Atlantic States Marine Fisheries Commission

ISFMP Policy Board

November 10, 2022
11:45 a.m. - 2:15 p.m.
Hybrid Meeting

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1.	Welcome/Call to Order *(S. Woodward)*	11:45 a.m.
2.	Board Consent *(S. Woodward)* • Approval of Agenda • Approval of Proceedings from August 2022	11:45 a.m.
3.	Public Comment	11:50 a.m.
4.	Executive Committee Report (*S. Woodward*)	12:00 p.m.
5.	Lunch Break	12:15 p.m.
6.	Review Draft *De Minimis* Policy (*T. Kerns*) **Possible Final Action**	12:45 p.m.
7.	Committee Reports • Habitat (*L. Havel*) **Possible Final Action** • Atlantic Coastal Fish Habitat Partnership (*L. Havel*) • Law Enforcement (*T. Kerns*)	1:30 a.m.
8.	Progress Update on On-Going Stock Assessments (*K. Drew/J. Kipp*) • Black Drum • Black Sea Bass • Bluefish • Spiny Dogfish	2:00 p.m.
9.	Review Noncompliance Findings (If Necessary) **Action**	2:10 p.m.
10.	Other Business/Adjourn	2:15 p.m.

The meeting will be held at The Ocean Place Resort (1 Ocean Boulevard Long Branch, NJ; 732.571.4000) and via webinar; click here for details

MEETING OVERVIEW

ISFMP Policy Board
Thursday November 10, 2022
11:45 a.m. -2:15 p.m.
Hybrid Meeting

Chair: Spud Woodward (GA) Assumed Chairmanship: 10/21	Vice Chair: Joe Cimino (NJ)	Previous Board Meetings: August 4, 2022
Voting Members: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, DC, PRFC, VA, NC, SC, GA, FL, NMFS, USFWS (19 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from August 4, 2022

3. Public Comment – At the beginning of the meeting public comment will be taken on items not on the agenda. Individuals that wish to speak at this time must sign-in at the beginning of the meeting. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Board Chair may determine that additional public comment will not provide additional information. In this circumstance the Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

4. Executive Committee Report (12:00-12:15 p.m.)

Background

- The Executive Committee will meet on November 9, 2022

Presentations

- S. Woodward will provide an update of the Executive Committee's work

Board action for consideration at this meeting

- none

5. Lunch Break

6. Review Draft *De Minimus* Policy Possible Final Action (12:45-1:30 p.m.)

Background

- The Commission includes *de minimis* provisions in interstate FMPs to reduce the management burden for states that have a negligible effect on the conservation of a species. The *de minimis* provisions in FMPs vary by species and include a range of requirements for management measures, reporting requirements, and *de minimis* qualification periods.

- Past Policy Board *de minimis* discussions focused on the balance between standardization across FMPs and the flexibility for the species management boards in developing *de minimis* provisions.
- The Policy Board tasked a Work Group to provide a recommendation for addressing *de minimis* that addresses the concerns raised by the Board which were presented in May. Based on the recommendations the Board tasked staff to draft a white paper with options for a draft policy which were presented to the Board in August. The Board Provided feedback on the options and tasked staff to develop a Draft *De Minimis* Policy for Board review.

Presentations

- T. Kerns will present the Draft *De Minimus* Policy (**Supplemental Materials**)

Board action for consideration at this meeting

- **Review Draft Policy and provide feedback to staff**

7. Committee Reports (1:30-2:00 p.m.) Possible Final Action

Background

- The **Habitat Committee** will meet on November 7.
- Atlantic Coast Fish Habitat Partnership's Steering Committee will meet November 8-10.
- The **Law Enforcement Committee** will meet on November 8.

Presentations

- L. Havel will provide and update of the Habitat Committee's work and present the Fish Habitats of Concern Document (**Briefing Materials**)
- L. Havel will provide an update of the ACFHP's work and provide details on the FY 2024 National Fish Habitat Partnership RFP
- T. Kerns will provide and update of the LEC's work.

Possible Board action for consideration at this meeting

- Consider approval of the Fish Habitats of Concern Document

8. Progress Update on On-Going Stock Assessments (2:00-2:10 p.m.)

Background

- Black drum, black sea bass, bluefish and spiny dogfish are all undergoing stock assessments

Presentations

- J. Kipp and K. Drew will provide updates on the black drum, black sea bass, bluefish and spiny dogfish stock assessments

Board action for consideration at this meeting

- None

9. Review Non-Compliance Findings, if necessary Action

10. Other Business/Adjourn

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

ISFMP POLICY BOARD

The Westin Crystal City
Arlington, Virginia

August 4, 2022

These minutes are draft and subject to approval by the ISFMP Policy Board.
The Board will review the minutes during its next meeting.

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ATTENDANCE

Board Members

Pat Keliher (AA)
Sen. David Miramant, ME (LA)
Cheri Patterson, NH (AA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)
Dan McKiernan, MA (AA)
Raymond Kane, MA (GA)
Jason McNamee, RI (AA)
David Borden, RI (GA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)
Matt Gates, CT, proxy for Justin Davis (AA)
Bill Hyatt, CT (GA)
Jim Gilmore, NY (AA)
Emerson Hasbrouck, NY (GA)
Joe Cimino, NJ (AA)
Tom Fote, NJ (GA)
Kris Kuhn, PA, proxy for T. Schaeffer (AA)
Loren Lustig, PA (GA)
John Clark, DE (AA)
Roy Miller, DE (GA)
Craig Pugh, DE, proxy for Rep. Carson (LA)
Mike Luisi, MD, Administrative proxy
Lynn Fegley, MD, Administrative proxy
Russell Dize, MD (GA)
Pat Geer, VA, proxy for J. Green (GA)
Chris Batsavage, NC, proxy for K. Rawls (AA)
Jerry Mannen, NC (GA)
Bill Gorham, NC, proxy for Rep. Steinberg (LA)
Mel Bell, SC (AA)
Chris McDonough, SC, proxy for Sen. Cromer (LA)
Doug Haymans, GA (AA)
Spud Woodward, GA (GA)
Erika Burgess, FL, proxy for J. McCawley (AA)
Gary Jennings, FL (GA)
Marty Gary, PRFC
Mike Ruccio, NMFS

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

Staff

Robert Beal
Toni Kerns
Tina Berger
Maya Drzewicki
Lisa Carty
Kristen Anstead
Katie Drew
Emilie Franke
Lisa Havel
Chris Jacobs
Jeff Kipp
Sarah Murray
Marisa Powell
Anna-Mai Christmas Svajdlenka
Deke Tompkins

Guests

Max Appelman, NOAA
Pat Augustine, Coram, NY
Rachel Barrales, Cape Cod Fishermen
Linda Barry, NJ DEP
Sharon Benjamin, NOAA
Alan Bianchi, NC DENR
Sharon Benjamin, NOAA
Mandy Bromilow, NOAA
Jeff Brust, NJ DEP
Nicole Caudell, MD DNR
John Maniscalco, NYS DEC
Mike Celestino, NJ DEP
Heather Corbett, NJ DEP
Nicole Costa
Christine Densmore, USGS
John Duane
Cynthia Ferrio, NOAA
James Fletcher
Dawn Franco, GA DNR
Alexa Galvan, VMRC
Lewis Gillingham, VMRC
Angela Giuliano, MD DNR
Joshua McGilly, VMRC
Helen Takade Heumacher, US FWS
Carol Hoffman, NYS DEC
Kyle Hoffman, SC DNR
Harry Hornick, MD DNR
Jesse Hornstein, NYS DEC
Janelle Johnson, NC DENR
Adam Kenyon, VMRC
Karen Knotts, USGS
Kathy Knowlton, VMRC
Chip Lynch, NOAA
Shanna Madsen, VMRC
Kim McKown, NYS DEC

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The Board will review the minutes during its next meeting.

