

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

**The Westin Crystal City  
Arlington, Virginia  
Hybrid Meeting**

**May 7, 2025**

**Approved August 7, 2025**

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1. **Approval of agenda** by consent (Page 1).
2. **Approval of Proceedings of October 22, 2024** by consent (Page 1).
3. **Move to adjourn** by consent (Page 25).

**ATTENDANCE**

**Board Members**

Megan Ware, ME, proxy for C. Wilson (AA)	John Clark, DE (AA)
Rep. Allison Hepler, ME (LA)	Roy Miller, DE (GA)
Cheri Patterson, NH (AA)	Lynn Fegley, MD (AA)
Doug Grout, NH (GA)	Robert Brown, MD, proxy for R. Dize (GA)
Nichola Meserve, MA, proxy for D. McKiernan (AA)	Allison Colden, MD, proxy for Del. Stein (LA)
Raymond Kane, MA (GA)	Pat Geer, VA, proxy for J. Green (AA)
Sarah Ferrara, MA, proxy for Rep. Armini (LA)	JJ Minor, VA (GA)
Nicole Lengyel Costa, RI, proxy for J. McNamee (AA)	Sen. Danny Diggs, VA (LA)
David Borden, RI (GA)	Chris Batsavage, NC, proxy for K. Rawls (AA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)	Ben Dyar, SC, proxy for Blaik Keppler (AA)
Matthew Gates, CT, proxy for J. Davis (AA)	Malcolm Rhodes, SC (GA)
William Hyatt, CT (GA)	Mel Bell, SC, proxy for Sen. Cromer (LA)
Robert LaFrance, CT, proxy for J. Gresko (LA)	Doug Haymans, GA (AA)
Marty Gary, NY (AA)	Spud Woodward, GA (GA)
Emerson Hasbrouck, NY (GA)	Carolyn Belcher, GA, proxy for Rep. Rhodes (LA)
Joe Cimino, NJ (AA)	Erika Burgess, FL, proxy for J. McCawley (AA)
Jeff Kaelin, NJ (GA)	Gary Jennings, FL (GA)
Adam Nowalsky, NJ, proxy for Sen. Gopal (LA)	Ron Owens, PRFC
Kris Kuhn, PA, proxy for T. Schaeffer (AA)	Max Appelman, NMFS
Loren Lustig, PA (GA)	Rick Jacobson, US FWS

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

**Ex-Officio Members**

Caitlin Craig, Technical Committee Chair

David Bailey, Law Enforcement Committee Rep.

**Staff**

Bob Beal	Emilie Franke	Jeff Kipp
Toni Kerns	Tracey Bauer	Jainita Patel
Tina Berger	James Boyle	Samara Nehemiah
Madeline Musante	Chelsea Tuohy	
Caitlin Starks	Katie Drew	

The Atlantic Menhaden Management Board of the Atlantic States Marine Fisheries Commission convened in the Jefferson Ballroom of the Westin Crystal City Hotel, Arlington, Virginia, via hybrid meeting, in-person and webinar; Wednesday, May 7, 2025, and was called to order at 1:15 p.m. by Chair John Clark.

### **CALL TO ORDER**

CHAIR JOHN CLARK: It is 1:15 p.m. and the Atlantic Menhaden Management Board is now called to order. The Chair of this meeting is John Clark, that's me. I am the Administrative Commissioner from Delaware.

I'm joined up here at front by fellow Commissioner and Workgroup Chair, Marty Gary. From the Law Enforcement Committee, we have David Bailey from Maryland, and from the Commission, we have FMP Coordinator Extraordinaire James Boyle, and Stock Assessment Dynamo, Dr. Katie Drew.

### **APPROVAL OF AGENDA**

CHAIR CLARK: Without further ado, let's move on to Item Agenda 2, which is the consent items. Does anyone have any revisions to the agenda? Seeing none; the agenda is approved by consent.

### **APPROVAL OF PROCEEDINGS**

CHAIR CLARK: Does anybody have any revisions to the proceedings from the October 2024 meeting? Seeing none there, the proceedings are approved by consent.

### **PUBLIC COMMENT**

CHAIR CLARK: Now we move on to Item Agenda Number 3, which is Public Comment, public comment for items that are not on the agenda.

For the Item Number 4, which as we know, has generated very much public interest, we will be taking comments on that during the Item 4 at points there, but this is for items that are not on the agenda. Mr. Zalesak, I saw your hand was

up. Is that for something that is not on the agenda? Okay, come up to the microphone then, introduce yourself and make your comment. You have three minutes.

MR. PHIL ZALESAK: My name is Phil Zalesak; I am President of the Southern Maryland Recreational Fishing Organization. There are two items missing on today's agenda. First, violations of federal law and second, and option to end all purse seine harvesting of Atlantic menhaden in Virginia waters.

Oh, by the way, you all have a copy of this. This Board and Virginia are in violation of the Magnuson-Stevens Act, a federal law that defines the requirements for allocation of fisheries among states. Be advised, there is absolutely no reference to the importance of historical catch in the law, when it comes to allocation of a fishery to the Atlantic states, none. In fact, National Standard 4 specifies the exact opposite. There are four direct quotes from the Act. Requirement one states, conservation and management measures shall not discriminate between residents of different states. This Board allocated over 75 percent of the Total Allowable Catch of Atlantic menhaden for the Atlantic Coast of Virginia. Virginia is also in violation of this Act for allocating over 98.42 percent of this quota of purse seine harvesters, and only 1.58 percent to the non-purse seine bait fishermen.

Requirement two states, if it becomes necessary to allocate or assign fishing privileges among the various U.S. fishermen, such allocations shall be fair and equitable to all such fishermen. Virginia's 1.58 percent allocation to non-purse seine bait sector is clearly not fair and equitable. Requirement three states, reasonably calculated to promote conservation.

In the case of Virginia, there is no science, empirical data or economic analysis which supports allocating over 90 percent of the Virginia quota to the reduction fishery Omega Protein, a Canadian owned company. The vast majority of their harvest comes from the Chesapeake Bay and its entrance, which amounts to 158,000 metric tons or 348 million pounds, or 3/4 of a billion fish. This is science.

There is science, empirical data and economic analysis, which supports the position that localized depletion of Atlantic menhaden is occurring in Virginia waters. The impact on Maryland and Virginia since 2016, is conservatively 500 million dollars in GDP and 5,000 jobs. Requirement four states, “carried out to such a manner that no particular individual corporation or other entity acquires an excessive share of privilege.”

Virginia allocation of over 90% of its quota to Omega Protein, again a Canadian owned company, is clearly in violation of the law. In summary, the Atlantic States Marine Fisheries Commission is in violation of federal law, and will be defunded if this continues, based on the current Trump administration policy.

I strongly recommend that you, as Chairman of the Board, add the following option for consideration for the Board today’s discussion, and all purse seine harvesting of Atlantic menhaden in Virginia waters. American Protein, Omega Protein and Ocean Harvester would simply conduct purse seine harvesting of Atlantic menhaden three nautical miles off of Virginia coast. They wouldn’t lose any employees, they’ve just got to drive a little bit further out to get all these fish, which they both testify.

CHAIR CLARK: Phil, could you finish up, please.

MR. ZALESK: I thank you for your time, Mr. Chairman. Oh, by the way, I gave you that economic analysis. I gave a copy of that to you, do you, have it?

CHAIR CLARK: I do have that, thank you very much. Thanks, Phil. Is there any other comment, once again for items not on the agenda? Seeing none.

### **CONSIDER FINAL REPORT FROM WORK GROUP ON PRECAUTIONARY MANAGEMENT IN CHESAPEAKE BAY**

CHAIR CLARK: We are now going to move on to the Item Number 4, which is Consider the Final Report from the Work Group on Precautionary Management in Chesapeake Bay. I just want to commend the Work Group. I think you’ve all had a chance to see the tremendous report they put out. The amount of work that was put in, I was able to attend all nine of the Work Group meetings. The really in-depth discussions, the amount of work the Work Group put in, really fantastic. Marty did a wonderful job of chairing this, and James, writing everything up, just amazing. Without further ado, let me turn it over to Marty Gary, Chair of the Work Group.

MR. MARTIN GARY: Thank you, Mr. Chairman, for those kind words, and as Chairman Clark said, my name is Marty Gary. I am the Administrative Appointee for the state of New York to the Atlantic States Marine Fisheries Commission, and I’m the Chair for the Work Group on Precautionary Management in Chesapeake Bay.

We have a short slide show, James or I guess Madeline, if you could pull that up to walk you through the summary. While that is coming up, I’ll just mention so everybody should know by now. James did a phenomenal job condensing all the information from the Work Group meetings, and as an executive summary followed by the formal report.

In total it’s about 60 pages, but hopefully if everybody took the time to read those first four pages, you’ll get a pretty good taste of what went into all the work we put together. We’ll go ahead and get started. The Work Group was comprised of myself as Chair, Ray Kane from the Commonwealth of Massachusetts.

Rob LaFrance from Connecticut, Loren Lustig from Pennsylvania, Joe Cimino from New Jersey, Allison Colden from Maryland, Pat Geer from Virginia, and Spud Woodward from Georgia. I want to just pause

here for a moment. This group, I think a lot of us around the table in the room have had the privilege to have the opportunity to work with Work Groups or chair them like I did. The chemistry of those groups is critical to the success of it.

