarily seen in the more northern areas.

So, I have two questions. One is can we expect around 2002 to actually see a leveling off or maybe an increase in biomass; or, would we expect to see the biomass continue (to decline)?

The second question would be since these animals were recruited more to the northern range, is AMAC assuming that they will contribute to the fisheries of the Mid- Atlantic and South Atlantic?

DR. DOUG VAUGHAN: Well, to answer your second question first, yes, we consider the Atlantic stock one stock. So, yes, if there's increased recruitment coming out of the more northern areas, they will contribute to the coastwide stock and join in the migrations, north and south, annual migrations north and south.

To answer your first question, with the three real poor recruitment years, say, age-1 in '96 to '98, we are seeing that the decay in what was a very high spawning stock, so that we have seen a down turn in that the last three years. Depending on how strong the recruitment to age-1 last year was, it was about 2.7 billion as the initial estimate, if that holds up, that's a moderate level of recruitment, but certainly not a real strong level of recruitment.

A very rough initial look at the expected recruitment to age-1 in 2000, based on the zeros last year, seems to suggest it may be very good. If that pans out, then in about, that as age-3, which would be in 2002, then hopefully, we'll see a fair amount of an increase in the spawning stock, which age-3 is the first age of maturity.

VICE-CHAIRMAN MOORE: Thank you, Paul. Dave Cupka.

MR. DAVID CUPKA: Thank you, Mr. Chairman. I guess my question concerns more procedure, and that is I'd like to know in my own mind what the implications are if we vote to accept this report, and I speak in relative to the recommendations in there. I'm assuming that we would still be able to act on Amendment I further down the road, and it automatically wouldn't include all these recommendations, would it? But, I'd just like to have it clear in my mind what the implications are. Are we just voting to accept the report, or are we actually voting on the recommendations in the report?

VICE-CHAIRMAN MOORE: The motion as it stands is simply be to accept the report as is, and the recommendations therein contained would be discussed further when we talk about the amendment.

MR. CUPKA: Thank you, Mr. Chairman.

CHAIRMAN MOORE: Gordon.

MR. GORDON C. COLVIN: Mr. Chairman, I would just note that the motion on the board is to approve the report, not to accept it. I would certainly consider favorably voting on a motion to accept, but I would not vote favorably on a motion to approve.

VICE-CHAIRMAN MOORE: Jack, **would you accept that as a friendly amendment?** Okay, let's **change the language as it reads to move to accept the 2000 AMAC Report rather than approve**. Do we have a second for the friendly amendment? Bill, you okay with that? Is there a second to the friendly amendment motion here? Bill Adler. Discussion? Call the vote. All those in favor, say aye; opposed. **The motion passes**. Okay, so we now have an amended motion. Further discussion on the motion? Sir.

SENATOR GEORGE GUNTHER: I should apologize, I fell asleep. No, not at the meeting. And, part of it was I kept reading over the reports that have come in on your menhaden, on the management and on the recommendations, and going back, we now have our CD ROM that we can get information off, which is pretty good reading, and it puts you to sleep at night sometimes. But, as the third wheel on a troika here, being representative of the legislative side of this, I tell you at times when I read through these reports, I don't pretend to be a biologist.

I've had a long experience with the menhaden fleet. I've been 34 years in the Senate in Connecticut, and I think of all 34 years, I've been involved as far as the menhaden industry has been concerned. I was instrumental in setting up the menhaden fishery line way back, I guess that's damned near 25 years or more ago. When I read this report, as a non-biologist, it's really difficult for me to take and read the report which comes out and says open up all the closures we've got, the restriction from having the menhaden fleet come into our estuaries, go into our harbors.

(I) mean, that's been our experience in Connecticut. When I read some of the figures here, you go over some of them, there's a -- unless I'm misinterpreting it -- 10 percent of the catch of the reduction has been bait fishing. And the Long Island Sound, I don't think anybody -- you might have one or two small purse seiners in New York State, but there's none in Connecticut. The bait fishery is purely a gillnet type fishery in the state of Connecticut. I know that we've had people who've applied for licenses for our state, but very few of them have really fished for menhaden, and the only ones that we know of have been the bait fishermen.

You've got 70 percent of the catch as a reduction in the Chesapeake, and then environmentally, 36 percent. I tally up those, maybe I'm not very good at figures, but it tallies up to 116 percent of the fishery that has come up -- and I know in your CD ROM, you had a thing there, you were concerned about this business, which would get a tally up of over 100 percent in that report, because of the percentages you were using. Is this incorrect?

MR. STREET: Yes. The total landings that are recorded for menhaden -- and there is considerable

unrecorded landings. But the total recorded landings are about 207,000 metric tons in calendar year 1999. Of that, approximately 83 percent is from the menhaden reduction purse seine fishery. About 17 percent is from the bait fishery; most, but not all of which comes from the purse seine bait fishery in Chesapeake Bay and New Jersey.

Also, included in the bait fishery are landings from pound nets from North Carolina northward, gillnets from Florida northward, and various other -- shrimp trawl bycatch, fish trawl bycatch, longhaul seine bycatch, etc. We have far more detailed tables state by state of bait landings by gear. They're not in here. They are, in fact, in the draft FMP amendment. They're just not in this report.

SENATOR GUNTHER: Well, I know that Dr. Pierce, I believe it was, made some remark there. He says so we don't get embarrassed -- so we don't embarrass ourselves by having an annual removal greater than 100 percent -- a remark that sort of caught my eye.

MR. STREET: We don't.

SENATOR GUNTHER: I constantly see throughout this report the business that this is strictly a political or a social type objection that we're getting. Yet, we as Legislators are at the front door of that. As I said, being one-third of this group in here, we have to go back and listen to the music. I know that in Long Island Sound, I, for years, have been an advocate for a management program, but that's been a long time coming, and I haven't seen a good management program coming.

I think a lot of the suspicion on the social basis is the fact that the people don't trust the industry itself, and especially where the fox is in the henhouse. That is in the subcommittee that you've established here, which is an exception to the normal species that we have. There's a large number. In fact, I think you've made a good representation of the commercial fishery on there, which makes a lot of us very suspicious that the results that are coming out of here and in reading this report that you have here, we could say the same thing.

It sounds like it's more on the social political basis on the commercial fishery than it is on a scientific biological basis. I know that I've had people reading these reports and that, and they're coming back to me -- and when you're talking about opening up the closures is going to help in developing the biomass and that type of thing, it's pretty hard for most of us non-biological experts to see how that makes common sense.

Because, we're told the impact on the fishery has been greatest in the fishery down in the Chesapeake. So to open up all the estuaries that are being closed down, they were closed down partly on a social basis because they were drifting in and going into our harbors and that originally. That has been very protective for the rest of the species in our area. So it's not easy for us to read this and not feel that the social political aspects of this are as much in strength on the present committee that we have established under this Commission.

MR. STREET: Two things. First, the opening is to open areas now closed to such fishing which extend beyond one nautical mile from the shore lines. So there's no intention to open harbors, bays, coves and things like that.

Second, the impetus for this recommendation came from persons concerned with the situation in Chesapeake Bay, with the forage-base issue in Chesapeake Bay, and who wanted to find a way to maintain a viable fishery, which is one of the objectives of the plan, while relieving some of the pressure in Chesapeake Bay.

The way to do that is to find additional areas where those vessels, now concentrated in Chesapeake Bay, could fish outside Chesapeake Bay. This was a suggestion at an open meeting with a number of conservation group representatives present. They participated fully in the discussion.

VICE-CHAIRMAN MOORE: Steve Jones.

MR. JONES: Steve Jones. I'd like to make one comment in addition to what Mike just stated. I think it's my understanding that this was also a recommendation from the Peer Review of the Menhaden Plan.

VICE-CHAIRMAN MOORE: Point taken, thank you. Yes, sir.

MR. LEW FLAGG: Thank you. I'm not a big advocate of opening up a lot of areas, but I do think that there is a legitimate problem that is trying to be addressed here, and that is if you have a lot of areas closed, and a lot of fishing activity in the remaining open areas, it does probably cause localized depletion. To the extent that you can spread out fishing effort over wider areas to prevent that occurrence, I think it's to the benefit of the resource and the users.

So, I think there is a legitimate problem here that does need to be addressed, and I hope we can do something to address the problem of localized depletion because of lack of open areas that might be available to prosecute the fishery.

VICE-CHAIRMAN MOORE: So noted, thank you. Bruce.

MR. FREEMAN: The issue that I tried to raise initially was that there are certainly biological implications that need to be looked at and need to be discussed, need to be understood. But in this fishery in particular, there are strong social issues that also need to be looked at. And the social issues, so far as I can tell, on these recommendations, seem to be lacking.

I think that's one aspect. This plan will not be successful until we take them into consideration, and that's my concern. That they need to be looked at, they need to be discussed, as do the biological.

VICE-CHAIRMAN MOORE: Thank you. Further discussion on the amended motion? Very good, hearing none, I guess we can call the motion, or call the vote. All those in favor, say aye.

MR. FOTE: We want to caucus.

VICE-CHAIRMAN MOORE: Do we need time to caucus here? . Let's take a 2-minute break.

Time's up, please come on back. Please come on back. We're going to get started now. Call the vote. All those in favor of the amended motion, say aye; opposed; null votes; abstentions. **The (amended) motion passes with 1 no vote.** Are there any null votes? Any abstentions? Thank you. All right.