Guests (continued)

Nichola Meserve, MA DMF
Steve Meyers
Chris Moore, CBF
Wendy Morrison, NOAA
Allison Murphy, NOAA
Virginia Olson, Lobster Local #207
Derek Orner, NOAA
Nicholas Popoff, US FWS
Will Poston, SGA
Jill Ramsey, VMRC
Jason Rock, NC DENR
Mike Ruccio, NOAA
Steven Scala
Eric Schneider, RI DEM
Amanda Small, MD DNR
Melissa Smith, ME DMR
Somers Smott, VMRC
Kevin Sullivan, NH F&G
Spencer Talmage, NOAA
Angel Willey, MD DNR
John Page Williams
Chris Wright, NOAA
Dan Zapf, NC DENR
Faith Zerbe, DE Riverkeeper
Erik Zlokovitz, MD DNR

The ISFMP Policy 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; Thursday, August 4, 2022, and was called to order at 9:40 a.m. by Chair A.G. "Spud" Woodward.

CALL TO ORDER

CHAIR SPUD WOODWARD: All right, I'm going to go ahead and call the meeting of the ISFMP Policy Board to order. For those of you that are virtual, this is Spud Woodward Governor's Appointee Commissioner from the state of Georgia, and current Commission Chair. Welcome everybody to our meeting.

APPROVAL OF AGENDA

CHAIR WOODWARD: Our first order of business is approval of the agenda. Is there any request in modifications or changes to the agenda? If so, raise your hand and be recognized. I don't see anything. Any opposition to accepting the agenda as presented? I don't see any, so we'll consider the agenda adopted by unanimous consent.

APPROVAL OF PROCEEDINGS

CHAIR WOODWARD: In your briefing materials we also had proceedings from our May, 2022 Policy Board meeting. Any edits, modifications, corrections to the minutes? I don't see any. Is there any opposition to accepting those minutes and proceedings? Seeing none; we'll consider those accepted by unanimous consent as well.

PUBLIC COMMENT

CHAIR WOODWARD: This is a time we have available for public comment. I don't see anybody in the audience, do you have anybody online? Don't see any hands, so no public comment.

EXECUTIVE COMMITTEE REPORT

CHAIR WOODWARD: At this point I'll give a brief report on our Executive Committee meeting, which was held yesterday from eight to ten. After our administrative duties with the agenda and the meeting summary, we had no public comment.

Bob gave a brief CARES Act update. Things are proceeding well. We are looking at probably a significant understand of Cares 2, and so the Executive Committee will be deliberating on that in the future, as far as possibly shifting money from unspent jurisdictions to those that still have remaining needs.

We did that with Cares 1, it worked out real good. That is proceeding along. The next thing we did was received a report from the de minimis Work Group from Toni Kerns. I want to thank that group for the work they've done. We discussed that report quite a while, and actually came up with some recommended preferred under the options where there are option categories, and Toni will be reporting on that a little later on in our agenda. We also reviewed and updated investment policy. The way the Commission operates is it tries to maintain an adequate balance in an operating fund to cover costs associated with staffing and operations. In the past we've had sort of a three-tier approach. Going forward we're going to have a two-tier approach. We'll have an operating fund balance, and we'll have a reserve fund.

That reserve fund will be there as a contingency. Those monies are invested in a diverse portfolio that mixes gain with low risk. Going forward, whenever we develop an annual budget, we'll be looking at the budget and unspent funds, and how to possibly either move those funds into activities or to perhaps add them back to the reserve fund.

That was approved by the Executive Committee. Next thing we did was reviewed a letter of support for a Resilient Coast and Estuaries Act. That was brought to us by the Legislative Committee, and we approved that and later on in our agenda I'm going to ask Bill Hyatt, our Legislative Committee Chair to

bring that forward to the Policy Board for consideration.

Next, we had a presentation from Dr. Lindie Hice-Dunton. She is Executive Director of the Responsible Offshore Science Alliance. That group has come to the states from Maine to North Carolina, asking for some support. She gave an overview of that entity's activities, the kind of things they're doing, how important or relevant they are going to be.

That was an informational presentation to the Executive Committee. Then we also had a review of the latest version of the Appeals Policy, which we're calling now the zombie policy, because every time we try to get it done, it keeps rising back up again and takes on new life. Hopefully today we can actually finally put it to rest. That's another thing that we'll be dealing with a little later in the agenda.

But the Executive Committee approved the latest version of it. Under Other Business, our Awards Committee Chair, Jim Gilmore, brought up the idea that arose during the most recent committee deliberations of recognizing those folks in the states that have done a superlative job managing the Cares Act on top of their other duties. That's something the Awards Committee will be working towards.

Then lastly, we received an annual meeting update, like all of you should have seen your e-mails from Tina, but that will be November 6 through 10, 2022, at the Ocean Place Resort in Long Branch New Jersey. Tom Fote mentioned that there will be fishing opportunities, so if you do have plans on coming in early, or have the opportunity to come in early, there will be some opportunities.

Please, just factor that in your long-term planning, and get back in touch with Joe and Tom, and let them know about it so they can get a head count. That is the report from the Executive Committee. Any questions? As I said, some of those items you'll be seeing a little later in the agenda.

CONSIDER CHANGES TO THE APPEALS POLICY

CHAIR WOODWARD: Seeing no questions, our next agenda item is the Appeals Policy, and I'm going to turn that over to Bob.

EXECUTIVE DIRECT ROBERT E. BEAL: Great, thank you, Mr. Chair. As Spud tactfully said, the goal here is to wrap this up and approve it today, hopefully. There are two changes. The most recent version of the Appeals Document was included in supplemental material. There are two changes that are highlighted in yellow, and then I have one additional change that I'll briefly comment on. But I'll talk about the two changes that were highlighted in yellow. As everyone may remember, at the May meeting we brought the Appeals Policy back to the Policy Board, and there was a suggested change during that meeting.

The change to reflect that conversation begins on Page 3 and ends on Page 4. It centers around the idea that as we move through the appeal process, if an appeal gets to this Policy Board, and this Policy Board needs some additional technical information, they can reach out to one of the technical support groups, you know a Technical Committee, Assessment Science Committee, Management Science Committee, whatever it might be, ask for additional analysis or information, and the Technical Support Group will get that together as quicky as possible.

The Policy Board will revisit the issue at the next quarterly meeting, or at an interim meeting between the two quarterly meetings. That is included there. As I said, on Page3 or on Page 4. Then if you look on the other highlighted yellow section on the last page, Page 5, it's just a recognition that, you know as we go through the appeals process there, the management boards and Policy Board need to keep in mind that some of our FMPs are jointly managed with the Mid-Atlantic Council, in particular.

Just reading the language very quickly, in the case of a jointly managed species, the Policy Board and the species management board should consider that corrective action could result in inconsistent measures between state and federal waters. This isn't an obligation to consult with one of the Councils, or anything along those lines.