I will say working with those folks that had experiential and academic knowledge of the fisheries in Chesapeake Bay like Pat Geer and Joe Cimino, Allison Colden, myself to a lesser degree from my previous experience, coupled with some of the out of state, out of region experience from folks like Loren and Ray Kane up in Massachusetts, and Spud Woodward down in Georgia, contributing to the information on the sciaenids and the cobia, and the things that are changing in the Chesapeake Bay.

None of these things were really critical. I just want to pause for a moment and just acknowledge how important it was to have the right people there, and I really felt like we did have the right people. We've worked hard on this document. We'll go to the next slide and walk you through this.

This is the genesis of the Work Group and the task that was presented to us. The motion from the August, 2024 Board meeting: Move to establish a Board Work Group to consider and evaluate options for further precautionary management of Chesapeake Bay menhaden fisheries, including time and area closures, to be protective of piscivorous birds and fish during critical points of their life cycle.

I would just stress the consideration and evaluation of options as we go forward in this presentation. As far as a Work Group task goes, this Work Group is addressed with this charge without determining if there is or is not an adequate supply of menhaden to support predatory demand in the Bay. The Work Group developed the following questions as a guide for their consideration of potential management approaches, they developed. The

questions were composed of, what was the problem in any management act that any management action would address. What are the priority species to consider, and what are the critical points of their life cycle?

What data can be used to support this discussion, and for each management strategy discussed, what are the benefits and implications? How would the performance of potential measures be evaluated? This timeline, it starts with the August, 2024 Board Meeting where the motion was made, Work Group was formed.

Then between September 2024 and April 2025, the Work Group held 11 meetings, 9 full Work Group meetings and then 2 subgroup meetings. We had a piscivorous bird and a fish subgroup that were formed. A lot of meetings over a long time and a lot of work went into this. Then here we are, May, 2025 with the Board, meeting to consider the Final Report.

I will also note that there was an external group of osprey experts that met and provided a separate report to inform the Work Group discussions. I will say, we'll go into the summary document and just highlight some areas. Based on the life history of predators examined in the nature of Chesapeake Bay menhaden fisheries, the recent changes in menhaden availability, the Work Group discussed a number of precautionary management options that the Board could consider for further action.

The approaches listed that I'm going to follow, could be implemented individually or in combination, depending on the Board's risk tolerance and management goals, and I'll go into a brief description of each. The first one is the seasonal closures. The Work Group discussed a suite of possible seasonal closure options that focus on ospreys, due to their consistent seasonal habits and signs of food stress.

Possible options ranged temporally from May 1st to August 15th, to cover ospreys highest and most critical bioenergetic requirements. The most critical time period is earlier in that timeframe. The Work

Group noted concerns over unknown or unintended concentration of effort at other times of year.

Next, we focused on area closures, and we looked at a Watts study that concluded in 2024, studying and documenting osprey reproductive deficiencies in certain high salinity areas. Therein we saw a different scenario as we went up into riverine habitats and lower salinities. From that paper, potential closure options included all of Chesapeake Bay, including or excluding existing Memo of Understanding.

There is a Memo of Understanding related to harvest in certain areas at certain times. Targeted areas based on fishing effort, and targeted areas with the most scientific information on osprey reproduction and survival. That is the quick bullet on area closures. Next to effort controls, similar to management of Atlantic herring fishery, the Work Group discussed methods to distribute fishing effort more evenly throughout the season, including quota periods, which could be bimonthly, trimester or seasonal, and Days Out. Then gears that were included in potential management actions, I'll note that the Work Group did not reach consensus on restricting potential seasonal and/or spatial closures to certain gear types or sectors. But issues that were noted included socioeconomic impacts; the bait and/or reduction fisheries, including impacts to fisheries that utilize menhaden bait; impacts to gears with limited mobility to move out of potential closure areas; and impacts to nondirected gears.

Next area we looked at was decreasing the Chesapeake Bay Reduction Fishery Cap. A few items to note here. This could leave additional menhaden as forage in the Bay water for all predators. This could be combined with quota periods or other effort controls, to help distribute the effort more evenly throughout the fishing season, and as a precautionary measure, based on past landings, we noted that further research is needed to develop a

biologically based cap, and may require the Board to consider a novel approach to setting the cap.

Research recommendations, recommendations developed by both the Work Group and the external osprey group to improve our understanding of both species and relationship. That was it, so there was just a general theme of additional research requirements being advanced to the full Board. I'll stop there, and again I'll just say, this was a really challenging subject to tackle.

But I just applaud my colleagues on the Work Group, and it was an honor to have the ability to chair that Work Group and work with you. I think we did our very best for you. I hope you are pleased with the effort we put forward, and we'll take, Mr. Chair, any questions the Board has, and I'll also look to some of my fellow Work Group members to help answer some of those questions.

CHAIR CLARK: That was an understatement saying there was a lot to consider there. Great effort, great presentation, thanks. What we're going to do is take questions for Marty and the Work Group right now, and following the questions we will take public comment on this issue. Following that we will go right into Board discussion of where we want to go with this report from the Work Group. Who has questions? David Borden.

MR. DAVID V. BORDEN: Marty, my compliments to you and all the members of the committee. I think this is a perfect example of how a work group should perform, in spite of the differences of opinion that are represented. My question is on the purse seine fishery, particularly in Virginia, so I don't know if this is a Marty or Pat. What depth can those purse seines fish in, and I recognize you've got reduction purse seines and then normal purse seines. What are the depth constraints?

MR. GARY: This is absolutely a question for Pat Geer, so I'll just go to Pat.

MR. PAT GEER: I think I'm just going to leave the mic on. The purse boats themselves do go out, their depth is about 6 to 9 feet, that's all, and then

when they are fully loaded it is about 13, so they usually do not fish in less than 20 feet of water.

CHAIR CLARK: Go ahead, Dave.

MR. BORDEN: Pat, that's reduction boats or is that all? As I understand it, and please correct me if I've got the wrong impression, you've got the seine boats, smaller seine boats.

MR. GEER: Those are the small boats.

MR. BORDEN: Those are the small boats, how about the constraints on the reduction fleet?

MR. GEER: Well, that is the reduction fleet. They have two small boats that leave the large vessel, and they go out with the purse and they set the purse.

CHAIR CLARK: Pat, I think David might be referring to the bait for seines.

MR. GEER: Oh, okay. Are you talking about the purse seine, the bait versus the reduction?

MR. BORDEN: Yes.

MR. GEER: It's the exact same vessels and the exact same gear.

MR. BORDEN: Okay, that answered the question, thank you.

CHAIR CLARK: Other questions, anybody online? I'm sorry, Lynn Fegley.

MS. LYNN FEGLEY: Also, what a great report. It's the first time I've seen this much information and the right information, correct information all in one place. It's a brilliant resource and thank you. I just had a question, in this write up in the background, there is a sentence that talks about the osprey reproduction.

It says local reproductive rates have declined sharply since 1975 to below the population maintenance level. I guess, is that correct? Is it going on that long? I had thought it was a more recent phenomenon, the reproductive rate decline.

MR. GARY: On the bird questions, I will defer to either Allison or Rob, so whoever wants to jump in.

DR. ALLISON COLDEN: Just briefly, I know I can speak on behalf of the other Work Group members, reflecting back to you the good time we had working with you, Marty as the chair, so thank you. One of the reasons, Lynn, that may be so striking a number, is because there have been relatively few studies.

The reproductive rate is not a parameter that is measured on an annual time step. There have been three or four studies since the tail end of the DDT era, and the reproductive rate in the 2006, 2007, 2021 studies that are listed further down in the report have shown that the reproductive rates are below that 1.15 maintenance level.

CHAIR CLARK: Thanks, Allison, any further questions? Nichola Meserve.

MS. NICHOLA MESERVE: Thank you to the Work Group for a really great job. I was struck by the figure that shows the cumulative purse seine reduction harvest over a number of years, how different 2023 and 2024 were from the prior years. Just looking for a little bit of explanation as to that timing change.

It's also notable, because it kind of looks like one of the options that is in the document about waiting until June to open fishing. I don't know if this is a question for you, Pat, but is there any information about the ongoing work of the nest studies in those two years, to consider what that change was from.

MR. GEER: Yes, I'm glad you brought that up, because when I first showed that graph in one of the workshops, everybody's eyebrows went up. The harvest was much delayed in those two years, much later, like almost two months later than

normal. As a result, their effort usually in the springtime is much higher.

I don't know if there is a table in there that shows, I don't have the numbers in front of me. The harvest, we look at a two-week period, was well below average until like almost August. But by August it tapered off and got back to about normal. It was very unusual to see for two consecutive years being that low that early on.

But there is another graph in there that shows, I call them spaghetti graphs, because there is like 20 years in there. You can kind of see there is a wide range of how that fishery operates from year to year. But seeing those two years that were very low, and realizing that the critical periods for osprey were occurring during that period, you can make the conclusion that the menhaden weren't in the Bay at that time. We might have a mismatch with time.

CHAIR CLARK: Next question we have is from Jeff Kaelin.

MR. JEFF KAELIN: If I could just add to that. You know New Jersey has a very active menhaden purse seine fishery, and includes that 11.5% of the coastwide stock allocated to us there. First of all, I wanted to say to Marty and the Work Group, tremendous job. I think I listened to every single discussion. It's a tremendous resource document.

But we experienced, we've gone through the same thing in New Jersey, where the water was very cold those two years, and we have an ITQ, a transferrable ITQ program in New Jersey, both for the boats and the carry boats. We only caught 75% of the quota fishing right up until Christmas, and usually we're catching fish in, I guess in March, April generally.