IWP APPLICATIONS

So, IWP is next, Item number 6, Review/Approve the IWP Applications. Mike has reviewed this already. Presently, there are no IWP applications. Unless there aren't any here, I'd like to go ahead and skip to number 7. No need for action. Item number 7, Review Options for Overfishing Definition Specifications. I'm going to turn this over to Joe.

OVERFISHING DEFINITION SPECIFICATIONS

DR. DESFOSSE: I just have a couple of words before we get into Doug Vaughan's presentation. There are a number of pieces of information that are available to you; they should be in front of you. There should be four things, actually three written pieces of work here, and the fourth one will be Doug's presentation. There is a report entitled "Supplemental Analysis of the Status of the Atlantic Menhaden Stock". There's relevant information in there that Doug will be referring to.

There's also a document here, it's eight pages long. It's something that you have seen at the last meeting. It's an expanded version of Section 2.5 in the draft amendment, the definition of overfishing. It has PTD notes, et cetera, in it. The numbers in this have been updated as of the last AMAC meeting. The PDT also reviewed this last week during a conference call. There are recommendations in this handout. On page 4 there is an AMAC recommendation and also a PDT recommendation we will get to at the appropriate point.

There is also a one-page handout here. There was a request at the last Board meeting for some information on what overfishing definitions are used in other forage fish management plans. I found three separate examples. One would be the Atlantic Herring FMP or Amendment I. There is also a Coastal Pelagic Species FMP on the west coast with the Pacific Council. There is also a draft Forage Fish Management Plan for Washington State. That information is there in front of you, and with that intro, I'll turn it back over to Doug for his presentation, if that's okay with you, Mr. Chairman.

VICE-CHAIRMAN MOORE: Thank you, Joe, that sounds good.

DR. DOUG VAUGHAN: Okay, as Joe said, I'm going to give a presentation for Atlantic menhaden on some potential F-based and spawning stock biomass-based benchmarks, which are the two benchmarks that are used in the Magnuson-Stevens reauthorization.

The scope of the talk I'll give here will be to discuss some of these benchmarks for both targets and thresholds; present some historical performance of Atlantic menhaden benchmarks; say something about the static spawning potential ratio approach or static SPR; also, something concerning the yield per recruit approach; then show a few overheads on F Med or F Replacement; a few slides on spawner-recruit approach, both the Ricker model and some of event-tree or conditional probalistic approaches that I've used with Atlantic menhaden for about ten years now, based on a manuscript that was published through a Canadian Journal Special Report at a workshop I went to in Halifax in '91. Then I'll just present a slide with the AMAC recommendations.

First, I'll just throw up this overhead on the relative survival of Atlantic menhaden. It's an index of survival that's based on the recruitment to age-1 divided by the spawning stock the previous year. This peak right back here in the 50's is from the huge '58 year-class, and during the 60's when we had, basically, real poor recruitment, and then along with low spawning stock, and then we had a rebuilding here with this very high survival event here in the mid-70's. Then in recent years we've had poor survival.

This figure here compares the solid red line as the VPA estimates of recruits to age-1, and it's compared with the squared values, or a coastwide index that I put together, including information from Maryland and Virginia, as well as southern New England, principally Connecticut and Rhode Island; and then, as Mike said earlier, the SEAMAP data in recent years, as well as four different indices were put together from North Carolina. The early years of this index are principally based on the Maryland index, but from about 1972 on it includes areas from up and down the coast. And there has been extremely good agreement between these two, between the coastwide juvenile abundance index, and what I call the lag recruitment to age-1. And it has lagged back one year to line up temporally with the juvenile.

This looks at some of these index values on a state-by-state basis, and with the SEAMAP of data being basically from around Cape Canaveral, Florida up to around Wrightsville Beach or Wilmington, North Carolina. Then the North Carolina Division of Marine Fisheries indices are combined into a single index for North Carolina. There's the Virginia seine index, Maryland, Connecticut, Rhode Island, and then this coastwide combined index.

Sample size, or N, refers to the number of years in the index. The current value is for the 1998 year-class, then the 25th, 50th and 75th percentiles of these indices, and then comparing the current value to the performance

of that based on those percentiles. The 50th percentile, or median is the value such that 50 percent of the historical values were above it, and 50 percent below. So we see for, say, the SEAMAP, the current value of 0.19 relative to -- and these indices index values are normalized by subtracting the mean and dividing by the standard deviation. That's where you get negative values. But the current value for SEAMAP is above the median. The North Carolina, current value for North Carolina, 0.21 is above its median, but neither the SEAMAP or North Carolina are above the 75th percentile. Whereas with the Virginia and Maryland seine indices, the current values are either, in the case of Virginia, below the 25th percentile, or in the case of the Maryland index, a little bit above the 25th, but still well below the median, indicating that those two indices coming out of the Chesapeake Bay are at historical relatively low values.

In terms of Connecticut and Rhode Island, the current values are above the 75th percentiles, indicating that they are historically relatively high. Coastwide, the current value of - 0.13 is right at the median value.

Okay, I'll put up a schematic that comes out of -- basically, there are two things that are being looked at with the reauthorization of the Magnuson-Stevens Act. There are spawning stock biomass and fishing mortality. I have on this figure, B‘ and F‘ would represent target values or values that you would like to be at, versus B“ and F“, which represents threshold values; values in the case of biomass that you don't want to fall below, or in terms of fishing mortality, you don't want to be above. When fishing mortality is greater than F“, you're overfishing, and when spawning stock biomass is below B“, then the stock is either overfished or depleted. I prefer the term "depleted". Obviously, if you're above B‘ and below F‘, then you're in good shape.

Okay, to look at some historical values on Atlantic menhaden for F and spawning stock biomass, this is the historical pattern in the fishing mortality, and it's the mean F on the ages 2 and older. As you can see, the solid blue line represents the median of the historic values, whereas the dotted value here is the 75th percentile. Twenty-five percent of the historical values have been above that and 75 percent below. This other dotted line here is the 25th percentile, and as you note, high values occurred mostly during the 70's and into the 80's. The lowest values were either back in the 50's, late 50's, and some of the more recent values.

Okay, this is the historical pattern of spawning stock biomass. Again, the solid blue line is the median, the dash line here is the 75th percentile, and this is the 25th percentile below. We had very high values of spawning stock in the late 50's resulting from two very huge recruitment events, the '51 and '58 year-classes. We had very poor spawning stock during the 60's, into the 70's, and then relatively high spawning stock in more recent periods, with the tailing off the last -- from a peak three years ago as a result of the poor recruitment during '96 to '98, or the '95 to '97 year-classes.

Okay, so biological benchmarks, one potential approach is looking at the historical values in terms of the 25th, 50th and 75th percentiles, where we've been historically with respect to F and SSB. For the moment, the SSB over R doesn't really play a role. But the median value of fishing mortality rate has been 1.39; the 25th, 1.13, which is also similar to the current value; and the 75th percentile of 1.72. Correspondingly, the median for spawning stock biomass over the period was 40,400 metric tons versus a 25th percentile of 20,900, and 62,900 for the 75th percentile.

Okay, other approaches that I'll be talking about are both static SPR and yield per recruit. The solid blue line, which I'll be talking about first, shows how the static SPR or static spawning potential ratio declines with increasing F as a continuous function. This red line here is the yield per recruit curve, initially increasing to a maximum, and then declining to some extent. The F Max is the fishing mortality that maximizes this yield per recruit curve, and F 0.1 is a value that's been used in a number of international arenas for a long time. That's based on an economic argument that backs off F Max to some extent, and it's equal to where the slope of this curve is 10 percent of that, of the slope at the origin. F 20, F 10, F 5, are various values of the static SPR were where the blue curve would cross the 20 percent, 10 percent and 5 percent of F, or of the spawning stock, theoretical spawning stock where F equals zero.

The F Rep is based on the median of the spawning stock biomass per recruit values or cluster of points, and then calculated from this curve. In terms of the static spawning potential ratio, this gives the values that have been calculated for Atlantic menhaden over this 45-year period. We had some very large values back in the 50's, when the spawning stock was extremely high. We had low values through the 60's to the 90's, here and there with, again, relatively high values in recent years that compare very well with the values in the 50's. That one value right here is the only time that, for Atlantic menhaden, that static SPR has been above 20 percent, and there are only a handful of values where it has been between 10 and 20. For most of the time, it has been between about 3 and 8 percent, which represents the number of values between the 25th and 75th percentiles. And I identify those values, the static SPR of 5 percent, 10 percent and 20 percent, the F values are given here along with the corresponding spawning stock biomasses. The value of F, say at 10 percent, is 1.14, with a corresponding spawning stock biomass of about 49,000 metric tons, and a corresponding value for 5 percent and 20 percent.

Here are some corresponding values. First, for F 0.1, which has been used as a target in some fisheries, and F Max as a potential threshold, and F Rep has been used as a threshold in a number of fisheries. In this case, the F 0.1

is less than half of F Max, which raised some concerns in the committee discussions.

DR. DESFOSSE: Doug, excuse me a minute. Just for the Board members' sake, in the overfishing definition handout on page 7, there is a table that has all these numbers laid out for you, in case you're having difficulty seeing some of the --

DR. VAUGHAN: Yes, I've just broken these into smaller tables for this presentation. Okay, to look a little bit more at F Rep or -- this looks at the distribution of the recruits to age-1. First of all, the X axis on this curve, this SSB underscore C minus SSB underscore Y, that's basically what the spawning stock biomass of the subsequent cohort is compared to the spawning stock biomass of the fishing year that produced it.