It's just a recognition that there is this potential cascading impact across these joint FMPs, and something to keep in mind when the Policy Board and species management board is deliberating on what exactly they want to do for corrective action. The other one that I wanted to briefly comment on, it's kind of a write-in change here at the last minute is: At the end of the first paragraph on Page 4, there is a sentence.

The last sentence there that is actually in a little bit different font, so it stands out. If the Policy Board requires a management board to take specific corrective actions, the scope of potential corrective actions must be consistent with the presentation of management options provided to the public in a draft amendment or addendum.

This language was approved by the Policy Board last meeting. I think it's all set. But I think we need to add a clause in here that this only obviously applies to issues that went out for public hearings. Sometimes there is conservation equivalency or specifications setting, or other things that happen at the management board can be appealed, but they don't have a public hearing record, they don't have a range of options that went out for public hearing.

This sentence kind of shouldn't hamstring the flexibility of a board moving forward, for issues that weren't taken out to public comment. We'll add sort of that clause, so it will read, if the Policy Board requires, the management board to take specific corrective actions for issues that went out for public hearing, the scope of potential corrective actions, etcetera. Just a note in there that that sort of limited scope only applies to issues that went out for public hearing. Those are the changes, three of them. Happy to answer any more questions or provide more background if anyone wants it.

CHAIR WOODWARD: All right, thank you, Bob. Any questions? Marty Gary.

MR. MARTIN GARY: Thank you, Bob. I think the answer is going to be yes, but I just wanted to be sure I understood it. Hypothetically, in the case of striped bass, if we were to exercise Board action come this November. Hopefully we won't, but if we do and we were to, that would be not an Addendum process with the public hearings. Would your narrative address that? My concern is that is a gray area.

EXECUTIVE DIRECTOR BEAL: The answer is yes. If the Striped Bass Board takes corrective action, because the assessment indicates that action is needed, and a state felt aggrieved by that action, a state could appeal, and obviously, as you said, there are no public comment options or a range of options wasn't taken out for public comment, since the public and the Board agreed to the fast process in Amendment 7.

CHAIR WOODWARD: Go ahead, Dan.

MR. DANIEL McKIERNAN: Bob, could you speak to the phrase, consistent with.

EXECUTIVE DIRECTOR BEAL: In the paragraph on Page 4?

MR. McKIERNAN: Yes.

EXECUTIVE DIRECTOR BEAL: That was a term that I think was debated over and over at the Executive Committee, and that's what they came up with to say, one of the options included, or there is a range of options, obviously that go out to public hearing, right? It has to be consistent with one of those options.

Or if that document notes that those options can be hybridized, and it has to be consistent with that. Whatever language we're going to include in any draft documents now, the range of options the Boards and Policy Board have for corrective action, are going to be limited to that range that is presented at public hearing. Does that help?

MR. McKIERNAN: It does. It's not necessarily one of the discreet options, but it could be in the range of.

EXECUTIVE DIRECT BEAL: Yes.

MR. McKIERNAN: All right, thank you.

CHAIR WOODWARD: Yes, I sort of think of it as if you have A, B and D you could create a C, because it's a hybrid of B and D or something sort of like that. But it would be within the sideboards that have been discussed and debated. John Clark.

MR. JOHN CLARK: Yes, that was one of the things that I was very much in favor of adding to this. Yes, that is pretty much what I was thinking, but I also want us to be clear when we draft an amendment or an addendum, to make it clear to the public that that is a possibility, if that is a possibility. If there are discreet options to put it that way, or if they could be one from Column A, one from Column B, we make that clear when it goes out for public hearings. Thanks.

CHAIR WOODWARD: All right, any other questions about the latest draft of the Appeals Policy? Is there any opposition to accepting it in the form it has been presented? Speak now or forever hold your peace. We are ready to put the stamp of approval on this one. I don't see any opposition, so we will consider it approved by unanimous consent. Thank you, very much. Okay, we put the Zombie in the ground and got enough dirt on it, hopefully to hold it down. We'll see next time we have to use it, which I hope is way beyond my tenure as Chair. Hopefully.

REPORT FROM THE *DE MINIMIS* WORKGROUP

CHAIR WOODWARD: Our next item is the report from the De Minimis Workgroup, and I've said, the Executive Committee discussed this quite a bit yesterday, and came up with some preferred options. They certainly are not binding on the Policy Board, but I think they are the result of a good dialogue and a good discussion and input. I'll turn it over to Toni.

MS. TONI KERNS: Thank you, Mr. Chairman. In your supplemental materials is a draft of a De Minimis white paper. The first bit of the draft just outlines the definition of de minimis, and the provision that allows for de minimis within the ISFMP charter for each of the species FMPs. The draft Policy outlines a set of standards that we could use for each of our species FMPs.

It does state that species boards could deviate from the standards, to address unique characteristics of a fishery. But those species boards must provide a rationale for why it is deviating from those. Then the draft also notes that federal FMPs do not recognize de minimis standards, therefore any de minimis measures implemented in a Commission FMP for jointly managed species, could result in inconsistent measures between state and federal waters.

Sometimes this gets a little tricky for evaluating compliance for states, when doing that in conjunction with the fishery management councils, in addition, sometimes it becomes confusing for fishermen who fish in state and federal waters, but have a federal permit. But the policy does not state what we need to do with that if the Policy Board has specific direction, then I can put that into the draft Policy.

For the minimum standards section, each FMP would establish a set of minimum standards for de minimis states. It would provide a minimum level of conservation for that species, and those minimum

standards would also prevent any regulatory loopholes for that fishery. The measures for the commercial and recreational fishery could be the same, or you could have minimum standards for each of those species.

For the sections that have options, I have highlighted in blue the preferred option from the Executive Committee. This is thinking about how we designate the fishery, meaning how do we apply de minimis to the commercial and recreational fishery. The first option is to allow each species board to review the provisions, and determine how de minimis would be considered on their own. It would either be commercial and recreational together, they could be separate, or you could have it just for one of the sectors. Option 2, which is the preferred option, is to separate for commercial and recreational sectors, or you could allow it just for one of the sectors. The last option 3 is a provision to have the commercial and recreational combined. Next is looking at the thresholds, so how do you establish de minimis? The first part of it, is whether or not you average landings.

This is suggesting we average landings, but for how long? Thresholds would be based on the average landings of the previous X number of years. Option 1 is two years, and the preferred option from the Executive Committee would be three years. This was suggested because it allows to sort of not chase the noise in fisheries, and not make you have to react back and forth to maybe a blip in a fishery change.

It really allows for consistent, either increase in landings or consistent decrease in landings for a state to be either in or out of de minimis. Next is what percentage of the coastwide landings would allow you to be de minimis. Option 1 is to task each of the species' boards TCs to determine what is an appropriate level that would have a negligible effect on conservation.

Option 2, which is the preferred option, is that a state's landings be less than 1 percent of the coastwide landings, and Option 3 is to be less than half a percent of the coastwide landings. I think that mostly the less than 1 percent is just somewhat consistent with what we have for most of our species.

I recognize that there are some species that have a different percentage, and as I said before, a species board could consider something different if they have some unique characteristics. Then lastly is looking at sampling requirements. De minimis states can be exempt from sampling requirements. It's important to note that biological samples for the outer edge states could be pretty important for stock assessments.