I think this year is a little warmer. There is cold water on the Continental Shelf, and we've learned this, we're in the squid business also, and we spent a lot of time with the Science

Center people looking at the oceanography on the Shelf, looking for the squid bridges. We've learned that this cold-water phenomenon has set up, up in Newfoundland Labrador Strait, and has persisted at least a couple years before we experienced it down here. It really looks like there is a cold-water regime on the Shelf, and there is documentation that that was cold water all the way down to the mouth of the Chesapeake Bay. It doesn't kill the fish, they just go to find suitable temperature, and bunker has a very wide temperature tolerance. Cold water, the fish weren't available to any fishery, either in the Chesapeake Bay or off the coast of New Jersey at exactly the same time. I thought the Board might be interested in learning that. Thank you.

CHAIR CLARK: Thank you for that info, Jeff. Joe, did you have questions or just to add more?

MR. JOE CIMINO: Just a little bit of a follow up there too. In 2022 and 2023, especially on the Atlantic Coast, New Jersey saw some osprey nest values at rates as high as like 66% in Vonnegut Bay in those years.

CHAIR CLARK: Thanks for that information. Any other hands here for questions? David Borden.

MR. BORDEN: It is noted in the Work Group of what the differential in the survival rates between the coastal osprey population and the ones that are upriver. My question is, what are the possible reasons that explain that differential? I mean there must be some theories. Some people will point at the menhaden fishery, but what are the other theories that explain that differential?

CHAIR CLARK: Allison, do you want to take that?

DR. COLDON: Sure, with the caveat that the Osprey Expert Workgroup, the memo that is included in the information in the report will be much more eloquent in answering this than I am. But my understanding is obviously they come into the Bay and they develop areas, you know territories if you would call it that, and establish their nests. Just because the community of fishes exist in the upper

portions of those tributaries, relative to the higher salinity tidal areas, you see the difference in the species composition, just based on the species that are present in the area.

CHAIR CLARK: Joe, is that follow up? Joe Cimino?

MR. CIMINO: New Jersey DEP works with some other groups on the surveys in New Jersey, and one of the things they've been attributing to success or failure is storms, particularly severe nor'easters. I think part of that might play into water clarity too, and just visibility for the birds.

CHAIR CLARK: Rob, did you have some follow up, Rob LaFrance?

MR. ROB LaFRANCE: Yes, I just wanted to point out in the supplemental materials there is a very good letter that does really explain all of what is happening. It came from Sarah Ryker, the Acting Director, and I think that is really worthwhile taking a closer look at, because it clearly lays out all the options that we're talking about. It gives some good rationale for what the output should be.

CHAIR CLARK: Thanks, Rob, and Lynn Fegley. Before you go, Pat, did you have anything else you wanted to add?

MR. GEER: I was just going to add food availability and competition, you know competition with other birds, possibly.

CHAIR CLARK: Lynn Fegley, do you have a question?

MS. FEGLEY: Thanks, Mr. Chair, for the second bite at the apple. Just similar to where Nichola was going. I was really struck by Table 2, which is sort of a heat map of effort in the Chesapeake Bay. It's from 2015 to '24, and I guess my first question is, am I interpreting this correctly? My second question is, what might be the reason for this?

Although, I think you had answered it about the weather. But when you look at the table and you see where green boxes are, our effort that is well above average, and red boxes are well below average. What it looked to me like, we're seeing this in recent years beginning in 2021, but really in 2022, that the effort in the Bay is becoming less spread out, and more concentrated in that midsummer timeframe.

It's not about what was caught, it's just about how that effort was distributed within the Bay. I find that to be really interesting on a number of levels, like I would really like to take some time to sit with that. But I wondered if A, my first question is, am I interpreting that correctly, and 2, I would love to hear some potential reasons why that might be the case.

CHAIR CLARK: Pat, I think that's for you.

MR. GEER: You are not going to have effort if there is no menhaden around. The effort was so low last year, the menhaden weren't here at that time of the year, so that is part of it. Yes, there is an increase, but the fleet is going to fish where the fish are. If they are in the Bay, the way they work it their captains all get an allocation of the Bay TAC. But if they are not there, they are going to go out in the ocean. But they clearly were not, in the last couple of years they just weren't in the Bay that early in the season.

CHAIR CLARK: Let me look around the table for any other questions. Loren Lustig.

MR. LOREN LUSTIG: I don't have a question, but I do have a comment, and it relates to my participation on April 12, as a speaker for the Virginia Osprey Federation; their major event here on the shores of the Potomac. I was very impressed with the public knowledge and concern about these various issues. My speech related to the importance of environmental education.

In working effectively with these various concerns, as part of that I wanted to mention that I was really pleased with the first four pages of the report

submitted by the Menhaden Workgroup, because it was so readable. You had a reader who had basic ecological understanding, and accurate concerns for conservation. That reader was able to digest that information. I am really happy about that and thought that I should maybe share that information with everyone here.

CHAIR CLARK: Thanks, Loren, and thank you to James for his great job of writing everything up. Do we have any further questions from the Board? Okay, not seeing any, what we're going to do at this point is open up discussion of this topic to the public. If you would like to speak, please raise your hands if you're here in the audience. If you're online, raise your hand online. We will then go, let me see, I see one hand in the audience. Is that you, Pete? Okay, looks like you're the only one who would like to speak, and then we have two online. We'll start with Mr. Himchak, so if you want to come up and introduce yourself. For three minutes, Pete. Okay, three people online. Sorry, three people online, two minutes. You have two minutes, Pete, thank you.

MR. PETER HIMCHAK: Thank you, Mr. Chairman. My name is Peter Himchak, I'm a fisheries scientist for Omega Protein, and I hearken back to, Oh God, decades of work on horseshoe crabs and shorebirds. But what I find interesting is, you know in the message that the USGS scientists presented to the Board back in August of 2024, about population dynamics of ospreys.

Not just in the Chesapeake, Mid-Atlantic, but in the other areas along the east coast and the west coast. There are patterns of meteor increases in numbers, following the ban of DDT. The issue of what you need to study that may be affecting ospreys outside on their wintering grounds, during the migration move.

These are all issues. This is a very complex problem, and I think, I'm not recommending that the ASMFC invest in the Piscivorous

Nearshore Technical Committee, but I think the Board would benefit more from the wealth of knowledge that the US Geological Service scientists have on ospreys' population dynamics and issues along other areas of the east coast and the west coast.

CHAIR CLARK: Thank you, Pete, next up we have online, Mr. John Millward, Joan, oh, excuse me, Ms. Joan Millward, please, go ahead Ms. Millward.

MS. JOAN MILLWARD: Thank you so much, and thank you for your time. My name is Joanie Millward, I'm President of the Virginia Osprey Foundation, and hopefully you all received my correspondence in your package. When I began to study ospreys, I read again and again, ospreys are a sentinel species.

I did not fully understand what that meant until recently. In other words, when ospreys have a problem we have a problem, our water has a problem. They are the canary in the coalmine. This problem is staring us square in the face, as we have watched chicks starve to death in past seasons. Here we are in a new season, and nothing has been done to correct a deadly imbalance to decrease abundance of menhaden.

I understand the need for a study on menhaden in the Chesapeake Bay, but even if that study begins tomorrow, it will take two to three years for completion. In that period of time, we could see population collapses all throughout the Chesapeake Bay Watershed. In the meantime, it would be my recommendation to move purse seine fishing three miles off the coast of Virginia, in an abundance of caution. We need to act before it's too late. Thank you.

CHAIR CLARK: Thank you, Ms. Millward. Our next public speaker we have Kate Wilke, you can unmute yourself and speak, Kate.

MS. TONI KERNS: Kate, you just need to press the microphone and unmute yourself.

CHAIR CLARK: Kate, we still can't hear you. We'll go to our next speaker or next public participant, and then come back to you. Next up is Mr. Tom Lilly. Tom, you can unmute yourself and speak.

MS. KERNS: Tom, you are unmuted on our end.

MR. LILLY: Members of the Board, as things stand right now, you are allowing factory fishing to catch 50,000 tons in the Virginia Bay. In terms of ten-ton schools, that is 5,000 schools taken from the Bay for spawning. Of those 5,000 schools coming into Virginia, let's say half or 2,500 of those schools would have migrated to Maryland, but they are all being caught.

That is the crux of the problem today, just as it has been for the last 20 years. Measures to protect the 2,500 schools coming into Maryland is what is needed here, desperately needed. The Work Group concentrated on ospreys, and Dr. Watson's peer reviewed science. There were critics. The U.S. Department of the Interior, in a letter in your materials, has answered this further.

They say that while there may be other factors involved in the osprey's decline, the principal driver of the nesting failures is limited prey and availability. Limited prey and availability, and we mention the resource and this means menhaden. We have thousands of chicks starving; we have the collapse of the commercial/recreational and charter striped bass fishing in the Bay.

You have your ERT science, which pins the cause of reproductive failure of both of these species on overharvesting. Respectfully, what are you going to do about it? The gravity of the situation on the Bay calls for decisive, effective and immediate action. It's substantial delay in opening the season could accomplish a lot, if you put on an area restriction on purse seines fishing within 10 miles of the Bay entrance.

Otherwise, they will just sit at the Bay entrance and catch everything coming in anyway. As we see it, the only real way to restore fairness to Maryland is to require the purse seine fishing only occur in the U.S. Atlantic Zone. Fairness to Maryland in this division with Virginia. What Charter 6 requires, anything short of that will mitigate the problem but not cure it.