When that value is negative, then you don't have replacement, and when that value is positive, you do have replacement. And then what I've plotted against it is the recruits that resulted from the spawning stock biomass, the fishing year spawning stock biomass. Of course, this is the '58 year-class that was so important in the Atlantic menhaden, but otherwise, there is little difference in the distribution of recruitment seen with whether there was replacement or not replacement.

This is a similar figure. Again, the squares on the right represent replacement, the pyramids on the left indicate there wasn't replacement. That, again, looks at the distribution of fishing mortality that was expended on the cohort that resulted from the fishing year spawning stock biomass. There's some indication that there may be a little bit higher fishing mortality, but it's very subtle when you don't have replacement versus when you do.

Another approach is looking at spawner and recruit. In this case, I have a couple of mathematical models of spawner and recruit, compared to the spawner-recruit data. Neither fit is impressive in terms of Beverton-Holt. One of the density-dependent parameter is not significantly different from zero. It is significantly different for the Ricker, but the Ricker still explains very little of the variability noted in recruitment as a function of the spawning stock. So that causes some problem in using a spawner-recruit model as a basis for coming up with a benchmark.

However, there is some very interesting dynamic behavior when this Ricker curve is used. This behavior was noted by Robert May in a paper in Science in 1976, where you get complicated behavior from very simple models. In this case, for the Ricker curve, you can get some very strange chaotic and bifurcation-type behavior. The blue curve here is where F is equal to zero, which suggests that you can (get) recruitment from near the maximal value allowed by the Ricker curve to something very close to zero. As you increase fishing mortality, you decrease this chaotic bifurcation complex behavior. I'm not suggesting that this really describes the population, but this is the implication of the Ricker curve as applied to Atlantic menhaden. That was for recruitment. Needless to say, you see the same behavior in the spawning stock biomass.

Okay, another approach, rather than using a fixed mathematical formula for exploring spawner-recruit relationships is to look at the conditional probabilities. I've defined here by low, moderate and high. Moderate is where it's within what's called the interquartile range or between the 25th and 75th percentile of the historical values for both recruits and for spawning stock. Then this looks at over the 45-year period what is the conditional probability of getting say a low recruitment from low spawning stock. In that case it would be about 27 percent of the time when spawning stock is low versus about 45 -- from a low spawning stock, there's about a 45 percent chance of getting moderate recruitment and about 27 percent chance of getting high recruitment from low spawning stock. Similarly for moderate and high. In terms of high spawning stock, there's a greater chance of getting low recruitment than getting, say, moderate recruitment or getting high recruitment.

Based on 100 iterations projected out 25 years, this is the pattern of the projections based on starting off with the population numbers for the most recent year; this example here with F equal to the current value of 1.1. The bars represent the interquartile range based on the 100 iterations. So that gives you sort of the variability, a sense of the variability based on uncertainty stemming from the spawner-recruit conditional probabilities.

Okay, these right here are various projections of recruits to age-1. These are the median values from those projections based on a series of potential benchmarks of F. F 0.1 is given by the square with the blue line. F 20 is the diamond. F Max is the pyramid, triangle. F 25th percentile is the circle. F-Med is the solid line. F 50th and F 75th are with the other symbols there given at the bottom. It suggests that the different levels of F have very little effect on the projected recruitment values. They overlap each other considerably. However, they do make a difference, of course, with spawning stock biomass. So, the lower F, the higher spawning stock biomass. Where F 0.1 is the lowest of the different values of F I used, and F 75th percentile was about 1.7, was the highest value. And the solid line there is based on the F-Med or F Replacement.

A final overhead here just presents what the recommendations were coming out of our AMAC Committee meeting. For the spawning stock biomass, we suggested that the median for 1955 to 1999 as the target, that was about 40,400; and the 25th percentile as the threshold, which I think was 20,600, but don't quote me on that. For F, we wanted to be a little more conservative. We selected the 25th percentile for 1955 to 1999 as a target, with the median as the threshold. Note that the median is similar in value to the F Rep. F Med was about 1.4, versus an F Rep of 1.3. And that concludes my talk.

VICE-CHAIRMAN MOORE: Thank you, Doug. Does anybody have any questions for Doug at this point? David.

DR. DAVID PIERCE: Yes, Doug, it's unclear to me whether you're referring to fishing mortality rates across all ages, age-0, age-1 and, of course, older, or just on fully recruited fish, age-2, for example, and older. It's important for us to get the proper context here. If we're going to set definitions for overfishing, we need to know what age we're talking about. And if it is only age-2 and older, and age-0 and 1 are not included in the calculation, or the determination as to what the target should be, then why not, because aren't we concerned about fishing mortality on zeros and ones, too?

DR. VAUGHAN: Okay, all the presentation was based -- the numbers were the F mean of twos and older. However, all the projections and all the calculations included age-0 and age-1, but it was in proportion to what they were for the 1995 to 1999 conditions. So, that the relative F of zeros to age-2+, and the relative F of age-1 to 2+ were all kept in the analysis. So, F on all ages were included, but F on age-0 and F on age-1 is less than, because they're not fully recruited to the fishery.

VICE-CHAIRMAN MOORE: Thank you. A.C.

MR. A.C. CARPENTER: Doug, I have two questions regarding the slides. One was you had two there that dealt with replacement. It was either a negative value or a positive value. And you pointed out 1958 as one of the positive values on that. Each one of those datapoints was a year; is that my understanding?

DR. VAUGHAN: What I did was I calculated the spawning stock for a given fishing year. Then to see whether there was replacement or not, I then looked at the year-class, or cohort that was generated from that spawning stock. Then I added up the spawning stock that resulted from that subsequent cohort, the recruitment to age-1 that started it off, and the fishing mortality that was applied to it over its lifetime.

MR. CARPENTER: My question was that if those datapoints would have been replaced with a year, '58, '62, '73, '95, '98, would there have been a pattern that would have come out that would have helped us understand this situation? That was my first question. Yes, that's the kind of graph I'm talking about.

DR. VAUGHAN: Okay, I probably should have explained this better. This is recruitment to age-1. The SSBC is the spawning stock biomass of the cohort that was produced by the spawning stock biomass in a given fishing year. In this case, this blue dot represents the spawning stock on the X axis, or it represents the spawning stock biomass for the 1950 year-class compared to the spawning stock biomass of the 1958 cohort; i.e., one in 1959, two in 1960, 3 in 1961, etc.

MR. CARPENTER: The short answer to my question is no. One more question. You presented a schematic of the fishery control laws, and then you presented as your last recommendation some bounds for really F and F‘ or F”.

Is it possible to take that 45 years' worth of data and fit it back into that schematic with a point for each year to say where we were in there? Am I making myself clear?

DR. VAUGHAN: Yes, you're making yourself clear. Yes, it could be done. Once you've defined F‘ and F” and spawning stock, or B‘ and B“, then I can put those on the same plot as F versus spawning stock biomass. So, yes, it's possible.

MR. CARPENTER: We had seen that done with the crab fishery in the bay, and it begins to -- if you put years in there for the datapoints, it begins to point out a pattern of events that helps us explain, at least, the Potomac River Crab Catch. I think that that kind of an exercise might be very useful in this particular fishery where we have such a good database.

DR. VAUGHAN: Most certainly.

VICE-CHAIRMAN MOORE: Thank you very much. Any other discussion? Bruce Freeman.

MR. FREEMAN: Doug, have you looked at the way they deal with other fisheries similar to menhaden on the Pacific coast, particularly Pacific sardine or anchovy there?

DR. VAUGHAN: I'll have to admit I haven't looked at what specifically they've done there, no.

MR. FREEMAN: It may be useful because it appears to me that there are very strong parallels between this forage. They're basically forage fish and about the same length of life and same characteristics of growth and so forth. I'm just curious how they dealt with it and what they used, and how successful they've been using those biological references. It just may be kind of a sanity check to look at what they've done there.

VICE-CHAIRMAN MOORE: Bruce, if I could have Joe Desfosse recognized.

DR. DESFOSSE: Some of that is laid out in that one-page handout, under Section two, under the Coastal Pelagic Species. There are two categories of species that are addressed in that plan. One is an actively managed species, which Pacific sardine is. The difference with what they're doing out there is that they estimate the biomass that's available at the start of the year. Then they have this cut-off, what's called a cut-off, or a set-aside, basically setting aside a certain amount of the spawning stock biomass that will not be harvested. They take the available biomass, subtract that set-aside, and then you apply a fraction to that to get the total harvest for that upcoming year.

VICE-CHAIRMAN MOORE: Any more questions for Doug? Bill.

MR. GOLDSBOROUGH: I'm not sure if Doug wants to comment on this, or someone else should, but he concluded by talking about the AMAC recommendations for targets and thresholds. I'm wondering what that actually means from a management standpoint if we hit

the target, or if we went over the target, what would happen if we hit the threshold, if we went over the quote "threshold", what would happen?

Is this any different from the triggers from a management standpoint that we've been using, and, I mean, could we consider any of this like we would consider a quota where you don't allow it to go over, or you subtract from next year in some way. I mean, from a management standpoint, what does this mean?