In particular, for all of the states for data poor species, those samples might be important. It is recommended that the species boards have the Stock Assessment Subcommittee or TC review sampling requirements for de minimis states, to determine an appropriate level, if any are important at all. The intent today is to get direction from the Policy Board on which options to move forward with, and then I would go back and complete the white paper and bring it back to the Policy Board for approval in November.

Then as species boards make changes to their FMPs, either through addendum or amendments, then we can address any changes that they need to make in their de minimis plans. It would be up to a species board and their prerogative if they want to take action just on de minimis they could do so.

I mean we can work that into the Action Plan for future years. The other part that I said that I would work into the white paper is just to note the importance of paying attention to the stock status, and how at times if you were overfished and overfishing was occurring, or if you were in a rebuilding program that Technical Committees may need to take a look at the minimum standard measures, or some of the sampling requirements for that species, to make sure that it is still having a negligible impact, or that we're collecting enough information for those species specimens to carry forward when they are in a declining state. It also

may impact the percent that allows a state to be de minimis, because if you have super low levels of catch, 1 percent maybe close to what most states were already catching.

CHAIR WOODWARD: All right, thanks, Toni, and let me I guess maybe put a little context on what I see is the practical application of this. That is, say for instance that we adopted those preferred options as the standards. They would be sort of the first filter that a management board and its supporting technical committees would use to apply an analysis of the appropriateness and efficacy of de minimis.

It may be that those entities decide that de minimis is not appropriate, because of the unique characteristics of that fishery or that species. They may decide that it needs to be less than 1 percent or you know you may have de minimis for recreational but not for commercial. But it would be the first thing that you would apply to that analysis.

That would bring some level of standardization, because if you look at the supporting table for it, it's pretty much all over the place. I mean we have some plans with no de minimis, we have lobster with a specified amount, it's not a percentage. In some we have you know a tenth of a percent, some we have a percent.

This would encourage at least the application of a standard when you're doing the analysis. That is sort of the way that I see this working. It isn't going to bind a Board or its Technical Committees to a specific set of parameters, but it applies a uniform sort of filter to everything. That is kind of what I see as this being a practical application. Doug, you had your hand raised?

MR. DOUG HAYMANS: Thank you, Toni, could you go back to the fishery designation slide, please? This may be a benefit of being back in person meetings, or it could be a detriment. But you know, you have a chance to talk about this over dinner. Several of us were questioning. I guess I'll take the credit. We were questioning the wording and whether it got to where we thought it should be. At least for me, in initiating this request, I was looking to require each species board to have de minimis for recreational, commercial, and/or both.

Of the three options that are there, as they're written. I don't know that there is a requirement for each species board to have de minimis. You know once there is de minimis within the Board, then the Board can choose whether or not it grants de minimis to a state that has to provide justification why it can't grant de minimis. But without having that provision there, the state doesn't even have an opportunity to request de minimis. I don't see the option there.

For me, Option 2, if it were to drop the "or for only one sector" and instead say "or both fisheries together" or "both fisheries combined" the way that 3 reads. To me that would do it. De minimis for all plans is either considered separately for commercial and recreational or together, or combined. If that is what we selected, then each species board would be required to have de minimis for each sector. I just don't know that either of those three get us there.

CHAIR WOODWARD: Thank you, Doug, anyone else have similar concerns? Erika.

MS. ERIKA BURGESS: I hate raising my hand to speak, just to say the same thing someone else said, so I'll say that I also support what Doug said.

CHAIR WOODWARD: Okay. What you're recommending, Doug, is that we basically say, change Option 2, provision is separate for commercial and recreational or.

MR. HAYMANS: Combined.

CHAIR WOODWARD: I guess we need to remove the word separate, you could say provision is for commercial or recreational or combined, because you really can't have them separate and combined, that would kind of cancel each other out.

MR. HAYMANS: Well, the idea to me at least, would be that the species board would have to have a provision for both sectors, whether they are separate or combined could be up to the species board, but they at least have to have provisions for each sector.

CHAIR WOODWARD: Okay, Toni is going to look into the charter, to make sure we're not getting crossways with something. Anyone feel like that's the wrong path to go down to make that modification? Again, this is setting sort of a standard. The first thing that a Board has to do to address the concept of de minimis, and then they move forward making decisions based on the uniqueness of that fishery and that species going forward. Roy.

MR. ROY W. MILLER: Mr. Chairman, with regard to Doug's suggestion. How about a fishery like menhaden, where there is not recreational de minimis component? I assume that is what the framers of this were thinking when they put or for just one in there. What I'm getting at, you can have separate commercial and/or recreational de minimis definitions. But in some cases, there may only be a recreational or a commercial de minimis.

CHAIR WOODWARD: Right, and I think what he's suggesting would allow for that. That Board would analyze that fishery based on its attributes, and then make the decisions. Obviously if there is not a recreational component it would be no point to develop a recreational de minimis. But where you've got mixed use fisheries, you know it's sort of saying, hey you need to at least discuss and attempt to establish these things separate, unless there is a compelling reason why you're not going to do it differently. Mel, you raised your hand?

MR. MEL BELL: Yes, I think it's just kind of the semantics here. If I'm following this, it could say, provision is for commercial and recreational combined, or for just one, and that gives you your options, combined, or if there is no recreational one, it's one or the other. Is that kind of what you were going?

MR. HAYMANS: Well, to me the phrase "or for just one" allows a species board to only do one. If there is justification, menhaden, and it's written in that there is no recreational de minimis because there is no recreational fishery. That makes sense. But again, we go back to bluefish. There is not a recreational de minimis, but yet there are recreational fisheries throughout. I'm simply trying to ask the Bluefish Board and the other boards where it may come up, to consider recreational de minimis. I'm just trying to get that into each plan across the board.

CHAIR WOODWARD: All right, Jay.

DR. JASON McNAMEE: I'm not disagreeing here. I thought I would just offer another angle on this. I'm having a little difficulty understanding how you might combine them, so maybe it's happening somewhere and I've not seen that yet. But the notion of having them separate, in my mind makes sense, because the data streams are so different. Even in the case of menhaden you could calculate.

There are recreational harvests, so you could figure out whether or not you are de minimis, based on the recreational harvest of menhaden in your state. I'm not suggesting we do that. It could be done. But that is kind of what I'm getting at is, you know normally for a commercial fishery you have some sort of a quota, a census type accounting system. For recreational you have MRIP. I guess what I'll say is combining those two things together is not an insignificant task. You would have to really think it through.

CHAIR WOODWARD: Maybe this will help clarify a little bit too. Really what we're talking about here is where we have both, those landings are combined together to generate a number that is then used to compare to the coastwide landings. We use a combination of recreational estimates of recreational landings, and reported commercial landings for spot, spotted sea trout, striped bass, weakfish.

What Doug is saying is that you analyze them and develop separate criteria, and if you applied that like we do in, I guess some fisheries, you would have an estimate of recreational landings, and you use that number to compare to the estimate of coastwide recreational landings. You have a reported commercial landing for a jurisdiction, and you compare that to the coastwide landings.

You might be one, you might qualify for both, you might qualify for one and not the other. I'm capturing sort of where we're going with this. The intent, I think, is to, I hate to use the word compel, but to get each management board to at least do the initial analysis where appropriate, to have separate criteria for the two fisheries.

You know we talked about the challenges of using MRIP estimates for recreational, and the fact that they can be erratic. You know and you can run into situations where you're in one year and out the next year, because of the vagaries of the way MRIP estimates go. Maybe if we tweak this a little bit.