What this comes down to is will you take the steps necessary to cure the problem once and for all. If you take that step, you will benefit tens of millions of people and millions of children, that want to use and enjoy Chesapeake Bay as they could be, to protect their Bay's food supply. Thank you.

CHAIR CLARK: Thank you, Mr. Lilly. Next, we're going to try Kate Wilke again. Kate, do you want to try it again, please?

MS. KATE WILKE: Yes, thank you so much for coming back to me, and apologies for my voice, I am home sick. But I just wanted to say, my name is Kate Wilke, I'm with the Nature Conservancy, based in Fairfax, Virginia, and I just want to thank the Work Group for the time and effort they put into assembling all this information. It's really great to hear it all in one place. It's a lot, and it's pretty clear that there are some local, spatial and temporal issues related to both the ecology and the fishery that occurs in the Bay. I would love to see the Board initiate an action to consider potential management within the Bay.

That would enable a Plan Development Team or an FMAT to kind of pick up this information and then dig deeper, because I know that the Work Group was only able to go so far, and I would love to see this investigation into the ecology and the fishery specific in the Bay, to continue. Thank you.

CHAIR CLARK: Thank you, Kate. We have two more people, let me go to the person in the room. If you would just introduce yourself and then who you're with, if you're representing an organization. Thank you.

MR. WILL POSTON: My name is Will Poston; I'm with the Chesapeake Bay Foundation. Much like everyone else, I think this is a great effort and a great product developed by the Work Group. It's an incredibly expansive document, but I think we can all agree it's an incomplete document.

I think that underpins the decision here today, and later on into the future with this Board that we are operating in an incredibly data deficient situation with this species, and in this region. To kind of highlight that I wanted to quote a quote from a letter that VIMS submitted to the VMRC a couple weeks ago, to guide your discussion.

Over the past two and a half years, VIMS has invested considerable time and effort in designing a suite of studies and pursuing funding to conduct them to reduce the uncertainty around the ecological impact of this fishery. These efforts have not so far resulted in the funding necessary to complete this work, and we remain uncertain about the likelihood of future funding.

As such, VMRC finds itself in the position of needing to make management decisions on this important issue with data limited context. In such a situation it is perhaps the wisest course of action to take a precautionary approach. VIMS submitted that a couple weeks back to VMRC again, and then in closing,

The Bay is changing, fisheries are changing, there are new species, as you all saw in the Work Group report that are increasing in landings and effort. Menhaden underpin all of those species, the entire Chesapeake Bay ecosystem. Acting precautionary is the reasonable approach. Thank you.

CHAIR CLARK: Thank you, Mr. Poston. We have two more public comments we're going to take. Both of them are online. First up is Roberta Kellam.

MS. ROBERTA KELLAM: Hi, I'm Robert Kellam, I am with Birding Eastern Shore. I am on the eastern shore of Virginia, Northampton County. Last year I was helping to monitor the 20 osprey nests on my creek where I live, Nassawaddox Creek, which is in the saline portion of the Bay. We only had 5 chicks survive out of 20 active nests, so 60 eggs, 5 chicks. The question about timing I think is the most critical, because there was a group of Omega boats right at the mouth of Nassawaddox Creek in around the third week of May. Shortly after that, a lot of chicks were lost. The fishing, even if they are not getting a great quantity, if they are fishing during that time of year, they might be getting everything that is available.

I guess I'm just hoping that even Omega would just agree to just not fish in the Bay for at least May and June, to early July, best case scenario. The osprey nesting study is continuing this year, and we would be able to know right away if that was successful. Thank you.

CHAIR CLARK: Thank you, Ms. Kellam, and our final public commenter is Joseph Smith. Mr. Smith, you can unmute yourself and start your comment.

MR. JOSEPH SMITH: Joe Smith here. In another life I was at the National Marine Fisheries Service, Beaufort Lab. I handled the fishery dependent data for the menhaden fisheries. My compliments to the Work Group, a tremendous amount of work in a short amount of time. I read over the report.

I'm a little dismayed that there is not a historical perspective on removals from the Bay of menhaden. That data exists in a public document, my technical report NMFS 144. I would just like to make the Board aware of decades ago there were two fish factories in Reedville, Omega Protein, formerly Zapata and Extended Products or AMPRO.

From 1985 to 1996, removals from the Bay, based on the logbook data that vessels volunteered, removals were on average those 12 years, 150,000 metric ton. One year, 1987, there were 177,000 metric tons, at one year, 3.5 times as many fish is being removed from the Bay currently.

Some of the Watt's data I've seen says that the reproductive coefficients for ospreys in the Bay were quite high, above that threshold of 1.1, I think, back then in those years '85 to '96. Clearly, I would like to reiterate something Pete Himchak said, something else is going on. There is something more than just removals of menhaden versus osprey reproductive success. Thank you.

CHAIR CLARK: Thank you, Mr. Smith. Now we come back to the Board. We all had a chance to read the report. Chairman Gary has given a great summary of what the Work Group did. We've asked questions about the Work Group. We've heard some very interesting public comment here. Now there is just a little matter of what the Board is going to do next with this. With that, I will open it up for discussion. Who would like to lead the discussion? Going once, going twice, there we go, Lynn Fegley.

MS. FEGLEY: I think I have a plan; I would like to try projecting a plan forward. I want to reiterate what I said before that the information in this report is extensive, it's fascinating. There is a lot to consider here, you know in addition to the information we were given by USGS around ospreys and the work on ospreys. You know we certainly have a problem in Maryland, and nobody said it more eloquently than Russ Dize, who is looking online today, that we are not catching menhaden in Maryland, and we haven't been for the last few years. There is a lot to unpack here. I would really like for this to have deeper consideration and potentially have our Technical Committee help us unpack things that we could maybe take forward. But we all know that the Technical Committee right now is really busy, and we want them to take focus on that task to get the stock assessment ready.

I'm going to suggest, and if folks around the table, we really just got this document, we haven't had a ton of time to read it. There is also the Whitman letter in supplemental materials that has a lot of information. I would

like to suggest that we take this home, we read it, we think about it and we start to develop tasking that we could give to the TC in August.

What I'm suggesting is that we bring this back up for a more detailed conversation in August that will potentially allow the Technical Committee, once the assessment is wrapped up, to help us move forward in a rational way with this document. That is my spiel.

CHAIR CLARK: Thank you very much, Lynn, so Lynn has given us an idea for possible next steps. Does anyone want to comment on that or come up with some other ideas? I see Pat Geer, go ahead, Pat.

MR. GEER: I think Lynn made some very good points. I mean there is a lot of good information in this. I enjoyed working with everybody on this, but we are not the analytical experts, let's just face it. We're a bunch of managers now. This needs to have a further look at. Mr. Smith just said something else is going on.

I fully agree with that. Something else is going on, we don't know what that is. Every question we answer we found three more gaps. There are a lot of problems with the Watt's paper that everybody is quoting. VIMS incidentally wrote a commentary that stated that they do not establish a clear relationship with menhaden in abundance and availability, and that was by Rob Latour, Jim Gartland and Sarah, I'm sorry, I can't remember her last name.

I'm very reluctant to give this to the TC right now, with everything they have to do. But I think we don't want to just put this on the shelf and leave it there. I'm okay with taking a look at this more, and if there are any questions the Board wants us to look at, from the result of what we've done.

We might be able to look at some more, and come back in August and see if we have any plans, something we can give the TC. But I am really reluctant to do that, because of the work they are doing on the stock assessment, which that needs to take number one priority.

CHAIR CLARK: Thank you, Pat, Allison Colden.

DR. COLDEN: Pat, it sounds like you are investing more time to hang out, so thank you. It was great working with you too. I think, just to reiterate some of the things that Lynn said, and even Pat said. This is a moving target. Even the Watt's paper and the Latour rebuttal had a Watt's response that was published like two weeks ago now at this point. Obviously, there is information coming in all the time, and like Pat said, it would be a real shame, I think, for this document that we spent months on, for folks not to be able to fully absorb all of the detail that is in it, and all the nuances, because there are some really important connections that I think were made. Obviously, would like to hear whether others are in the same boat there.

CHAIR CLARK: Do we have any other hands? Rob LaFrance?

MR. LaFRANCE: I just want to align my comments with what Lynn Fegley said. It's clear from my perspective, that the TC needs to focus on the work that it's doing in the short run. There is a lot to do. One of the beautiful things about menhaden management is we're using an ecological reference point, and we're spending a lot of time and effort on pulling that together.

The TCs focus has got to be on being certain you have the data right. What I learned from this experience is there is a lot of information that is driving the train in one direction or another, but we need to spend a little bit more time to understand it. I think there are a lot of really bright minds around this table, and I would really encourage folks to start dig into the data.

I look at some of the work that Pat Geer did, notably the table that Nichola talked about earlier, and looking at how harvest takes place. Let's think about this in a positive way. What can we do to actually help improve the management of the species, such that the ecology of Chesapeake is doing better?

I think we can do that. I think this document is the beginning of that. I really want to kind of congratulate everybody in the Working Group. It was one of the most collaborative groups I've worked on. I really enjoyed working with everybody. When we had a difference of opinion we talked through it.

I think we're on the beginning of a really good opportunity to make progress here. I guess I would support the idea of bringing this back, letting the TC do what it needs to do, and then start to bring them back for additional questions. Let's spend some time and digest this, and think about what all the benefits we could get from it are. Thank you.