DR. VAUGHAN: My only comment would be that's up to the Board here to decide.

VICE-CHAIRMAN MOORE: Bill, I think that's a management consideration, and we're really focusing here on what the overfishing definitions would be in absolute values. So it would be up to this Board to determine what actions, if any, would result when a threshold or target is exceeded. A.C.

MR. CARPENTER: Mr. Chairman, I think that Bill's question and mine are somewhat related. The idea of being able to graph past years against a target and against a threshold in both terms of F and spawning stock, I think would help guide us in being able to determine what the implications of picking certain numbers are. You could then at least go through this exercise and say that in five of the last seven years, or three of the last ten years you were either over or under that schematic range that you had there.

I think that that kind of an exercise would be very helpful in trying to help pick what the number should be in retrospect, and at the same time looking at where we have been, and what the consequence of those decisions would have been years ago if we had made the same one, is what I think I'm trying to get to here.

VICE-CHAIRMAN MOORE: So noted. Further discussion? Any other questions for Doug? Yes, sir.

DR. MICHAEL RICE: From what I'm gathering on this is that it seems that from what you're presenting is that you have a pretty weak spawning stock-recruit relationship throughout the entire spectrum. A lot of the management choices are all predicated on basically maintaining spawning stock; one which basically leaves open sort of the possibility of sort of picking your biomass level that you want from sort of high to low by various management decisions.

Has there been any thought on your side in terms of sort of a bigger ecological picture in terms of what these fish are doing in terms of grazing, in terms of phytoplankton or as a forage fish?

DR. VAUGHAN: I mean, certainly, there has been a lot of discussion in recent years on that score. But in terms of any analytical work, I'd have to say no.

VICE-CHAIRMAN MOORE: Mike would also like to address that question.

MR. STREET: This issue is the exact one being addressed through the Commission's development of a multi-species program. And the Commission has applied for grant funds to hold workshops. Is Geoff White here, because he's the one who's heading up that function for the ASMFC. But it's beyond the kin of AMAC and PDT. But if I can take a minute or so, what we're looking at is holding a workshop, a series of workshops actually beginning this fall, to examine up to eight multi-species models.

And don't ask me to try and explain any of them, I cannot. But we have been in contact with researchers all over the U.S. and Canada. The University of British Columbia has a team that's very good at some of this. They're charging the state of Florida for 9 to 12 months work on one model, $250,000. So this is not an easy task. Fortunately, though, menhaden has among the very best data to accomplish this task. But this is going to be a multi-year effort because it is extraordinarily complex.

VICE-CHAIRMAN MOORE: Thank you, Mike. If there are no other further questions for Doug at this point, I'd like Joe Desfosse to focus on the specific AMAC recommendations at this point regarding the overfishing definitions, if you would, please.

DR. DESFOSSE: Doug had that overhead that dealt with the AMAC recommendation, basically using the historical data base, using the 25th and 50th percentiles of the observed fishing mortality rates. I'll point out the overfishing definition handout on page 4 contains the AMAC recommendations and also the PDT recommendations. The observed targets then would be an F of 1.1, and the threshold would be an F of 1.4.

There's also the SSB targets and that would be 40,400 metric tons, and the 25th percentile for the threshold being 20,900 metric tons. Also note that the recommended threshold values for F 1.4 is similar to the estimate of F Rep. The recommended threshold level of SSB or 20,900 is similar to the estimate of the minimum spawning stock threshold, the MSST of 20,500. It's also similar to the SSB which produces half of the maximum number of recruits from the Ricker curve.

The PDT made a number of points. The first is that the menhaden database is an extremely strong historical record. The spawner-recruit relationship for menhaden is weak at best, and adopting very conservative SSB or SPR levels would have little to do with ensuring good recruitment. F 01 has no biological basis, and the PDT is very uncomfortable with it. And the fourth point is that the menhaden stock has had good recruitment at low SPR levels, especially levels below 10 percent. And that the life history of menhaden is very different from striped bass and other piscivores that need SPRs of at least 20 percent.

One point that the PDT would like to make or a recommendation on the targets and thresholds, that in lieu of using the point estimates from the final year or the terminal year of the VPA, that the most recent three-year running average be used. You can see the differences in the values here. There is not much difference in the

fishing mortality rate between the final year in 1999 and the 3-year average in '97 through '99. They're both at about 1.1 to 1.2 rounded off. The SSB estimates, the point estimates do differ somewhat. The SSB estimate for 1999 is 32,800, while the 3-year running average is 58,300.

So those are the recommendations from both the Technical Committee and the Plan Development Team.

VICE-CHAIRMAN MOORE: Thank you, Joe. So, before we have discussion, we have the AMAC recommendation before us for the overfishing definitions. At this point, in order to begin discussion, would anybody like to make this in the form of a motion? (no motion) All right, let's have discussion first, then. David.

DR. PIERCE: Once more, I need a clarification. These recommendations from AMAC regarding the values of F target and threshold, these pertain to age-2 and older fish, correct?

DR. VAUGHAN: The numeric values are for 2 and older, but they include in the analysis and in the significance of the analysis, zeros and ones.

DR. PIERCE: Okay, so if we adopted these values for target and threshold, they're based upon an analysis that looks at age-2 and older fish. When we calculate fishing morality rates to see where we are relative to those targets, the threshold and the target, we would also include age-0 and age-1, partial fishing mortality rate for those age groups, too?

DR. VAUGHAN: Well, I was going to say, I guess the problem that would arise would be if there has been a significant change in selectivity for zeros and ones relative to twos.

DR. PIERCE: Okay, I'm still having trouble wrapping my mind around this one. One reason why is that I look at the figure in your supplemental analysis of the status of the menhaden stock, Figure 24, and this figure, as well -- well, many of the other figures, include age-1, or reference age-1.

It's unclear to me at this point in time to what extent, or how high is fishing mortality on the age-1 fish, because right now it seems as if, because we're going to set a target in a threshold F to age-2 and older fish, we're not seeing anything about age-0 and age-1 fish relative to whether or not they're overfished.

I guess I'm asking you, Doug, and the rest of the committee, is it possible for us to overfish the age-1 fish? If it is, then shouldn't we be somehow factoring into our amendment some concern about that?

DR. VAUGHAN: Okay, this is expressed as exploitation rate rather than F, but you can see here this is for the 2+. The blue line is for age-1, and the line, jagged line, the red line at the bottom is for zeros.

The way all the analyses are done, static SPR, yield per recruit, etc., are based on some selectivity between the F at age. And this is true for menhaden, for weakfish, for striped bass, all the assessments are done the same way. You have a selectivity pattern for your most recent set of years, or whatever. In this case, the selectivity pattern is based on '95 to '99. Then the Fs are reported as 2+. If you have a sudden increase in F on 1's relative to age-2, then it can make a difference in terms of what the actual static SPR is, or the F Max, or whatever, because they change with selectivity.

As I say, the selectivity used in these analysis are based on the recent selectivity for the latter part of the 90s.

DR. PIERCE: So, I guess what you're saying, Doug, is that for age-1 fish, the exploitation rate has been relatively constant over a long period of time. Hence, we need not worry about that, we only should be concerned if suddenly we see an increase in mortality on the age-1 fish?

And the better indicator of the status of the fishery in terms of what the fishing mortality rate is going up and down would be the focus on age-2 and older fish. Is that what you're saying?

DR. VAUGHAN: I'm not sure I'm saying that, but --

DR. PIERCE: Well, that's my interpretation, that we need to just focus on age-2 and older fish, and be wary of the fishing mortality rate on the age-1 fish. And if it jumps up on age-1 fish, then the alarm bells go off, and that would necessitate some action, perhaps. That's something that I assume that the Board would have to discuss.

DR. VAUGHAN: I would probably concur with that, yes. I would say that would -- certainly it's important to keep an eye on the F for all ages, even though I would normally be reporting the F on 2+. And certainly if the selectivity pattern should change significantly, it's important.

CHAIRMAN MOORE: Paul Perra.

MR. PERRA: I'm looking at this recommendation, and it says, SSB and SPR levels would have little to do with ensuring good recruitment. F 01 has no biological basis, and the PDT is very uncomfortable with it. The menhaden stock has had good recruitment at SPR levels well below 10 percent. And the life history of menhaden is very different from striped bass and other piscivores that need SPRs of at least 20 percent".

I'm trying to put together all the different graphs I've seen, and it's hard. But I did see one that said that at a moderate stock size, it was the best chance to get good recruitment. At a low stock size, you had a low chance, and a high stock size, you didn't have such a good chance to get good recruitment.

I haven't been able to connect an SPR, SSB or anything else to what that moderate stock size is, because I've seen too many graphs. Can you help me out here?

DR. VAUGHAN: Yes, the way moderate spawning stock biomass was defined was as between the 25th and 75th percentiles, which are in the table.

MR. PERRA: All right, where does that come out percent wise, because you're talking about 10 percent, you

know, below 10 percent, you've always had good recruitment, at SPR levels well below 10 percent.

DR. VAUGHAN: Well, the historical interquartile range was between 3 and 8 percent. So 50 percent of the time -- the middle 50 percent values were above 3 percent static SPR and below 8 point something percent.

MR. PERRA: Okay, so you're talking somewhere between 3 and 8 percent?

VICE-CHAIRMAN MOORE: The exact value is actually on page 15 of the draft AMAC Report, and the median is 5.4 percent. The 25 percent value is 3.1, and 75 is 8.2 for SPR, so it's 5.4. Further discussion? How about a motion?