Again, we're not looking to make final approval of this, tweak that language. If everybody is agreeable with the intent of what we're trying to accomplish with that language, I think we can perfect it maybe, to make sure that it communicates clearly what the intent of that language is. Then when we come back at the annual meeting, make sure. It's kind of like the Appeals Policy. You know the turn of a phrase or the meaning of a word makes a big difference. We want to make sure that everybody is comfortable with where that language takes us.

MS. KERNS: Spud, I think that the charter itself is specifying, and I'm not quite sure if I think it requires de minimis. But I think that that is where the charter is what gets at whether or not you require it or not. That may be, and I'll come back to the workgroup and let you know. Maybe where you require it.

Then this language that we're talking bout tweaking is just whether or not when you are evaluating your de minimis. Are you doing it with the two sectors combined, or are you separating them and then determining it? I guess if you don't have de minimis for one of your sectors, then you are not evaluating it, so it is automatically by itself.

CHAIR WOODWARD: Are we generally comfortable that we've got something to work from to come back with? Eric nodded his head, thank you. You look pretty somber over there. As far as the other options go, are we comfortable with those other options again? You know you had set the 1 percent standard, but that doesn't mean a management board could not deviate from that. But it has to have a clear rationale for why it would deviate from that 1 percent.

It just puts a little more onus back on the boards and the supporting scientific bodies. You know it's kind of like what John was talking about. You know make sure we clearly articulate in our documents what the outcomes could be, or why an outcome is what it is. I mean if folks are comfortable.

We can work on that and come back at the annual meeting and have a chance to chew on it a little more. Is everybody okay with that at this point? Generally seeing heads nodding, all right, thumbs up from Eric, all right, very good. Okay, thank you all.

UPDATE ON EAST COAST CLIMATE CHANGE SCENARIO PLANNING

CHAIR WOODWARD: We'll move on, and Ms. Kerns, you're back on stage for East Coast Climate Change Scenario Planning.

MS. KERNS: Thank you, Mr. Chairman. Just as a very quick reminder, this is East Coast Scenario Planning, and it is addressing how the East Coast management bodies are going to address governance and management issues that are being affected by climate change, and particularly looking at stock availability and distributions.

We are hoping to advance a set of tools and processes that can provide flexible and robust fishery management strategies, to continue to promote fishery conservation and resilient fishing communities, and address uncertainty in an era of climate change. Where we are in this process, we just finished the scenarios itself, so looking at what will our future look like.

I will go briefly over those scenarios today, and we are moving into the application phase. This is using the scenarios to identify actions and recommendations for how we make adjustments to our management process, so we can be more flexible in the future. A couple of things that are coming up, in terms of our timeline.

We'll be hosting Scenario Deepening webinars this month, August 17 and August 23. The webinars are open to all stakeholders to validate the scenarios that we created. We'll give an overview of the stories from these initial scenarios, and allow participants to have the opportunity to give us comments and make suggestions on the scenarios, on how to make them more plausible, challenging, relevant, memorable and divergent. Then next we've added something new to our process. We are going to do some fishery manager brainstorming workgroups in September. The purpose of these is to help identify the issues, ideas and options that should be discussed at Scenario Planning conversations that we're going to have at all three councils and the Commission meetings during the fall.

Then those ideas would be presented at the Summit meeting in early '23. The output from these working sessions will ensure that the Council and Commissions won't be starting from a blank slate at our meetings this fall, but have specific issues to consider and ideas to build on, setting the stage for the summit.

We will be reaching out to folks to see if anybody is interested in participating in these working groups. We're going to have three meetings sometimes in September, and it will be intermingling of Council and Commission, and some NOAA/GARFO staff, and Science Center staff. Then lastly, we'll have the Summit meeting in February.

It will serve as the venue to discuss inputs from the manager meetings in the fall, with the goal of developing a final set of governance management and monitoring requirements for the process. Most of these recommendations are likely to require further development and discussion by the NRCC, and individual management groups to address.

But we're hoping to have a final report after this Summit. The following slides that I'm going to go over outline the four scenarios that were developed in the June workshop. The scenarios are not predictions, instead they are an outline of what might happen to ocean conditions and stocks, and other changes to coastal communities.

The scenarios contain storylines and suggestions on how fishing industry participants, managers, and other players might adapt, react to, and prepare for such conditions. The purpose of these scenarios is to act as the platform for conversations on preparing for climate change. What you'll see, what I'm presenting is sort of two framework structures.

It looks at two critical uncertainties. These are important factors that will likely shape our future, but could develop in unpredictable ways. The Y axis, which I know this doesn't look like a Y axis, but it doesn't fit on the slide, is stock production replacement in 2024, and it's either declining or maintained.

Next slide is the X axis, how unpredictable are our ocean conditions, and how well does science able to assess and predict stock levels by 2040. On one end of the spectrum, we could have very unpredictable changes, and conditions could be low, and ability to assess is poor, or we could have very predictable changes, conditions would be high, and our ability to assess would be good.

The framework that we built here, you'll just see in the different quadrants, starting in the upper left

hand side stocks are maintained, but hard to assess. On the right-side stocks are maintained but are really straightforward. Bottom left stocks decline and are hard to assess, bottom right stocks decline, very straightforward and easy to assess. The story that we created, and I will go over this more thoroughly in November at our meeting. But in our upper left quadrant we have our Ocean Pioneers, where the stocks are maintained, but they are hard to assess and predict. In this time, we have crazy ocean conditions, a lot of swinging, booms and busts. The weather is weird, but the ocean is resilient. We don't have any damaging tipping points. We can have dangerous fishing conditions though, but the payoff is still there for many operators, and you can still make some money.

The traditional stock assessments are less reliable. Seasons, locations and genetic diversity have changed considerably. We have real-time data from fishery operators, it becomes more valuable than traditional science. The ocean activity is dominated by entrepreneurs, technology folks and pioneers. Winners will have deep pockets, new technology and willingness to take risks.

The balance of power in fishery is shifting towards the larger operators. They expect more help from managers as traditional science is not delivering them information. Kind of how long can abundant stocks keep delivering for those big operators? Moving down to our bottom left. We are calling this the Stress Fractures, it's where stocks are declining and are hard to assess.

We have very unpredictable conditions that create climate tipping points. Storms create pollution and reduce quality habitat. We have a lot of disease; marine heat waves lead to die-offs. There is high stress on fishing operators, stock assessments are challenged by insufficient data, and the science is unable to help the fishery management community adapt.

Cost of fishing gets very high, so profits begin to sink. The government support needed to save domestic fishery, but only a select number of fisheries can get the support. Stocks experiencing range shifts are incorrectly classified as overfished, and these false flags undermine the management process.

Fishing no longer is a dominant activity in the ocean competing with other industries for space and labor. This is kind of a gloom and doom corner. Then moving over to the bottom right, we're calling this the Managing Decline. Science is good, but the news is still bad. We have warming trends with declining productivity.

The maximum fish size is smaller, the cold pool breaks down. We have range shifts as species move north and east, but not much range expansion. The science is effective and predictive, but its findings are not always great news. Agriculture becomes very prevalent as a source for seafood, and we have effective management puts limits on newly arriving species, allowing for the establishment of reproducing populations as they move into different areas.