CHAIR CLARK: Thank you, Rob, and now I'll go to Joe Cimino.

MR. CIMINO: Just agree with everything that has been said, and as Pat pointed out, we're kind of the retired technical folks. I was chair of the Weakfish TC for the four years that they disappeared, and I don't know if all of Delaware is mad at me for that or not, but.

CHAIR CLARK: Yes, we are, Joe.

MR. CIMINO: I kind of figured. But you know, we also learned this week that the states of Delaware through North Carolina were not a reasonable region for striped bass, because there are almost no coastal striped bass caught in Delaware through North Carolina. This is something larger than what is happening in the Chesapeake Bay.

I think for those reasons, we can't assume there is a simple solution to this. That is just not fair to the resources in any way, shape or form. I think we need to get past the ERP work and really make the tough decisions on what are the next steps for this species, and for all the ones we manage.

CHAIR CLARK: Thank you, Joe, and Lynn, just to get a little more clarity on, were you talking about each individual Board member would come up with ideas for the TC, or were you thinking more that the Work Group would continue to meet and, yes, you're

welcome, Work Group? I'm trying to give you more to do. Just wanted to clarify that as to how you saw this as going ahead. Then I saw your hand, Mel, I'll get to you right next.

MS. FEGLEY: It was not necessarily my thought process to task the Work Group. I sort of leave it open to the Board if that is a good idea. But I think some of the questions that I've heard around the table, and a lot of the questions that I have, I was really appealing to each individual Board member to look at this information and look at this data, and try to think deeply about how we can move this forward.

Also, I'll just take, because I have the mic, a minute to say that this is a coastal board, and what happens in the Bay doesn't necessarily stay in the Bay. I mean this really is, this estuary is very important to many of the species that we manage. I would just encourage people; there is a lot of information here. Go home, digest it, and I think we could come up with some good guidance for our TC, and have a robust discussion about how to move this forward in August. That was my thought.

CHAIR CLARK: Thank you, Lynn, thanks for that clarification. I guess I've got Mel and then Jeff Kaelin.

MR. MEL BELL: I agree that the approach that we seem to be taking has been kind of started, so that makes sense to me. One thing specifically in looking at the reports that came to mind, maybe this is something that would be a specific question to the Technical Committee on how this is fleshed out.

But the research recommendations on Page 28 of the report. Those are general recommendations, but they identify areas where perhaps data gaps and things that we need to know to effectively manage. I'm not real familiar with what sorts of things might be going on or potentially going on in the Chesapeake Bay area, but that would be helpful, I guess for me.

There are 11 things identified in their general areas. Are some of those potentially have a better chance of being something that somebody may already be starting, or could be implemented? That would be helpful, I think, and for us to kind of see if there is low hanging fruit in there, or things that if there are potential, and I know funding is an issue.

But if there are ways that we can identify specific projects and what approximate costs might be, we could perhaps support those sorts of things. If we could kind of enhance, you know between now and down the road here, enhance that one page and some of those ideas, and maybe flex some of that out, put price tags on it, potentially. I mean that could be useful, because I think we've identified that there are certain things that we need to know and have data. If that is a reasonable list in a general sense of where to start. They're just kind of fleshing that out a little bit. Again, I'm not familiar with what might be going on, what is potentially even possible. Maybe the price tags are pretty extensive, but that would be helpful, I think, in allowing us to move forward with this.

CHAIR CLARK: Thanks, Mel, and that sounds like something that based on what we've been saying, that you could write up that you would like to see the TC look into. Next, we have Jeff Kaelin.

MR. KAELIN: I agree with it; we shouldn't be tasking the TC right now and just let the ERP run out. I've been going to those meetings over the last year, and also five years ago. I think we ought to be happy with our outcome. There is a lot of fish in the water, I think four million metric tons coastwide is projected to be available for forage everywhere, from North Carolina up into the Gulf of Maine.

I'm going to go out on a limb here. I have read all this, I did listen to all the meetings, and I've been a commercial fisherman, and I'm reading the data, describing the Chesapeake Bay fisheries. I think it goes from Page 11 to 15, focusing on the overlap areas, particularly around Mobjack Bay.

Honestly, if the Board were to take any action at all, I think it could be justifiable to eliminate pound nets

and gillnets operating in the March, April, May timeframe up in the upper areas of the Chesapeake Bay off Maryland. I'm not going to make a motion about that, but looking at this objectively. That is what I take away as some kind of a meaningful relationship between those birds and the dead fish that are coming out of that area.

Because we have a saying in the commercial fishing industry, a dead fish is a dead fish. I think if we do move ahead, we've got to be clear about the fact that it's not just one company, it's not just one gear type that are taking fish in that Bay. That is the kind of review that I would like to see the TC do, in addition to some of the other ideas that Board members have around the table.

CHAIR CLARK: Thanks, Jeff, that sounds like something you'll be bringing for the TC at the next meeting. Next, I saw Mr. Minor.

MR. JAMES MINOR: I've heard a lot of conversations, and this topic is like it's been here forever. The questions I want to ask is, why are we just focusing on the Bay if there are problems on the West Coast and all throughout the East Coast in the decline of osprey? You know where is the real-world evidence in reference to where predators are suffering, because of the menhaden fishery.

Before we make any decisions, I think we need real world evidence. Before we make any decisions on anything that we do. I mean where is the scientific proof, the real scientific proof. That is what I want to hear. I'm not hearing that. That's just my take on it, thank you so much.

CHAIR CLARK: Thank you, Mr. Minor. Next up we have Bill Hyatt.

MR. WILLIAM HYATT: I have a question, I believe it is sort of a follow-up to what Mel was saying, and I apologize if I missed this somewhere along the lines. But relative to

those research recommendations that are on Page 28. I'm wondering how many of those, and possibly all of them, are inclusive within the VIMS study that has been referenced on a number of occasions?

CHAIR CLARK: I'll turn that over to the Work Group. Allison.

DR. COLDEN: I haven't seen the study plan in a while, but some of these research recommendations do reflect the consensus report recommendations or study report recommendations that our group, which included myself, Lynn, saltwater anglers, representatives from the reduction industry, all agreed on things about environmental conditions, the surveying of menhaden abundance and biomass.

I will say at that time when we came up with the report, maybe two or three years ago now, I think it was three years ago. There was not a specific discussion that I can recall about ospreys in that Work Group. Some of the research recommendations relating specifically to osprey were more from our Work Group conversations. But there are several items listed here that coincide.

CHAIR CLARK: Bill, did that answer your question?

MR. HYATT: It does. At some point I would be very curious if somebody could run the sidebar conversation just with checkmarks, say which ones are in the VIMS study and which ones are additional. I feel it would be helpful.

CHAIR CLARK: Okay, David Borden.

MR. BORDEN: Quick question. If I understand the timeline and the workload issue. We come back with our questions, we finalize, the Board considers the different perspectives that have been brought forth at the next meeting. My question to staff is, at that point is the workload going to accommodate action by the technical folks at that point? Is there enough free time, so between the August meeting and the fall meeting we could get a report?

DR. KATIE DREW: I think it depends on the extent of the tasking. There may be time to do one or two items and report back to the Board that are high priority. However, basically the peer review will be the week after the August meeting, and then we will need to do some of the projection work and other follow up work from once the peer review is complete, and bring all of that to the Board in October.

I think there is the potential to have a few, maybe one item, depending on the scale of what the Board is interested in, et cetera. If the requests are too extensive, we're definitely going to have to prioritize. I think there is time to do a small amount of work on this between August and October, but I certainly don't want to commit to maybe a full answer to all of the questions that have been brought up so far.

CHAIR CLARK: It's a heck of a lot going on right here. Next up we have Roy Miller.

MR. ROY W. MILLER: Thank you, Mel Bell and Bill for highlighting this group of 11 research needs. I was wondering if I could focus on one for just a second. Can anyone give me an update on where we are, regarding the long-term need for a biomass survey of menhaden in Chesapeake Bay?

I mean this topic has been ongoing since the Commission first started to manage menhaden, dating back to the eighties or nineties, and we keep talking about it. Is there any progress, anything in the winds that we can look forward to maybe addressing this particular survey need?

CHAIR CLARK: Did you want to answer, Katie, and then Allison.

DR. DREW: I guess the short answer is, we have no updates on this because we have no funding to do the kind of survey that we need for the Bay. It remains a high priority research recommendation, and we definitely, you know

the Board has seen those pilot studies that have potential, but funding remains elusive.

DR. COLDON: Just to follow on to that a little bit more. There have been bills considered in the General Assembly of Virginia for the past three years to fund the menhaden studies, and they have not moved forward. All of them, every year have failed, you know due to interference or due to the priorities of the General Assembly.

I know, just for others around the table who may not know, Alexander Law and several of the menhaden delegation have also been including this in our federal appropriations ask, as has the Commission, and have been visiting our Maryland delegation to try to push this forward, and so far, that has not been successful either.

CHAIR CLARK: That points out that it costs a lot of money to get some of these answers. Further discussion among the Board here? Does anybody have anything else they would like to add? Joe Cimino.

MR. CIMINO: This is mostly because Lynn gave us homework assignments and I'm going to turn mine in right now. We are seeing advances with EDMA work, so going back to when we were in the pandemic and the states got some money back from ASMFC, because we weren't having in-person meetings.

New Jersey purchased a lot of equipment for EDMA work. We now do that on every fishery independent survey that we do. We do it on every tow for our trawl survey, you know we do it for every haul, for our seines, and that work is getting to a point where it's going beyond just presence and absence understandings.