DR. DESFOSSE: Based on A.C.'s comments earlier, is theBboard uncomfortable moving forward with selecting targets and thresholds and overfishing definitions without seeing that other graph, if you will?

CHAIRMAN MOORE: A.C.

MR. CARPENTER: I, for one, would prefer to see that graph, given the recommendations that have been put forward here, and that would then give me some basis for picking a number, or at least understanding the implications of a number that I may be picking. I'm a little bit like Paul down at the other end. I've seen too many graphs and too many numbers to understand what any of them mean.

VICE-CHAIRMAN MOORE: What is the will of the Board here? Is this opinion expressed by everybody else? Joe has another question.

DR. DESFOSSE: I'm concerned from a staff perspective that development of the amendment is getting slowed down pending the selection of the overfishing definition. Is there some way that we could, or the Board could incorporate all these options into the public hearing draft and move forward that way; possibly take this separate handout, Section 2.5 Definition of Overfishing, incorporate that into the draft amendment and take that out to public hearings?

Because if we lose another meeting -- the next Board meeting wouldn't be until August, and public hearings would then be September, October.

CHAIRMAN MOORE: A.C. had his hand up first, and then Tom.

MR. CARPENTER: In light of Joe's suggestion there, I think the kind of graph that I'm asking for, if it were incorporated in the public hearing document with each of the options that have been presented, may be a very useful tool for the public hearing document as well as allowing us to move forward in a little more rapid means.

I think the Board can literally wait until after the public hearings to make that decision. We've had several options presented here for ranges of ideas in various ways of controlling this thing. I think if we could combine those options with the kinds of graph that I've asked for, I think that it would be very useful and may actually save us some time if we present that to the public at the same time.

CHAIRMAN MOORE: Thank you, A.C. Tom.

MR. FOTE: My problem is I'm thinking about going to a public hearing, standing in front of a room of people and trying to explain what the overfishing definition is. I'm having a difficult time understanding it myself. So, how am I supposed to explain it to the public who has, I think, less of an understanding than I do? I don't have that much of an understanding. I fully admit it. I have a difficult time understanding what we should be choosing here now, how we should basically put it out in form.

How do I explain it to the public sitting in the audience? And that's my difficult problem here of basically supporting an overfishing definition. It's not simple enough right now that I can take it to the public and feel comfortable trying to explain it. It ain't something simple.

CHAIRMAN MOORE: Thank you. Jack, and then Paul, and then Bill.

MR. TRAVELSTEAD: In spite of Tom's misunderstandings, and maybe some others not understanding all of this information, it seems to me we've got to move forward. There have been numerous complaints over the last six months that this thing is bogging down, and, you know, I think everybody wants to get this stuff out to public hearing. I'm prepared. Mr. Chairman, to offer a motion to that effect. I have one question, though. I assume, Joe, what you have drafted here, 2.5, Definition of Overfishing, all could go out to public hearing.

Then the specific recommendations from both AMAC and the PDT as well would be the specific measures that could go out to hearing for public comment. So, if a motion is in order, Mr. Chairman, **I would move that we accept this document as part of the public hearing document, along with the AMAC recommendations and the PDT recommendations.** It doesn't preclude other options being added by someone else immediately after this, but I think this thing is ready to go.

VICE-CHAIRMAN MOORE: Okay, there's a motion on the floor, is there a second? Vito.

MR. VITO CALOMO: **I second it.**

CHAIRMAN MOORE: Discussion? David.

DR. PIERCE: Yes, I've read these documents, and I'll admit it has taken me a while to read through them and to completely understand them. I think I've read a good familiarity with them, and I could support the motion. I would suggest that in order to make it easier to understand for the public -- that is why these particular values of fishing mortality and SSB were chosen -- that we provide for the benefit of the public, and perhaps for ourselves as well, a better description as to what 25 percent and 50 percent and 75 percent percentiles mean.

Because, it's a statistical term that many people understand, but I'm sure the public won't. I think if it's

explained well to the public, they will better appreciate the reasons why we're choosing these particular values of F, the threshold and target and SSB for threshold and target. So, I'll support the motion.

VICE-CHAIRMAN MOORE: Good point. Further discussion? Paul, did you still want to comment?

MR. PERRA: I'll support the motion, but I'm uneasy about going out to the public with not having a preferred alternative and telling the public which way we're leaning.

I also would like to see a little more explanation in the public hearing document about why high biomass doesn't give you a good recruitment or some kind of little more discussion about it, maybe a background graph that the public can see, because it's one of the big issues with menhaden. It's different than a lot of other species. They're used to seeing 20 percent SSB or SPR, and here we are saying somewhere between 3 and 8 percent. You get immediate reaction back, they don't believe you. They think you're trying to pull the wool over their eyes, or something. I hope the PDT can do something to address that.

Myself, I would like to see a preferred alternative that shows keeping moderate biomass to have high recruitment. I don't think we're at the point to get a consensus on that. Do we have that? Is that part of this? It's not clear to me that that's part of the PDT recommendation right now.

CHAIRMAN MOORE: Yes, Mike and then David.

MR. STREET: As a member of the PDT, I've been talking to Doug a little bit. He can do the analysis and prepare the figure that A.C. is asking for. He said he can do it fairly easily and provide it to Joe electronically within a very few days.

So, then it becomes a procedural question for this Board. How do they want to examine it, vote on it or not, etc., insofar as still trying to work within the established schedule?

VICE-CHAIRMAN MOORE: David, did you still have a comment?

DR. PIERCE: Yes, Doug, I didn't bring my calculator with me, excuse me. Would you translate the target F of 1.13 into a percent exploitation in light of the fact that natural mortality for menhaden is judged by the group to be around 36 percent each year and 0.45. I want to make sure it's under 100 percent.

DR. VAUGHAN: 36 percent, that's expressed as a proportion. The instantaneous rate for Atlantic menhaden is 0.45. Fisheries biology is done in instantaneous rates.

DR. PIERCE: Right, but what's the exploitation rate for 1.13? F is 1.1 -- well, I guess this could come up later on, but I just want to feel comfortable that once that's translated to exploitation, it's not greater than let's say 55 percent, because if it is -- or greater than, let's say, yes, greater than, say greater than 60 percent, because if it is, then we're like at 96 percent removal of the resource each year, and that's kind of hard to explain to the public.

DR. VAUGHAN: Except probabilities aren't additive. You don't add the 36 percent as you increase F. Some are going to die from fishing that would have died naturally and vice versa. So, there will be some slight reduction in the probability of natural death.

DR. PIERCE: I won't press it, thank you.

VICE-CHAIRMAN MOORE: Bill.

MR. GOLDSBOROUGH: I think that gets at the question I had, too. All right, let me ask it this way. The estimate for natural mortality that's being used, is that roughly the same estimate that we've used over the years, or is that a new estimate?

DR. VAUGHAN: No, it's the same value. 0.45 came out of an extensive tagging work done at Beaufort Lab over about a 20- to 30-year period.

MR. GOLDSBOROUGH: And I assume that natural mortality includes predation?

DR. VAUGHAN: That would be part of M.

MR. GOLDSBOROUGH: Well, I think, then, I would suggest that one of the big concerns of many of the other constituencies along the coast is forage-based, and that in this management regime we allow more of the resource to be available as a forage base, that we might amend our estimate of natural mortality upwards to account for that.

DR. VAUGHAN: Oh, I would agree with you. I think M is probable too low right now. M has probably been increasing over the years, but there's no quantitative way right now, that I know of, of estimating it.

MR. GOLDSBOROUGH: Well, I guess my point is that when we try and come up with an F target, that that ought to take into account an allowance of a higher M.

DR. VAUGHAN: If I were to increase M, then F would concomitantly decrease in the analysis, so that F -- we're probably overestimating F in recent years. It would be the logical consequence of having quantitative estimates that increase M over time, which is probably what's happening. And that is a research recommendation that came out of the Peer Review in '98, and certainly it would be a very interesting project to work on.

CHAIRMAN MOORE: Paul.

MR. PERRA: Yes, to answer Mike's question, I don't want to slow the process down anymore. I want Joe to be able to do his job, so I would say that once the PDT does its work, the Chairman and maybe one or two other Board members ought to take a look at it, and then get it out to everybody so they can use it. Otherwise, we'd all have to look at it again, do all kinds of editorials. When is it going to -- this is not going to come back to the Board, Joe, right? You need to go out and do public hearings.

DR. DESFOSSE: Right, the intent was to approve the document for public hearing at this meeting. I thought Mike's question was pertaining just to that graph, and I don't see a need for the Board to have to look at that graph again, just incorporating into the public hearing document.

VICE-CHAIRMAN MOORE: Yes sir.

MR. PAT AUGUSTINE: Thank you, Mr. Chairman. I have to ask a dumb question, what is the preferred option?

VICE-CHAIRMAN MOORE: I think at this point we don't have a preferred option, and I think that's a question before the Board. Does the Board want to move forward with a preferred option or not? Gordon.

MR. COLVIN: I guess I'd ask the same question a different way, and I'll ask Jack. The motion refers to the AMAC and the PDT recommendations relative to the overfishing definition. I think, actually, maybe we're talking about more than an overfishing definition, I'm not quite sure. But I'm not sure what the recommendations of the PDT are, having read this thing a couple of times.