Therefore, we have successful small-scale fishermen that can adapt to some reduced catch in limits, and these new stocks that are coming into their area. We have unsuccessful regions have not protected newly arriving stocks, resulting in an industrialization of the fleet, and competition from imports and aquaculture.

We have on the upper right-hand corner is Checks and Balances. In this we have predictable changes and tolerable conditions. The range expansion, as many stocks move predictably north and east, advances in habitat protection and climate mitigation are good for fishing in coastal communities. Disease is only apparent in a limited number of stocks. Science effectiveness improves, and is delivering effective ocean monitoring, real-time fisheries are reporting in through web, and population monitoring is going well. Carbon emission growth has been limited, and pollution is under control. The species composition has

changed, but management can provide a full and flexible balanced use of the fish stocks.

There is investment in other ocean uses and coastal uses that provide economic bounty to coastal communities, and the recreational sector is healthy, thanks to stable productivity and increased coastal wealth. That is our like super positive corner. As we move forward, we'll provide more information for these different scenarios that are presented here.

What we're asking for management bodies to do is think about, okay if we move to any of these corners, how do we really need to be more adaptable and flexible in our management process, in order to travel down one of these paths? It's not necessarily that we want to know how we change specific measures for this particular species.

But it's how does our process work, how do we interact with other states, how do we interact with the fishery management councils to make these changes. Thinking about big picture, switches, or maybe some stuff still works and we don't have to make those changes. That's all I have.

CHAIR WOODWARD: Well, after that cheerful presentation. I think we'll just end the meeting there, and we'll just go on home and enjoy what time we have left. Woo, anyway, seriously. We've got time, I don't want to give you short shrift. I figure maybe you're going to put a positive spin on this at the end. I don't want to miss that slide. Okay, all right. I saw several hands. Let's see, I've got Dan, Jim Gilmore, Tom Fote. Loren. All right, go ahead, Dan.

MR. McKIERNAN: Toni, do you think that there is appetite to try to amend laws?

MS. KERNS: We've talked about it as a core team is that that is something that might need to happen, or that we at least identify. If we want to be able to prepare for the future, these laws need to be changed, to allow for X, Y, or Z. It can be a recommendation that comes out of the group. Whether or not the appetite is there is hard to predict.

CHAIR WOODWARD: All right, Jim Gilmore.

MR. JAMES J. GILMORE, JR.: Toni, and that was great. I'm serious. That was very, very, very well done. It really kind of, as much as Spud said it was depressing, and it really does kind of show a big picture of what is going on. That is actually following up what Dan just said. I think for, like I said in ASMFC managed species, this is great.

But then we get to our jointly managed species, and the examples we've had the last couple of years, where I think the Commission could have fixed some things, like maybe a species like black sea bass. But it's a joint species, and Magnuson says no, so that is the end of the story. If we want to fix it, it's going to take us probably one to two years, because of the federal process. Same thing, it's like we really, a big part of this moving forward is that Magnuson has not had a major update since 2007. We didn't really have climate change when they were writing that version. You know the whole thing is about allocation, governance. All that stuff was really not a major issue. You know if we're going to move forward on this, that is an important thing to get fixed.

Granted, Bob said it yesterday. Nothing is happening on Magnuson this year, and it's been going like that for several years now. Well, we're just going to be in this endless loop of, well, Magnuson says no, so we can't do anything about it. Just as a recommendation, I think we need to be a little bit more broad than just bringing GARFO in on this.

I think at some point Headquarters really needs to come into this. We are all going to all be meeting in San Diego in November, or whatever. I'm not sure if this is ready for primetime, but we really need to start having those discussions, and even the suggestion about maybe some of the key federal

government elected folks, their staff to be involved with this.

Because when we get to the end of this, if we've got this great document that says here is how we fix it. Then we go, well, but Magnuson says no, so we're just going to be spinning our wheels. Just some suggestions, and an important thing to do. But we've really got to look at the end game of, when we get to the end of it, are we going to have any impact? Thanks.

CHAIR WOODWARD: Yes, Toni has got a response to that.

MS. KERNS: Jim, just don't forget that this isn't just GARFO sits. We're doing this with all three management councils, GARFO, the Science Center, Headquarter staff, the Southeast Region. We have all entities involved. In addition to that, NOAA Headquarters did present a Climate Governance Strategy that they are initiating.

We are hoping that they will use the recommendations that come out of this Scenario Planning process, to help guide their policy. I do see that Mike Ruccio has his hand up on the webinar. Spud, if he wants to, I'm not sure if that is what he would be getting at, but Mike, I've unmuted you, you just have to unmute yourself.

MR. MICHAEL RUCCIO: Okay thanks, hope everybody can hear me, and apologies for not being there in person. We had a little Covid on our vacation last week. Better to spare you all from exposure. But you know Toni really stole most of my thunder, why I shot my hand up. You know Jim and Dan; I appreciate your comments.

This is something that we are both involved with, the actual scenario planning for the Atlantic Coast, and engaged with kind of on a national and broad scoping scale. We are continuing to think about and have a number of kind of efforts, Toni mentioned one being looking at governance. We are trying to not get in the way of Scenario Planning, and see what they kind of come up with for governance recommendations.

But also, cognizant that governance can be really tricky and difficult to navigate, and if we need to kind of stand behind the process, and provide additional guidance, we're ready and poised to do that. But we have a number of efforts, I guess I would say, that are underway that are looking at shifting distribution, changes in climate, and really to the key point that I think you were raising, Jim. Does Magnuson play well in that sandbox or not? You know we have limits, in terms of what we can do and how we can influence things like reauthorization, but we've had, you know, we may have seen Janet last year up on the hill when we had the Huffman field hearing.

We've had continual conversations with a number of our authorizing committees, in both the Senate and House side. This is something that we're actively engaged in, both public facing and behind the scenes, and you know happy to have more conversation about it, if that is helpful.

CHAIR WOODWARD: Thank you, Mike. All right, Tom Fote.

MR. THOMAS P. FOTE: Yes, I've got two points, one after listening to Jim, and listening to him on the phone. I'm thinking that maybe the annual meeting would be a good time to invite some legislators in to have a workshop during one of those particular times. I know Congressman Pallone wants to come over, because he's going to give us a greeting.

But, wouldn't it be better if we basically sat around and talked about this and the Magnuson Stevens Act, and where we were? If that is what you presumed, I will try and set that up. But yes, and get one of our Senators or anybody else that would like to send staff. You know it might be an opportunity if we do something like that. That was my first point.

The second point is, I've just gone through a three-year process with Rutgers University and DEP, mapping the state of New Jersey, so what do we do with aquaculture, and where were the areas that might possibly use as the water rises in New Jersey. Spent a lot of time, a lot of money. But the amazing stuff is the USGS, all the information that we put in there.

You can put 60 overlays on these maps now, the state of New Jersey. I mean Joe could probably talk about it a little more than I, but I have been through the process. It's out in draft form, but that's what I could imagine what most states are beginning to look at. Where are the fishing areas. I'm talking about it at MAFAC, because I sit on their climate change committee, but it's really all state waters that I'm talking about mostly.

But it does give some parts to the federal waters, where the fishing grounds are. But it is interesting to look as the water rises, what are we going to lose? Where we actually can move docks to, where we're going to have aquaculture beds. We could share that with the Commission, it's still in draft form, but we're back completing that. Joe, do you have anything to follow up on that?