Even if we're just seeing trends on population sizes, but they are starting to get to a point where they believe they could start looking at population estimates. It's actually a very inexpensive option once you are up and running on that kind of work, adding it to surveys that are not necessarily meant

for menhaden, but seeing that EDMA presence would be a huge help.

CHAIR CLARK: Anybody else? Okay, not seeing any hands. What we have is to put this in summary. The Board has decided that each Board member will think about this, come up with questions, possible tasks for the TC, that we will discuss at the next meeting. I think we will need some kind of reminders. I probably will forget this assignment by tomorrow.

Then when I do think about it, I'll probably think somebody else will come up with that idea, I'll go back to scratching my butt. Let's get some scheduled reminders, maybe, to go out about what these tasks are. I mean would that be helpful? I know it will be helpful for me. Does everybody think that would be useful to have? That looks like something I'm giving you to do, James, you don't have to thank me.

At this point, I think we are, unless anybody has anything else they want to bring on Item Number 4, I think we're ready to move on to Number 5. With that, thank you very much, and once again, thanks to Marty and the Work Group, just a phenomenal job with that.

**PROGRESS UPDATE ON 2025 ECOLOGICAL  
REFERENCE POINT BENCHMARK STOCK  
ASSESSMENT**

CHAIR CLARK: Now we'll move on to Item Number 5, which is Progress Update on 2025 Ecological Reference Point Benchmark Stock Assessment, and that will be Dr. Drew. Thanks, Katie.

DR. DREW: Today I'm going to be giving you an update on the timeline and then giving you an update on the decision by the M Workgroup and the SAS on the estimate of M for the base case. Just to kind of prepare your expectations, I have one slide on the timeline, and then I have 20 slides on the other topics, because we are going to get really into it here.

Starting with the timeline, I appreciate the Board being conscious about our timeline and where we are with the stock assessment. We are really in crunch time now for this and trying to finalize the results and the writing. In mid-June, ERP Workgroup will have a call to finalize the assessment results, and the menhaden staff will have a call to approve their update report.

In mid early July, the ERP Workgroup will approve the final report, and the Menhaden TC will approve the final update report for that, so that by July 25, we can provide both of these reports to SEDAR for the peer review panel. The Peer Review Panel will meet with us during the Peer Review Workshop in Charleston, the week of August 12.

That is essentially the week after August meeting week, so that by October 27, or the week of October 27, i.e. Annual Meeting, we will be able to present the assessment and peer review results to this Board. This is our current timeline. It is tight, but we are optimistic that we are going to stay on it and get this all done in time. That is where we are with the timeline. I guess I will pause and see if there are any questions on the timeline, before I get to the next longer topic.

CHAIR CLARK: Okay, not seeing any, go right ahead.

DR. DREW: As many of you are aware, the M in the single species model is based on a large-scale tagging study that occurred in the late 1960s. A published paper was done on this by Liljestrang et al in 2019, and the estimate from that study is used to inform the estimate of M used in the single-species model. Dr. Ault and his colleagues in 2023 presented to the staff a reanalysis of the tagging data that resulted in a lower estimate of M than Liljestrang et al had gotten in their paper. The SAS formed a workgroup to review the data and the analyses, and consult with the authors, and understand what was causing the differences, and what the best estimate of M to use in the single-species model is. I'm here to kind of provide some background on what exactly we did, and the final decision that the SAS made on this particular topic,

that is being used to inform the assessment update, as well as the ERP affects.

For some background on the menhaden tagging study. From 1966 to 1969, the Southeast Fisheries Science Center tagged over one million menhaden with coated wire tags, and released them along the Atlantic Coast. This is one of the largest scale tagging studies every conducted. These tags were recovered by magnets installed at reduction plants.

Essentially, the fish would be caught, they would be processed into scrap. The fish scrap would pass by the magnets, and the metal tags would be pulled out of the scrap and retained, and then researchers would clean the magnets regularly to collect the tag, and no untagged fish had been recaptured.

These data are used in a tagging model, and to simplify a tagging model very much, basically what happens is a tagged fish are released and then there are sort of two outcomes of those tags. The tags can be recovered by the fishery, which the model interprets as fishing mortality, or that tag is never recovered. The model interprets that as natural mortality.

Now, obviously these tags can be lost for reasons other than the fish dying, and that could be because the tag is lost or shed, so it just sort of pops off or pops out of the fish. It can be lost because the fish dies as a result of being tagged, or it can be lost or disappear, because it's caught, but never reported that it was caught.

I think we see this a lot with striped bass. You know that reporting rate has gone down over time. People were really enthusiastic about reporting those tags initially, but now we hear a lot of stories about, oh people have cans of these tags and they are in their offices, but they never report to us.

We have to understand all of these parts, in order to understand what is natural mortality

and what is fishing mortality, and what are the sort of extraneous losses. The Southeast Fisheries Science Center, as part of this larger tagging study, also conducted studies to understand tag shedding rate, tag mortality rate and the magnet efficiency rate, which all help the model understand what has happened to these disappeared tags, and help them understand how much of that is these other extraneous factors, and how much of that is natural mortality.

The magnet efficiency rate is equivalent to the recording rate. If a tagged fish is caught, how likely is it that that tag will actually be recovered by a magnet and seen again by the researcher? As part of this larger tagging study, the Southeast Fishery Science Center also did the plant-test study, where they would release fish with tags in batches of 100.

They would just toss them into the catch as it was getting offloaded into a plant, and then check and see how many of those tags that they knew they released into the catch were picked up by the magnet, and how long it took from the time that they threw it into the catch to the time that it was recovered. Basically, I just want you to understand the scale of this study, which is a huge amount of eggs were released, and a huge amount of work was done to understand these confounding factors, like the tag shedding, the tag mortality and the magnet efficiency rate, in order to be able to develop reliable estimates of natural mortality, and movement rate out of this study.

After the M working group looked at these two papers, the Liljestrand et al analysis and the Ault et al analysis, we realized that different subsets of the data had been used. There were issues with confidential versus nonconfidential data being used, and there were different ways of estimating that magnet efficiency or that reporting rate that were all contributing to the differences that we were seeing in natural mortality.

We really dug into what exactly these differences were, to understand what was causing the final answer to be different. Starting with the differences in the data. First of all, Liljestrand et al

is using what we're calling the Coston dataset, and this was a published white paper that summarized the tag/recapture information to the month and region level, so 1966 to 1969.

In this dataset they had records for about 121 million tag releases over this time period. However, it does not include recoveries after 1969. Unfortunately, the raw data from this study, the digital version has been lost. We have the Coston dataset, which was the summarized results, and we also have what we're calling the NMFS re-digitized dataset.

Recently, well not so recently anymore, but the NMFS, some of the paper records from this study were found and were re-digitized, and so we have a very fine scale record now of each individual tag that was recovered. This covered the years from 1966 to early 1971. However, when we looked at this period from 1966 to 1969, and compare it to the Coston dataset, we can see that what was re-digitized was not a complete record.

Some of those hard copies have also been lost, in addition to that digital data. You can see that for 1966 to '69, the re-digitized records had about 768,000 releases, compared to that 1.1 million from Coston. Meaning that about 28% of the Coston releases are missing in this re-digitized dataset. This is what we're saying, we have sort of two different subsets of the data and neither of them are complete.

Coston does not have the recaptures that occurred after 1969, and the NMFS re-digitized dataset is missing some of the releases that we know occurred from 1966 to '69. There are sort of pros and cons to both of these datasets. They provide just slightly different views of the information. The second difference in the data was the issue of confidential data.

Liljestrand et al, when they were working on this, received permission from industry to access the confidential fishing effort and landings data by plant, month and year. Ault et

al did not receive permission to access the confidential data, and so they have to reconstruct the effort, in order for the model to work, by region, month and year from available nonconfidential data sources.

I think probably the biggest difference is this difference in method specifically about that magnet efficiency question. In addition to the tag recovery information, some of the plant-test data was also re-digitized at the same time. Liljestrand et al used that data to estimate the magnet efficiency rate for each plant. Each plant was tested multiple times, they did multiple tasks to throw in factors of 100 fish to see how many of those tags they recovered, and see who could get an idea of how good the magnets were at recovering these tags for each plant.

Then in order to sort of take that information and go from the plant level up to the region level, Liljestrand et al created a weighted average of the plants within a region, weighting them by the landings of each plant in that region, in that month and year. If a plant was not active during a specific month, it's efficiency rate would not be included in that regional average.

If a plant was responsible for most of the landings in that region in that year and month, its average would get a higher weight in that overall average. Liljestrand et al used the empirical estimates as a fixed input to their model. Ault et al calculated a regional plant efficiency weighted by the sample size of the plant-test data, instead of the landings, because again, they did not have access to the confidential data.

The plants were tested sort of roughly, relative to how active or how much they contributed to landings. I think using the sample size is not a bad proxy for landings. However, what they did was they then modified those efficiency estimates, using what they call a stepwise approach, to improve the fit of the observed recovery within the tagging model to the predicted recoveries by the model.

They would essentially set the tagging model, come up with an estimate of  $M$ , adjust those estimates of magnet efficiency, and run the model again, until the model fit could no longer be improved. Having reviewed all of those decisions, we could understand kind of where these differences were coming from and what was causing these differences.

The SAS then had to sort of decide what the best approach was to develop an estimate of  $M$  from the dataset. The first decision was to use the Coston dataset instead of the NMFS re-digitized dataset. This is because the Coston dataset has a more comprehensive spatial coverage, which is important for getting good estimates of movement rates to support spatial models in the future.