There are different options here and there are notes and comments. Is it the intent of the motion to simply include all of these various options for fishing mortality rates, spawning stock biomass targets and thresholds, age structures, or just these recommendations, these numbers that appear on page 4?

MR. TRAVELSTEAD: I guess it was my intent to include of all of document 2.5 as laying out various options. Then it was my understanding that the AMAC recommendations were more or less the preferred alternatives.

They applied very specific numbers to both fishing mortality and spawning stock biomass, which suggests that you are accepting option C, choosing both a fishing mortality rate and a minimum spawning biomass target. You're applying very specific numbers. So that is the intent of my motion. It incorporates preferred alternatives as the AMAC recommendations.

MR. COLVIN: I guess, Mr. Chairman, I would not object to the motion, so long as it were clear that the various options that are discussed in the text that precedes the AMAC recommendation appear in the public hearing draft and are subject to public review and comment.

MR. TRAVELSTEAD: Certainly my intent.

MR. COLVIN: Thank you for clarifying that, Jack.

VICE-CHAIRMAN MOORE: I think the way the motion reads right now it includes the whole document. That's my interpretation. Mike.

MR. STREET: Yes, the AMAC recommendation is use the 25th and 50th percentiles for the target and thresholds for F, and the 50th and 25th percentiles as the target and threshold for spawning stock biomass. And then the PDT's approach was to use those considering three-year running averages, rather than a single, than the single, than the terminal year point, because of the retrospective analysis problem that has been discussed before.

VICE-CHAIRMAN MOORE: Thank you. John Nelson.

MR. JOHN I. NELSON: On that point, Gordon had brought up what my question was going to be originally, and that is I couldn't figure out what the PDT recommendations were. I would suggest to the maker of the motion that we ought to have a range in here on PDT recommendations. They have two in here, the current and the three-year running average.

I would think that for public comment, we would want to include the current year average, which is F '99 equals 1.06, as well as the three-year running average. It gives two different levels of spawning stock biomass, which I think we ought to get public comment on.

DR. DESFOSSE: I guess we were missing -- one final element then from the PDT recommendation would be to add, above the first set of numbers, those on the left column, the AMAC recommendation and PDT recommendation would be the three-year running averages which appear on the right. That would have made it more clearer.

MR. NELSON: Well, no. I understand, after the discussion with Gordon, but I think that the point is that why shouldn't the public provide some comment on the current year?

I note in the report we've accepted, that, you know, the spawning stock biomass has been unchanged since the age 3 fish, but it's declining. And you condition it in here as far as using the three-year running average is fine, as long as the population doesn't undergo wide variations and fluctuations.

So, I think in order to make sure that we've covered all the grounds that give us the flexibility, I would like to see a current year average in there also. And, looking at Jack, he seems to not have an objection to that, but I'll let him speak. Would you like to do that?

MR. TRAVELSTEAD: I agree with that. I have no problem with including that in the document.

MR. NELSON: Okay, I guess we'll just go ahead and---

VICE-CHAIRMAN MOORE: Mike.

MR. STREET: In your suggestion, John, you're saying include it as data, not as the recommendation, because the point that PDT was making is that using a single point estimate from the terminal year could have a lot of variation, and, in fact, that number could be wrong.

Because, as you go in the years following, you become more certain of the past data. And that's the reason that we wanted to use the three-year running average. In fact, those would be the control rules. It would be the three-year running averages for those percentiles.

VICE-CHAIRMAN MOORE: David, and then Gordon.

DR. PIERCE: Okay, well, Jack has clarified a lot for me that the motion relates to the entire document, and then the preferred option would be the AMAC and PDT recommendations. I have no problem with that. I also need to follow up on a point that was made by Mike, and was alluded to by John Nelson as well, and that is this

business of the three-year moving average.

The three-year moving average doesn't factor into any calculation of our targets or our thresholds. The three-year moving average relates to what we compare with out targets and our thresholds. That's a very important point. And what's also significant here is that if we were to, when all was said and done, adopt the targets, the thresholds for F, and for SSB, we would find ourselves in a situation where we were close -- where we would be close to overfishing, but not really, because we would be looking at a target of 1.13, and the F for 97-99, the three-year moving average is 1.15.

So that's for all practical purposes no difference. So we'd be, let's say, close to -- it's a judgement call, let's say, no overfishing -- regarding whether the stock is overfished, we would not be overfished because the target would be 40,490, I think, metric tons, and the SSB for 97-99 is 58,300. So, we're quite a bit over the target, which would mean that we're not facing an overfished -- we do not have an overfished stock, and we're close to overfishing that stock. Am I correct with my interpretations?

DR. VAUGHAN: It's the thresholds that define overfishing or not. The targets are where you want to be. So, in this case, the threshold for spawning stock biomass would be below, I think it's 20,600. The target is 40,000, and the threshold for F -- and I'm just referring now to the AMAC recommendations -- would be basically 1.4, I think it's 1.39. The target would be 1.1.

DR. PIERCE: Okay, so you're saying that I've misstated that --

DR. VAUGHAN: Overfishing would be if you exceed 1.4, and overfished or depleted stock would be if you fall below 20,600.

DR. PIERCE: All right, so where would we be today if we were to adopt all of these specific recommendations?

DR. VAUGHAN: Right now the spawning stock biomass would be between the threshold and the target based on the most current value. Based on the three-year average, you're above the target.

DR. PIERCE: Give me the words I seek, are we overfishing?

DR. VAUGHAN: We're not overfishing or overfished.

DR. PIERCE: Okay, not overfishing or overfished, okay.

VICE-CHAIRMAN MOORE: I'd just like to point out it's 6:00 o'clock now, and I've just been informed by Dieter that the lights will be turned out at 6:25 o'clock. We do have three more potential action items here, so I just wanted to hopefully speed up the process slightly here, please. Gordon, did you have a comment?

MR. COLVIN: Dave made my comment.

VICE-CHAIRMAN MOORE: Bill and then Bill. Bill Goldsborough first and then Adler.

MR. GOLDSBOROUGH: I was going to offer another way to go about providing other options in this document. If the PDT prefers the three-year average for the reason stated, might it also be valuable to present an option of the three-year average computed with different values for M to account for the points discussed a few moments back?

VICE-CHAIRMAN MOORE: Thank you.

DR. VAUGHAN: The only estimates I have of M right now are from a long-term study done at Beaufort. Since the funding dried up for the tagging work in the mid-80s at Beaufort, there are no current estimates of M, other than that based on about a 30-year tagging program at Beaufort. Those are the values, the value of 0.45 that is used in the stock assessments.

MR. GOLDSBOROUGH: I guess what I'm trying to do is make the leap from the technical information that we're getting to the management regime we're trying to set up. And, if we were to revisit the goals and objectives that have already been adopted for the amendment, we would see all these other ecological values for the resource that are considered objectives.

So, we would presumably be able to present to the public how we're going to do things differently in order to achieve those objectives, too. To me, a very supportable, defensible way to do that would be to say we're going to assume a higher level of natural mortality that in a sense says we're going to leave more fish there for these, quote, "natural, ecological" purposes.

DR. VAUGHAN: Right now, the only way I would have be able to do any calculations and estimations based on what you're suggesting would be to arbitrarily pick a higher value of M now, linearly interpolated over some time horizon, and then re-estimate it. I can do it, but only really in a sensitivity analysis and certainly nothing that would be defensible for me to take to, say, the Stock Assessment Review Committee, or anything like that.

MR. GOLDSBOROUGH: Well, aren't picking a 25th and 50th percentiles fairly arbitrary, also?

DR. VAUGHAN: I don't believe so. It certainly is done a lot in statistics in a lot of areas.

VICE-CHAIRMAN MOORE: Let's move on here. I think part of this can be addressed through the hearing process as well. Let's try to avoid this discussion. Pat.

MR. AUGUSTINE: Thank you, Mr. Chairman. Based on all of the changes that we've discussed here, and the points that A.C. brought up and around the table, I think it's time to call the question.

VICE-CHAIRMAN MOORE: Do we need time to caucus? Was there a yes? Let's take one minute. Heather, if you'd please reread the motion as it stands right now. We can barely read the motion, if you'd please read it into the record for us.

MS. HEATHER STIRRATT: The motion is as follows: **"Move to accept the draft document, which is overfishing definition, Section 2.5, as part of the public**

hearing document, along with all of the AMAC and PDT recommendations. The PDT recommendations should include the current year average, as well as the three-year running average".

VICE-CHAIRMAN MOORE: Thank you, Heather. Call the question. All those in favor of the motion, say aye; opposed; null votes; abstentions. **The motion passes.**

Okay, we're on number 8. Review Management Options for Draft Amendment 1. Joe, please.

REVIEW MANAGEMENT OF OPTIONS

DR. DESFOSSE: Actually, what I'd like to do is quickly run through changes that have been made to the draft amendment and address the management measures as well. In your briefing books, a partial draft amendment was sent out. Earlier today there were copies of the full amendment available on the side table. I'm only going to go over Sections two through five, really the only sections that any major changes were made.

I will point out that the Habitat Section of the Draft FMP has been updated by Dean Arenholtz (NMFS) and by Carrie Selberg of our staff. If you look at the partial handout, actually, the page numbers should be the same.