MR. JOE CIMINO: No, I don't have anything.

MR. FOTE: Yes, it was a lot of work, and really, I'm going to thank a lot of people for doing that. If you want, I will get involved in this committee that you are basically putting together.

CHAIR WOODWARD: I think that would be a good prompt for Toni to maybe talk about what we're going to do at the annual meeting, in regards to Scenario Planning.

MS. KERNS: Tom, I don't know if we would have time for such a workshop at the annual meeting. But, at the annual meeting we will be, as a Commission, sitting down and talking about what types of recommendations do we think are needed to change our governance, and that is our governance, Council, NOAA. What do we think needs to change, in order to respond to any of these future scenarios?

It might be something that you want to invite them to, to listen to, but we will be spending a fair amount of time together, discussing and bringing forward recommendations that we can then take to the Summit meeting, where all of the bodies will get together, and try to bring something forward. We will have some seed ideas that come out of these brainstorming sessions that we're going to do, with the different folks from all of the bodies involved.

CHAIR WOODWARD: All right, thanks. All right, Loren.

MR. LOREN W. LUSTIG: Thank you, Toni, for a very interesting and informative report. You certainly used correctly the terms gloom and doom. In speaking of the managing the decline. You did bring out the concept of aquaculture. I would be interested in learning a lot more about aquaculture, and probabilities for ramping up those processes, as they become more sophisticated, increased efficiency, expanding. But I would wonder, is that only going to provide a tiny fraction of what the public has been used to, in terms of the availability of seafood for consumption? Even under the best scenarios, it's still just a very tiny fraction.

CHAIR WOODWARD: Yes, that's a big subject, and I think we all know there is some potential, but obviously the species diversity that is put on the tables of America would change drastically, if we had to shift over to aquaculture-based. I mean just personally; it wasn't too long ago I was skeptical that anybody would eat tilapia.

Now, you can go to just about any restaurant, and you see tilapia on the menu. But that's not necessarily a substitute for red snapper, but it is what it is. That's a big subject, and you know perhaps in one of our future meetings that is something we could delve a little deeper into, you know for the benefit of the Commission. Eric.

MR. ERIC REID: You should pick a different restaurant, in my opinion. That's the first thing. I'm not really sure where to start. This is a big topic. But I'll start with saying that the Scenario Planning workshop was two days or three days, it was held up the street. Jonathan Star was the facilitator. He did a fabulous job. There were 70 something people in that room, and he really did a great job, so he should be absolutely commended.

You know it's interesting that the scenarios are not all doom and gloom, but that's what they heard was all doom and gloom. Well, depending on how you want to spin that compass, so you can have a lot of them. My concern is, I've got a lot of concerns, and I don't want to have a half-full glass, but you know we might as well talk about it.

One is, when we had the CCC meeting in May, was it in May? I don't remember when it was. Anyway, the Commission is not in on that. But that is when the Feds rolled out their idea about this Scenario Planning. They have their own effort that, no offense, Mr. Ruccio, my friend, Mike. But I am not sure if those efforts are running in parallel, or they are going to intersect at some point. That is unclear to me. We really didn't know a lot about that development of the Feds idea, until it was rolled out in front of the CCC. I don't think people were all that thrilled about it. You have these two things happening at once, and I am not sure if the goal for each is the same. That is the first thing.

We have to consider that. The second thing is the timing of this, in my mind, the timeline not the timing. The timing is fine. But the timeline is really, I think, that is pie in the sky. I mean we have our meeting; New England has our meeting in September, the end of September, and we have to put this on our agenda.

But we've got a lot going on in that meeting. We might be able to squeeze an hour and a half to talk about it, and then our next meeting isn't until December. The effective input of our Council on this is not going to be that great, because when Toni did here presentation, which you did a great job, Toni.

I'm looking around the room, and people are going, what the hell am I looking at here? My Council is going to have a lot of questions, and they're going to want to talk about it, but an hour and a half isn't going to cut it. But that is all we have. That's the reality of it. You know Bob, you were in the Scenario Planning. I don't know how much staff time you have for this.

New England, you know our staff is busy. This new, The Management Working Group. I mean I don't know where it's going to all fit in, and to get this done by February. I think that is extremely ambitious. Fast is usually the opposite of good, so I think that we really have to look at what input you want. Do you want it fast, okay fine, but it's not going to be good. That's my opinion.

But it's really at this point, this is theoretical fisheries management that is going to be applied in a very near future, and that worries me. The Feds are concerned about how to change management governance on species that shift. We of course have different stakeholders that we have to be accountable to, and we have to take our time and do a good job.

Bob, I don't know if you want to speak to what your staff time looks like. You know certainly I'm not the Executive Director of New England, but I've got a pretty good idea what our timeline looks like, and it is not going to meet what has been presented today. I would rather do good than fast. That's my opinion.

EXECUTIVE DIRECTOR BEAL: Great, thanks for the invitation, Eric. You know this came along at a great time, because Toni was sitting around, really didn't have anything to do, so I gave her something to do. It worked out pretty well for us. But no. Yes, everybody is flat out busy, you know and as Toni mentioned a minute ago, or alluded to.

You know our annual meeting first week in November, you know looking at that agenda, there are some pretty big things on there. You know horseshoe crab that came out yesterday and menhaden. Those are all going to take a lot of time. Responding to getting a striped bass stock assessment and others. We're not going to have a half day or a full day to set aside and have this conversation, that I think is needed, to really dig into this and figure out collectively. Among 15 states, where do you want to go? What feedback do you want to give on the interactions with the Councils? It's complicated. If it was easy, we would have done it a long time ago. Yes, I think we're in the same spot. It's busy, it's an ambitious schedule.

But we'll, you know I think keep pushing is important. We're in a spot where, you know you mentioned the two tracks that are going on, the federal activities on governance policy and this Scenario Planning. The part I don't know is kind of how we fit into that federal process. We're the Commission, right, so we're kind of out on our own.

ASMFC chiming in on Magnuson Stevens potential changes is a little bit awkward. It doesn't really guide what ASMFC does, but indirectly it does. There are a lot of pieces here that need to be worked through. I'm not sure exactly where we find all the time to do it.

CHAIR WOODWARD: Yes, I appreciate your comments, Eric. When this first was even conceptualized, I was thinking, wow! I mean it is an ambitious undertaking, trying to look into our future that none of us can see into. But trying to make plans for that. As far as our role. I mean as Bob said, we obviously have a vested interest in what happens.

I have to frequently remind folks; nobody lives in the EEZ. They live in our states. They look to states to represent their interests. We're a good body to do that. We have a member of the public who has been very patient, and had their hand up. I'm going to, at this time, use my discretion to afford him a couple of minutes for a comment. Then we will move on to Dr. Jon Hare for our next agenda item.

MS. KERNS: Jim Fletcher. I've unmuted you on my end, you just need to unmute yourself.

MR. JAMES FLETCHER: I found it interesting sitting here. We talk about aquaculture in the last few minutes, and yet the federal government does not have an aquaculture plan. In North Carolina we tried to put aquaculture in the EEZ. Coast Guard, Corps of Engineers, everything was used to stop it.

They didn't have a policy, but they stopped it. Now, on menhaden, no one mentioned the hybrid menhaden, and do we have the ability to do stock enhancement, to raise and release breed eggs, from there up? Every one of these species, I hear them talk about science, but we are not doing anything to enhance the species for the last 20 years.