The NMFS re-digitized dataset, like I said, was missing about 28% of the releases in the Coston dataset and they were not evenly distributed across the regions. They had a lot of overlap in the central regions, but less sort of at the edges of the range. Then furthermore, when we ran sensitivity runs to kind of look at the effects of these differences in data.

There were really minimal differences in the estimates of  $M$ , between using the Coston dataset and using that full time series of the NMFS re-digitized data. We felt it was better to use the Coston dataset, where there is more comprehensive spatial coverage. The SAS also decided to use the confidential effort and landings data. SAS members who have confidential access to these data.

We felt this was more accurate and would rely less on assumptions than the recreated nonconfidential time series. Then finally, the SAS decided to use the empirical estimates of magnet efficiency from the plant-test data, but identified a mistake in the Liljestrand et al original paper, and recommended revising that. This mistake was essentially that Liljestrand et al used the recoveries on all magnets in the plant test data to estimate that efficiency.

However, the Coston datasets only included primary magnets. What are primary magnets? Up here we have a little figure of, basically where these magnets are located, and what happens to fish that are caught.

Basically, fish that are caught by these menhaden purse seine vessels are offloaded into the reduction plant, where they are processed into fish oil and fish meal. The primary magnets basically are set up so that as the fish scrap is transferred from the reduction plant to the drying shed, they pass by these primary magnets.

They are then put into the scrap shed; they hang out there. They are stirred regularly until the meal is fully processed and dried and ready to go to a buyer. At that point it is transferred from the scrap shed to a truck for transport to the buyer, and they pass through or by the secondary magnets at that point.

The original study looked at basically, when were tags recaptured, and when were they captured on primary magnets versus secondary magnets. The reason Coston only reported primary magnets is that tags could be recovered weeks or even months later on the secondary magnets, because they would get missed by the first primary magnet, and then they would hang out in that scrap shed until the drying process was complete, until you had a buyer, et cetera.

There is a potential that they would be recovered much later, and so you couldn't tell exactly when they were caught. Coston was summarizing to the month level, and wanted to make sure that if we're reporting tags that were caught in month X, it was actually caught in month X and was not recovered on a primary magnet two months later, but you didn't know when exactly it was caught.

The original Southeast Fishery Science Center analysis of this data said that you can tell with some reliability when that tag is actually caught from the recaptures on the primary magnet, but not from the recaptures on the secondary magnet. That is why Coston only reported the primary magnet. Looking

at the plant-test data, they did not separate it and say, these are primary and these are secondary.

But we were able to determine, by comparing the Coston data with the counts in the re-digitized data, which included the magnet number, that magnets 1 and 2 were primary magnets, and all the other magnets were secondary magnets. Liljestrand et al originally included both the primary and the secondary magnets from the plant-test data in their efficiency calculations, which was sort of a mismatch with the Coston data, because Coston was, again, only reporting the recoveries on primary magnet.

Effectively, Liljestrand et al in the 2019 paper overestimated the magnet efficiency for the Coston dataset. The SAS recalculated the magnet efficiency, using only the data from magnets 1 and 2 for use with the Coston dataset. The SAS could not come to consensus with Ault et al on the use of the stepwise method to adjust the magnet efficiency within the tagging model. Ault et al argue that this improves the likelihood and the fit to the observed data with this approach. But the SAS noted that this comes at the expense of the empirical plant efficiency data, that the final stepwise magnet efficiencies that Ault is using in their model are much lower than we actually observed in the plant-test data, and that is what is driving that lower estimate of natural mortality. That essentially, it's saying these tags disappear, but they disappear because they are caught by the fishery but not seen, not recaptured on the magnet.

When in fact we know the magnets are actually not bad at recovering these tags. The SAS felt that the stepwise approach was not appropriate, and resulted in estimates of tag efficiency that did not reflect the actual empirical observed estimates of magnet efficiency. We decided to use the empirical estimates of magnet efficiency as the base run

of the tagging model, but we would use the stepwise approach as a sensitivity run.

We used the Coston dataset for both, and used the confidential effort time series for both, but did one base run with the empirical estimates of magnet efficiency and one with the stepwise estimate, as a sensitivity run. The final results, the Liljestrand et al estimate of  $M$  for this study was 1.17. Once that mistake with the magnet efficiency data was corrected, the  $M$  Working Group's revised  $M$  base run was an estimate of 0.92, so about 20% lower than the Liljestrand effort.

The sensitivity run with the stepwise approach got a much lower  $M$ , an  $M$  of 0.47. Based on the sizes of the tagged fish, most fish in the study, were about one and a half years old. Similar to the last benchmark assessment, the SAS developed an age varying estimate of  $M$  to use in the BAM, by basically scaling that Lorenzen Curve so that the  $M$  at age 1.5 is equal to the  $M$  from this tagging model.

That means that menhaden of age 0 and 1 have a slightly higher  $M$ , and the older menhaden have a lower  $M$ , compared to that sort of point estimate from the tagging model. This is a comparison of the estimates of the 2020 benchmark  $M$  that scaled that Lorenzen curve to the Liljestrand et al estimate of  $M$  in the orange with the circles.

The base run from the  $M$  Working Group is the black with the low triangles, and then the sensitivity run using the stepwise approach is this blue curve lowest down. This is what is actually going into the single species BAM model. Our next steps for this, step 1, we've run the BAM with the new base model and the sensitivity run.

Using the lower estimate of  $M$ , both the base and the sensitivity run result in lower biomass in abundance and a higher  $F$ , as you would expect from this model. We cannot tell you anything about stock status of the TAC yet, because we have to propagate these results through the ERP models, which we are in the process of doing right now.

Our next step will be to develop these ERPs with the new M, and the sensitivity run M, and then take this decision as part of the benchmark assessment to peer review, so that the SAS and the workgroups decision on the handling of M can be reviewed by external experts through the ERP peer review process. With that, I am happy to take any questions.

CHAIR CLARK: Wow, Katie, that was a tour de force. That was amazing. Wow, just hats off to you and the SAS, what a lot of work that must have been. Thinking about magnets at menhaden plants is really interesting. Amazing presentation, and let's go to some questions. Rob LaFrance.

MR. LaFRANCE: Thank you, Dr. Drew, really good stuff. Just so I understand. The sensitivity run is really reflective of what the Ault paper sort of said, and you're going to run both basically, and give the Board back information, so we'll be able to see what is happening. Although the real number your recommendation would be the 20% lower one?

DR. DREW: While I guess we will take to the Peer Review Panel saying, this is our base run and these are the decisions that we made, and here is the impact of the base run versus the sensitivity run. We will try to develop that sensitivity run as equally and fully as we can, so that if the Peer Review Panel is like, we don't agree with those decisions, you made the wrong choices. We have a sort of a fallback position to be able to bring to the Board the version that the Peer Review Panel says is the best available science.

MR. LaFRANCE: I just want to complement you. That is a really great way to figure out what this problem was. I saw the scientist's kind of going from either side of it. Hats off to you of actually working through that. Thank you.

CHAIR CLARK: Thanks. Megan Ware.

MS. MEGAN WARE: Yes, I was curious who was going to have the task of explaining my notes to the Board, but you did a great job, Katie. My question is, so I think the Liljestrand paper uses overestimating magnet efficiency. I haven't noodled through yet if that it thinks we're catching more fish or less fish. I think it's more, because natural mortality went down. Is that correct?

DR. DREW: Right, what it's saying is that the model looked at, we tell it, we recaptured 100 tags, if we recaptured 100 tags, how many tagged fish actually were caught, and we just didn't see them, they got all the way through the process. Liljestrand et al said, you should see, it said these magnets are very good at recovering the tag.

If you caught 100 fish, it means you actually caught 110 fish were caught by the fishery. That was an overestimate. We're saying, actually, if you caught 100, maybe you only really caught 105, or maybe you caught fewer, but from the fishery, which means more of those missing tags are missing for a non-fishery reason, and as a result it's basically trying to figure out, where did those missing tags go?

Liljestrand et al we're saying, more of those missing tags went to the fishery, and less of them stayed out in the environment. We're saying, actually, the efficiency is lower. I don't know if I'm explaining this correctly. We're saying the magnet efficiency is lower, so actually more of them were caught by the fishery and 150 of them were caught by the fishery, we just didn't see those extra ones. Those would count as fishing mortality, not as natural mortality.

CHAIR CLARK: Any further questions? Erika Burgess.

MS. ERIKA BURGESS: I want to thank you, that is the most fascinating presentation on natural mortality I've ever gotten to sit through. I thoroughly enjoyed it, and I liked the simplistic genius that went into the original design of that tagging study. You left me with one question though, wondering about it.

But before I get to it, one more comment. This question about M has been really challenging for this Board, for ASMFC. I really want to commend you for presenting this so that you are extremely transparent with the logic and process that the SAS went through, that everyone can understand very clearly how you arrived at your choice of M going into the peer review.

I think that is really important, and so I think that is incredibly valuable to our process, and that is what I want to thank you more for, in addition to that great presentation. Lingering question, what proportion of tags were picked up by the secondary magnet?

DR. DREW: I would have to go back and look at this. I will have to get back to you on this. I think there was not a huge difference between. I think a good chunk of them were captured by the primary. We're not losing a ton of data by not using the secondary magnets. But I can get back to you with sort of the exact breakdown of that.

CHAIR CLARK: Next question is from Allison Colden, then we have an online question from Emerson Hasbrouck.