Page 34, the last paragraph before 2.12, it was written prior to the adoption by the Board of the other Management Board Makeup Option, Option 2, which is the current makeup of this Management Board, so that paragraph will need to be changed to reflect that. I just noticed that on the way up here this morning.

Section 2.7, page 40. Resource Community Considerations; the PDT has found it difficult to adequately address this section possibly due to a lack of information and expertise with the subject matter. Mike alluded to earlier, or said earlier, the commission is sponsoring a set of workshops to deal with multi- species interactions. A lot of that information gathered from those two workshops should be incorporated into this section. The staff will continue to try to beef up this section as best as I can. Right now we have not made any changes since that last meeting.

Page 44, there are two -- actually page 43 and 44, there's two new paragraphs under Biological Data.

Laura said that all of the copies we had out on the table are now gone. Are there members of the board that don't have copies? The copies that are in the briefing book, the partial amendment; do you have that? It's exactly the same. It's just that the full amendment was over on the side table. I'm actually working off of the partial.

Page 43, there were two new paragraphs added to address biological sampling. There's also a PDT note there. The Board may want to consider a recommendation or a requirement in later sections. That draft language has been included. I guess we can get to that at that time. I'm going to continue going through this page by page.

Page 45, 4.2.2, Specification of MSY and OY. There is nothing new to be added to this section at this time. The PDT was hoping to have some further guidance on the overfishing definition and provide better information for this section. If the Board is comfortable with the way the options are laid out here, we can move forward with going through with pubic hearing. There are 4 options. There were a couple of MSY estimates that are based on past historical studies. Option C is base MSY on historical performance of the stock and Option D is to develop an MSY proxy, sort of what you're dealing with in the overfishing definition discussion that you had earlier using SPRs and SSBs.

There's no comment? Section 4.2.2.1, Initial Specifications.

MR. TRAVELSTEAD: Section 4.2.2, Specification of Maximum Sustainable Yield on OY; it just seems to me we're going to confuse the public if we put this information in, and then also put in what we just voted on, the overfishing definitions, which seem to me are the better information with the thresholds and the targets. It's not clear to me how MSY and OY relate to those thresholds. And the comments here are that it's old data and not very reliable and unsophisticated approaches, it would seem to me we ought to take it out.

DR. PIERCE: Yes, I completely agree with Jack, especially since what's here on page 45 is also repeated on page 39, Stock Rebuilding Program. We define overfishing, we just did that. In a sense, we chose Option C, it's 2.5 on page 39, we chose Option C. Now, I guess A and B will still be in the document, but C is the one that's the preferred one. And Stock Rebuilding Targets, as shown on page 39, Option A, Option B, Option C, that's all MSY.

In light of what Jack just said, echoing what the PDT has noted, we shouldn't focus on that. Maybe it can be mentioned in the document because obviously we are shifting away from MSY concepts to this threshold and target concept (based on) SFA guidelines. Option D, develop an MSY proxy, I would suggest that that should be deleted, and that we should just reference, as Jack said, that which we just did. We voted to go with as a preferred the target and the threshold concept for fishing mortality rates and spawning stock biomass.

So, I would say take it out of the document or down play it significantly so we don't confuse the public. They will be totally confused if both are in there.

DR. DESFOSSE: Is there any objection from the Board in doing that? Okay. Section 4.2.2.1, Initial Specifications; is that also confusing the issue? Should that be removed and addressed at a later time, as well, or do you want to keep those options in there? We have one vote for keeping them. Is there any objection?

Okay, pages 55 through 56, just pointing out that the

sections dealing with habitat have been updated as well; Sections 4.4.1 through 4.4.4.

Page 57, *De minimis* Fishery Guidelines. Right now what is written in here, the draft option is to use 1 percent as the standard cut off for determining *de minimis*. The PDT points out the Board may wish to discuss whether to allow *de minimis* or at what level it should be designated; or, alternatively, that the Board could decide that *de minimis* states would have to comply with certain elements of the amendment and not others. Should we also point out that the 1 percent is subject to change as well? No comments?

MR. ADLER: You probably have to do the most restrictive in the public hearing. You can always relax it afterwards. Isn't that how you have to go to public hearing? If you're going to propose something there, you can relax it in the discussion afterwards when you make your decision, but you can't get stricter after the public hearing. So, thinking that way on any of this stuff, you need to word it that way, I think.

DR. DESFOSSE: I know that the Councils operate on that. I'm not sure if we do as well when we go to public hearings. Are we bound by that same standard? I don't think so, I see heads shaking no.

MR. CARPENTER: On this *de minimis* issue, given the nature of this fishery, is anybody except North Carolina and Virginia going to get above the *de minimis* threshold, even if it is 1 percent?

DR. DESFOSSE: I think New Jersey might as well due to the size of their bait fishery. I have not calculated those percentages and numbers.

MR. CARPENTER: So we have just gone through a procedure where we have invited everybody around the table to come to figure this thing out, and we have three states that are not *de minimis*, and everybody else is going to be *de minimis*.

MR. STREET: There are times when other states would not be *de minimis*, depending on fisheries. For example, if we do get lucky, have a good year class with fish showing up in New England, potentially Rhode Island, Massachusetts, and Maine could all meet the test to be above *de minimis*. In the 80s, they were.

VICE-CHAIRMAN MOORE: Bruce.

MR. FREEMAN: It seems the easiest way to deal with this would be to list several levels where *de minimis* would be the trigger, and ask the public to comment. You give 1 percent, half a percent, I don't care. You know, some variation in here. Just get the public's -- what they believe is reasonable or not.

CHAIRMAN MOORE: Bill Goldsborough.

MR. GOLDSBOROUGH: May I suggest that we think about the term and the definition of *de minimis* differently in the case of a species like this that has so many other values for various constituencies out there. We've always thought about *de minimis* only in terms of directed catch, because that's the only way we've really put value on other species. In this case, of course, we value it for forage base, and we value it as a filter feeder.

So, I would suggest that if it's practical -- I don't know, maybe I'm saying something that's just theoretical, but suggest that we think about *de minimis* in more comprehensive terms. And in that case nobody around the table would claim *de minimis* status.

DR. DESFOSSE: Okay, moving on, page 59 lists the two options for Board makeup. That is different from the last document that you saw. There are now two options there. Sections 4.8, 3 through 5, page 60 and 61, you'll see some new language in there that reflects the responsibilities of the Technical Committee, PDT and Plan Review Team that is laid out in the charter. Those are just some clarifications.

Section 5.1.1.2, I think it is; page 63, Monitoring Requirements. You see the new language there, "states are encouraged to assist the National Marine Fisheries Service". This deals with the Biological Sampling Program. Also on page 65, there is a recommended non-mandatory measure to the National Marine Fisheries Service in that they are encouraged to at least maintain the current Menhaden Sampling Program, including both the monitoring of catch and effort data and the Bio-Statistical Sampling Program.

Those are the major changes to the document since the last time that you've viewed it. The only other thing that I would point out is that the potential management measures in the draft document are rather vague. They are still pretty much a catch all of anything that could be used in the fishery. And they just list the pros and cons of different approaches. There is nothing specific in terms of management measures as to what you are proposing to do.

VICE-CHAIRMAN MOORE: Well, are we ready to make a motion here, or do we need to caucus for 5 seconds. David.

DR. PIERCE: Well, Joe just made a very important statement. We have from 4.2.7, to 4.2.14, catch All management measures, catch controls, TACs, effort control, pros and cons with absolutely no specifics as to what we're proposing for each of those categories. All I see our going out to public hearing with would be the idea that we're going to have some kind of a quota, it would seem. And we've got our biological house in order, so to speak. We've got our overfishing definitions, that's there as well with the alternatives.

But I feel very uneasy voting on this to bring it to public hearing when we have no management measures specified; just broad categories with no specifics. Am I the only one who feels uncomfortable with that?

Has the PDT offered up any recommendations regarding any of these specific broad categories of ways to control catch and effort, or is that on our shoulders, which I suppose it should be? And if it is on our shoulders, we probably need another meeting to discuss this in greater depth because I can't bring this to public hearing.

VICE-CHAIRMAN MOORE: Mike.

MR. STREET: Speaking for AMAC, we have made a very specific regulatory recommendation that it be included in Amendment 1. We reported that to you today; to open those areas, those marine waters beyond one mile from shore to menhaden fishing, and not to close any additional areas for five years, and do research as we specified. We recommended that it be compliance measures.

CHAIRMAN MOORE: David, could you answer?

DR. PIERCE: Yes, Mike's made an important point. There are some additional recommendations from AMAC that we haven't talked about in depth yet, but be that as it may, there are measures to regulate gear, the mesh size regulations, yes or no, what would that mesh be, minimum size limits?

It goes well beyond closed areas and recommendation made by AMAC. It goes well beyond that, and how are we going to prevent fishing mortality from exceeding the target? And same thing with biomass; it's not laid out yet.

VICE-CHAIRMAN MOORE: Well, what's the will of the Board? Are we ready to move forward at this point? Yes, sir.

MR. WILLIAM T. WINDLEY, JR.: I have a question about the AMAC Proposal. If we're talking about opening all waters beyond one mile, does that mean that anything inside of a mile we're going to be closed? Does that mean we're out of the Chesapeake Bay and out of the estuaries? Is that part of that package?

MR. STREET: No. It's just to take those areas where restrictions exist now beyond one mile and open them. And the intention is to decrease concentration in Chesapeake Bay. Like I said, this originated with people from the Bay, with the environment, with some environmental groups in the Bay.