DR. COLDEN: Katie, just want to reiterate everyone's compliments on that presentation. I listened in to several of the meetings trying to discuss this, and maybe the fourth time, and I think I'm like 60% there, in terms of understanding, so thank you again. Two questions, if I could. You mentioned that the Liljestrand paper was able to get access to the confidential data but Ault was not. Were they requesting the data directly from industry, were they requesting it from the Commission? What was the breakdown there?

DR. DREW: These data are held by the Southeast Fishery Science Center, and they fall under kind of an MOU with industry on this specific topic. Basically, because there is only one dealer or person involved in this, they are

fully confidential, and they get the final say on who can access the confidential data or not.

Ault et al and Liljestrand et al applied through the Southeast Science Center to receive access to these data. I think it was just a matter of when Liljestrand et al applied and when Ault et al applied. I will also say, industry refused a request for similar confidential data for menhaden, like Chesapeake Bay versus the Coast for that Liljestrand's lab, the Wilberg Lab for a more recent project on menhaden as well.

I think it's not necessarily specifically about who was asking, but maybe just like the current vibes at the time, but yes. They applied through the Southeast Fishery Science Center, but industry has the final say on that, because it is only one entity that has those data back in time.

DR. COLDEN: One other quick question. You showed the graph that had the different Ms for the different scenarios. But do you have the number for what the Ault run was?

DR. DREW: Yes, that was a 0.47 compared to the 0.92 of the M Workgroup revised base M.

CHAIR CLARK: Next up we have Emerson Hasbrouck. Emerson, you can unmute yourself now.

MR. EMERSON C. HASBROUCK: Thank you, Katie, for that great presentation. Are you looking for anything specific from the Board today on this, or is this just reviewing with us how the SAS is developing an assessment model?

DR. DREW: Yes, we don't need anything from the Board. I mean obviously, we welcome the Board's comments on this if you have further questions or directions that you would like to consider. But we are just providing an update on this, because we know the Board has received a lot, this particular issue has generated a lot of interest and comments from stakeholders, directed toward the Board. We wanted to make sure that we are reporting back to you this issue as we go forward.

MR. HASBROUCK: Thank you, if you're looking for a comment, I guess I would say great job, Katie, great job. Then also, thinking, I guess you were giving your presentation, you know back to that original study and then the work afterward. I guess there is a lesson here for all of us researchers in the room, and that is to never throw out your original hardcopy data for any of your projects. You know at Cornell we were just recently discussing about what to do with our hardcopy data from projects 20 years ago. I guess a lesson is, just hold onto it. Thanks, Katie.

DR. DREW: For sure, I would agree with that completely.

CHAIR CLARK: Emerson, it was the sixties, man, things happen. Any further questions and not seeing any. Katie, just so I'm clear, the fact that M is going to be lower means that F will be higher, and when you do the ERP, that means the F will be then broken up further. We could be looking at lower TAC.

DR. DREW: Right, I think it is difficult to say right now what the final outcome of this will be. I think, you know obviously if this were a single species model, it's much easier to understand how all these pieces play together. But we'll really have to wait for the ERP assessment to kind of understand the impact on reference points and the TAC going forward.

CHAIR CLARK: Once again, thanks for that amazing work that you and the SAS did on this, and great presentation.

CHAIR CLARK: With that we will move on to Number 6, which I guess is this a separate item? Oh, oh my goodness, here we go.

**PROVIDE DIRECTION TO TECHNICAL  
COMMITTEE ON 2026-2028 STOCK  
PROJECTIONS**

DR. DREW: The thing we are looking for, maybe for you guys to have more input on is some

guidance to the TC on projections. Next steps are, you know I've given you the next steps for the assessment, the next steps for you guys are the annual meeting 2025, a lot is going to be happening. You will receive the ERP benchmark assessment and the single species update. You will decide whether to accept that ERP assessment for management use, and then you will need to set that for 2026 up to 2028. As a result of that, we're not going to have a lot of the usual sort of back and forth with the Board on projections. The single-species assessment update will include projections using the results of the new ERP benchmark.

After the peer review is complete, and we've sort of gotten the thumbs up, or I guess the thumbs down, you know what should be their reference point going forward. The TC will do a series of projections to bring to you guys about what the TAC could be for 2026, all the way through 2028 if the Board is so inclined.

We want to provide a set of projections that are most useful to you, because there is not going to be sort of that usual back and forth, we present the assessment in August, and you guys ask for projections and we come back to you in October. It's all coming to you in October. Obviously, I know right now, it's a difficult request, because it is going to depend on what the results of the assessment are.

But we just want to make sure if you guys have concerns or thoughts initially, that we are as prepared as we can be coming out of that peer review after August meeting. Kind of as a reminder of what we have presented to you before, the projections in 2022, we did essentially two sets of projections. Number one was, providing the TAC associated with a 40% to 60% probability of exceeding the ERP target for 2023 through 2025.

Basically, if you wanted a 40% chance of exceeding the target here was your TAC. If 45, 50, 55, 60, so that would be the range of TACs that we provided, and then we also provided basically what's the risk of exceeding the ERP target or the threshold, for five different TAC projections, based on like 10%

less than status quo, 5% less than status quo, 5% more than status quo, and 10% more than status quo.

This is what we provided last time to you, based on your feedback. I think we would look to you to see, is this good, or is there something else you would like to see? Basically, we can provide a range of probabilities of exceeding that F target. Last time it was 40 to 60, is that good? Do you want to see a different range of values?

Last time we provided a range of increases and decreases to the current TAC, which at the moment is 233,550 metric tons. Going from basically a 10% increase to a 10% decrease. Do you want to see a different range or other values on that front? Are there any other projection scenarios that you would like to see?

Like I said, I recognize that you may not be prepared to make any decisions now. You can think about this and come back to us in August, then we can also consider that going forward. But we wanted to get you guys thinking about this, so that when we come to you in October, we have something that is as useful for you as possible.

CHAIR CLARK: Thank you, Katie. Are you looking for feedback right now, or?

DR. DREW: I mean if people have feedback right now, for sure. Like if you're looking at this and thinking, I know I want to see X and it's not on this list. You can tell us it now. If you would like to reach out over e-mail, we can definitely do that. But sometime between now and, I guess after the peer review would be ideal.

CHAIR CLARK: Before I open it up to the Board, is there any reason why with this new M that you would think these range of projections we've used in the past would be affected, like they wouldn't be as useful as they would currently be?

DR. DREW: I think the range of probabilities of exceeding the F target will still be useful. I am not sure as much about sort of the increases or decreases from the current TAC, because it is not clear to me where our sort of starting TAC will be on that front. But it might be helpful for the Board to think, if we have to take a cut to the quota, you know how risky or how averse would we be? Maybe we would want a wider range on that. But I don't know.

CHAIR CLARK: Wow, my brain already hurts just thinking about all the stuff we have to do. Any questions, comments for Katie on the projections? Nicole Costa.

MS. NICOLE LENGYEL-COSTA: Real quick. You're saying after the peer review, we could still get you recommendations. What is the drop-dead date to get you a recommendation?

DR. DREW: I would say probably September 1st, would be the drop-dead date. I think we will have the peer review in mid-August. I think we'll have a pretty decent sense of where we can go from there. Then we'll probably start out with these, and if there is anything new, we can take it up to September 1st.

CHAIR CLARK: I know we have Emerson online, but was there another hand over here? Oh, Megan Ware. We'll go to Megan then Emerson then Rob.

MS. WARE: I think this is a good starting point, because I feel like the projections we got in the last spec setting process were really helpful, and it was a good range. I think this is a good place to start. I agree that probability projections are probably going to be more useful. Something that was really helpful last time is we had combined years and then each year, so I would just ask for that again. That was particularly helpful.

DR. DREW: Got it, we can definitely do that.

CHAIR CLARK: Okay, next up is Emerson.

MR. HASBROUCK: I would like to see pretty much what was brought to us last time. You know that range of probabilities of exceeding F, 40% to 60% looks okay to me as a starting point. Also, range of the increase/decrease to current TAC. Maybe change that up a little bit from 10% increase to 10% decrease. Let's look at the bounds being 12% increase and 12% decrease, or maybe somebody else would like to see something else. I think what you provided us last time is a great starting point.

(Whereupon the meeting adjourned at 3:05 p.m. on Wednesday, May 7, 2025)

CHAIR CLARK: Next up we have Rob LaFrance.

MR. ROB LaFRANCE: I just kind of agree with what Emerson said. I guess the question I have for you, Dr. Drew, is depending upon what the TAC is, if we get a big movement in the TAC, I wouldn't want to see that either 10% increase or decrease expanded. You know if the TAC is pretty close to where it is then those numbers are fine. But if the projected TAC is, say 10 or 20% lower, then we should make those differentials the same. That would be my commentary.

CHAIR CLARK: Lynn Fegley.

MS. FEGLEY: Just to put the cap on these last few comments. For the TAC increases, rather than going to 12%, I would just suggest maybe we see minus 5, minus 10 and minus 15, 5 to 15, maybe 5 to 20 on each side, in increments of 5. I think we can really work with that.

CHAIR CLARK: Do we have anything else for Katie? No, in that case, wow! A lot of things we've got to consider here. Probably won't have time for that screen door factory tour at the annual meeting.

#### **ADJOURNMENT**

Okay, now we're moving on to Item Number 7, which is Other Business. Is there any other business? There isn't any other business to come before the Board. In that case we are adjourned.