VICE-CHAIRMAN MOORE: Paul.

MR. PERRA: That recommendation is not in this document.

VICE-CHAIRMAN MOORE: That's correct, it's not in there yet.

MR. PERRA: Right, and it only goes in if we vote to put it in.

VICE-CHAIRMAN MOORE: Further discussion? Our time is running out here. Yes, sir.

DR. RICE: I have a sort of a question on this. Is there some sort of ticking clock that is preventing us from sort of sending this back to the drawing board a little bit, or maybe until the August meeting, and sort of working on some of the problems with it, coming down with some more specifics?

DR. DESFOSSE: In answer to that, the proposed timeline was to have the new amendment adopted by the Commission at the upcoming annual meeting in October. That was the timeline that we were under in order to implement new regulations for the 2001 season.

VICE-CHAIRMAN MOORE: Senator.

SENATOR GUNTHER: I get a little confused with the process that this commission operates under. As I take it now, it's going to be another four months or five months before any action is taken on this program at all, including all the amendments? You're going to public hearing, and it's going to take, what, four months for that process?

DR. DESFOSSE: We're not going to public hearing unless the board approves this document to go to public hearing.

SENATOR GUNTHER: If it doesn't go to public hearing, then what happens?

DR. DESFOSSE: The Board would meet in August to review another draft and any further information from the Plan Development Team that they could provide.

SENATOR GUNTHER: Well, I'll tell you, the whole process, when I look at 4.8.2, we took an action last November to take and reconstitute this Board, and to see this thing prolonged now with an Option 2, which means keeping the Board as it is, and I think at the vote last October, if I remember rightly, I think it was 7 to 3 in the Policy Board. And we finally came down to a point of tabling. Now you're going to table and you're going to be a whole year, and I think the whole perception of the structure on this Board, compared to the rest of the Boards of the species and this organization is going to be out there hanging fire, and frankly, it wouldn't surprise me to see it go another year or two.

Now, that was not the intention I had of proposing that change last November, and from the look of it here, we stall around another year with the same structure here, and leave Option 2 in here to go out to a public hearing? You know, I just don't understand this constant dragging out, dragging out, and, in fact, I know damned right well I don't understand 99 percent of the graphs and that sort of thing. I guess I'm not supposed to.

But, I think this whole process here stinks in my book. Just to prolong, and prolong, and prolong on these things is far beyond what I expected. I thought we were going to take a decisive action last November. But apparently that was the tabling, sending it back and diddling around here; and now come in with an option, and there's no question in my mind, you put this out to public hearing, man, I'm going to tell you.

If Option 2 don't get clobbered, and that might be a good argument to leave it in there, but if it doesn't get clobbered and give you a good public hearing on this thing, I'll be amazed.

VICE-CHAIRMAN MOORE: Thank you, Senator. David Cupka, and then Bill Goldsborough.

MR. CUPKA: I hate to see it dragged out, too, but I don't know how you can take it to public hearing now. I mean, a lot of these sections don't even have anything in it, you know, to respond to. There are pros and cons, but there are no specific management measures in there. And they apparently haven't been developed and included. So,

I don't know how you could send this out to public hearing until it's further developed over what we've got now.

DR. DESFOSSE: The PDT found it difficult to try to develop anything in greater detail without having an overfishing definition in place, and figuring out where you needed to go, provide you with those options. So, it's sort of a circle here.

VICE-CHAIRMAN MOORE: Okay, Bill, and then Jack.

MR. GOLDSBOROUGH: As much as I agree with Doc in terms of how quickly we'd like to see an amendment completed and put in place, and noting that the votes you've gotten from Maryland so far today have been in support of doing things quickly, I have to point out a few things that might lead us to actually want to step back and slow down a little bit. And speaking from the standpoint of one of those environmental groups from the Chesapeake that Mike made note of, I would be willing to talk about this option that AMAC has put forth of opening up some areas along the coast.

I do think that there is some potential for fruitful discussion there. But the problem is that what we have right now might put something like that out there, combined with basically a status quo on fishing mortality and spawning stock biomass, and that's it. We just can't consider those things in a vacuum like that. We have to have the complete management regime for people to look at, to really judge whether we're going to do things differently to account for all the other interest in this species.

That's the problem. We've got to be able to step back and say, okay, we're going to complete this picture from a management standpoint. Here is how we're going to manage this stock completely. And that gives the public something to chew on. We're not doing that the way it stands right now.

VICE-CHAIRMAN MOORE: Thank you. Jack.

MR. TRAVELSTEAD: Joe, earlier you just said that you couldn't fill out some of these sections under 4.2.7, because you didn't have the definition of overfishing. Now that you have that, is that a relatively routine process of filling in some of these blanks, or do you need more information from the Board?

DR. DESFOSSE: I'm not sure what other information the Board can give us right now. We'd have to take it back to the PDT and see what we can do with --

MR. TRAVELSTEAD: I guess one problem I'm having with this section is it lists a title like "Coastal TAC Subdivided by Areas of Catch", and then there's no description of what you mean by that. There are some pros and cons, but there's not even a description for the public as to what that means, or an example of how it might work. And I don't think that would take another Board meeting to do.

It seems to me the PDT knows enough about what those things mean to be able to provide some description. And that would satisfy me as far as being ready to go out to public hearing. We could just have that.

VICE-CHAIRMAN MOORE: Mike, one second. If it's the will of the Board at this point to postpone this, then I don't see the need for further discussion regarding the details here at this point. We do have two more action items here to address. Unless it's the will of the Board to move this forward at this point, I propose that we put this back in the hands of the PDT to further flesh out the options that are contained within the draft, and then present it again in August.

Is this something the Board is comfortable with? Nodding heads. Mike.

DR. RICE: In that vein, I would suggest that on page 40, section 2.7 be given a prime consideration because I think that that's really the crux of Bill's argument, and I think that it's a real good one.

VICE-CHAIRMAN MOORE: So noted, thank you. Bill.

MR. GOLDSBOROUGH: Following up my other comments, if we do take that course, could I ask -- I would ask the Board to make the request of the PDT that it take the leap and throw out there some possibilities, filling in all these gaps in the management section here. Let's put some stuff on the table that are complete packages of management regimes.

VICE-CHAIRMAN MOORE: Are you looking for options or preferred alternatives from the PDT?

MR. GOLDSBOROUGH: Well, preferred alternative, sure, but in the form of a complete package and not just individual things taken in a vacuum. That's where we're having difficulty. That's what I'm detecting here, that we're having difficulty going thumbs up or thumbs down on any one management measure taken in isolation. We've got to see them all together.

VICE-CHAIRMAN MOORE: Thank you, Bill. Senator.

SENATOR GUNTHER: Following along with that line of thought, I'd like to suggest, and if necessary, to make a motion, that in Section 4.8.2, that the preferred option of this body be indicated. If it's necessary, I'd like to make that as a motion. In case this document is going forward, I think it should have an indication here as to where this Commission stands in this particular option.

VICE-CHAIRMAN MOORE: I think that would be addressed in the August meeting when this Board has the full revised draft document in front of it. And at that point, it certainly would be -- you know, you could make that suggestion at that point. Yes sir.

MR. NELSON: Following up on Bill's comment, I'm not really comfortable with having the PDT come back with preferred options. I think they should be developing options to consider, and the Board should be deciding if they want to leave those options in, and then they should be deciding what's the preferred option to go to public

hearing. The burden should not be on the PDT.

VICE-CHAIRMAN MOORE: Thank you, John. Paul.

MR. PERRA: Yes, I would agree with that. I think, though, the problem is that we're a very big unwieldy group not used to working together very well. And we've got a lot of new people on.

Perhaps the way to solve it is to make a subcommittee of a couple of people representing each region, who could flesh a little bit of stuff out with, you know, the PDT. That way they're not working in a total vacuum, and I'd be comfortable if the staff and the Chairman could kind of put together a group of four, maybe, people to take a better look at that and come up with some options that can come before the Board.

Obviously, the guys who are from each region could get on the phone and talk to the other guys a little bit. This way we wouldn't just be coming in cold at the next meeting and looking at what the PDT came up with.

VICE-CHAIRMAN MOORE: Jack.

EXECUTIVE DIRECTOR JOHN H. DUNNIGAN: Thank you, Mr. Chairman. I think it's fairly obvious from the recent discussion here that there's still a lot of work that has to be done. The PDT has got to do that.

From the staff's standpoint, I think we hear you and have a sense of what further work needs to be done to bring you a document that you can approve to go to public hearing. We will do that, we will do it by the August meeting. We'll work with the Chair and the PDT to make sure it gets done. That's my commitment to you. If it means we've got to bring a couple of you together with a small group, we'll work with the Chair to get that done.

In the meantime, Mr. Chairman, we have a function, a formal function ready to start in under 10 minutes. And given that that's likely where this is going to end up, I suggest that perhaps you might consider putting off the other agenda items, because I think that they can be, to your August meeting, and letting the staff proceed with that and calling it a day here.

VICE-CHAIRMAN MOORE: Pretty good. Unless there's any objections at this point, we will do as our faithful leader has suggested here. Is there any other business that needs to be addressed at this point? Hearing none, we're adjourned. (Whereupon, the meeting was adjourned at 6:45 o'clock p.m., June 7, 2000.)

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