We have ignored the science of BOFFFF, which stands for big old fat fecund female fish. If the models the staff is using were correct, they should have pointed out that we should have been leaving the largest fish. The United National Fishermen's Association has argued for God knows how long, to stop killing the large summer flounder, the females.

Yet ASMFC and the Council, has managed for the prestigious elite, and the prestigious elite is sitting around the table, are those that can afford a 20-to-30-foot vessel and a pickup truck to buy it, or private property to put the boat behind, so that they don't have to report. ASMFC has the chance to recommend cell phone reporting, so we don't have to say, oh we don't have the data. My question is, and it's very simple. Are we managing fish for food, or are we managing fish for sport?

CHAIR WOODARD: All right, Mr. Fletcher, thank you. I appreciate your comment. We need to move along. Thank you for that comment. We appreciate it. Yes.

MR. PATRICK C. KELIHER: As I've sat here and listened to the comments around the issues of

Scenario Planning and climate, and the timing issues that Eric Reid brough up. It may behoove the Executive Committee to talk a little bit about this, and even consider maybe a day for the Commission in a special meeting to talk more about this.

Because these issues of changing laws, the governance components of this, all impact the work that we're going to do here. It may be worth, especially considering the timeframes that they're talking about, rolling up our sleeves and having a broad conversation about it.

CHAIR WOODWARD: Do you want to host that up in Maine for us, some beautiful island somewhere?

MR. KELIHER: I do have an island. I'm not sure all of us would fit.

CHAIR WOODWARD: Good idea, and it is certainly something. It is not something we need to give short shrift, and I think that is the challenge is we're like jugglers that are really good, but even the best juggler in the world can only juggle so many balls at a time, and we're always pushing the boundaries.

REVIEW OF NOAA FISHERIES CLIMATE ECOSYSTEM FISHERIES INITIATIVE

CHAIR WOODWARD: With that I'm going to go into our next agenda item, and call on Dr. Jon Hare to do a review of NOAA Fisheries Climate Ecosystem Fisheries Initiative. Thank you, Dr. Hare, welcome!

DR. JON HARE: Thank you very much, and it's good to be here. When I introduced the Climate Ecosystem and Fisheries Initiative, but I'm glad I have the opportunity to follow Toni, because you just heard about Climate Scenario Planning, and part of those scenarios is sort of the decrease in the effectiveness of science to inform decision making.

That is what we, sort of NOAA Fisheries science, NOAA science in general have been working hard to sort of counter that. Our goal is to improve the science that we can provide to you, to help you make the decisions you need to make. That is where this Climate Ecosystem and Fisheries Initiative really came out of, was this interest and intent in NOAA improving the science that we make available to you.

Again, Climate Ecosystem and Fisheries Initiative, the vision is building the decision support system needed for a climate resilient fisheries ecosystems and coastal communities. You can think about this as climate models to science advice to decision makers. I'm just going to step through a little bit of detail about it, just so you are aware that we are working to improve our science.

What is the Climate Ecosystem and Fisheries Initiative? It's a cross-NOAA effort to provide climate informed advice, to reduce risks and increase resilience of marine resources, and the many people and businesses that depend on them. Cross-NOAA, it's the Oceanic and Atmospheric Research part of NOAA, which is the climate modeling part. It's NOAA Fisheries, which I think many of you know well. It's also the National Ocean Service, who are working together to try to develop this Climate Ecosystem and Fisheries Initiative.

What are we going to do? How are we going to do this? Our intent is to build end-to-end ocean decision support system, using expertise across NOAA and management partners, including Atlantic States Marine Fisheries Commission, to provide robust predictions, forecasts and projections of future marine ecosystems, including human dimensions, how humans intersect and use those ecosystems.

We very much view this as a scientific initiative, which is going to improve your ability to make decisions, so users of Atlantic States Marine Fisheries Commission are an integral part of this initiative. The intent is to inform existing management pathways that include the Marine Fisheries Commissions, Regional Offices within

NOAA, the Fisheries Management Councils, Marine Sanctuaries, among others.

This is a complicated figure. Just think of it more as conceptual. We view three intersecting parts of this initiative. On the left is the development of science research modeling observations. The middle is developing the operational capacity to provide that science, so operational climate models using standard data formats, and sort of an open information hub, where anyone can go and get climate model output.

Then on the right side is the engagement and extension, where we are working actively with you, with other management partners to use this operational science, climate informed operational science. Just to give you like a little more tangible idea, Oceanic and Atmospheric Research, the climate modeling part of NOAA, has already developed regional climate model grids.

They've developed a West Coast Regional Climate model, an Arctic Regional Climate model, an East Coast Regional Climate model and a Great Lakes Regional Climate model. The intent is to use these regional high resolution climate models, to inform the science that we are providing to you. These model results will be provided through a data portal, which is already in existence.

Physical Sciences Laboratory in Boulder is already providing climate model output to anyone. These are sort of the current class models, they are about a degree in resolution, so you know 60 nautical miles of these high-resolution regional grids that have been developed, or 5 to 10 nautical miles, so higher resolution, which is important, in terms of getting the climate right for a particular region.

We have the climate models under development, we have this information hub under development. Then what the initiative envisions is that each region will have a team of scientists who are trained in using the climate model output, and are working with you to develop science advice that you need to make decisions, and we call these Decision Support Teams.

Depending on the user, those Decision Support Teams could link the climate models to habitat and distribution mass. They could link those climate models to the species forecast and projections. They could link those climate models to ecosystem- wide forecast and projections. They could link those climate models to the tipping point and threshold analyses. Then some of the applications that come out of those analyses are Scenario Planning, Risk Assessments, ability to help with rapid responses, consultation in the regulatory review processes, management strategy evaluation, and the rebuilding and recovery plan.

Just want to emphasize, you know we had the conversation about Climate Scenario Planning. Out of that effort, no, go back one, please. Out of that effort there is going to be some ideas about what management actions could be taken, or what governance changes could be made, or what legislative changes can be made.

The intent of this initiative is to be able to provide the climate informed science advice that you will need to take those steps, you know using the best science available. Where are we with this initiative? We're putting the pieces together as you've seen. We've had it reviewed by the NOAA Science Advisory Board, and they reviewed it very favorably.

We've requested 20 million dollars in the NOAA FY23 budget request, 10 million dollars to NOAA Fisheries, and 10 million dollars to OAR. We recognize that we need to do this, and we recognize that we need new resources to do this. That is where this budget request has come from.

We're going to continue our pilot projects. We have one in the Northeast, one on the West Coast, one in the Gulf of Alaska, and one in the Bearing Sea. I'm happy to talk about those if there is interest. We're engaging with National Ocean Service in the planning and program engagements,

and working to communicate this to our external partners, including Atlantic States Marine Fisheries Commission.

Then we're updating our buildout plans for FY23 and beyond. We also understand that there is the need for additional observation on research activities, so we're starting to do the planning there. But that's it, all I have for my presentation today. Again, the intent is to improve the science that you are able to use in making climate informed decisions. Happy to answer any questions, thank you very much.

CHAIR WOODWARD: Thank you, Dr. Hare, any questions for Jon? Jay.

DR. McNAMEE: Thanks, Dr. Hare, that is awesome. I wonder, just I'll focus in on one element. Is the idea, so thinking about, I think it was like the third little icon down. You know stock assessments and projections. Is the idea that you would have this team that might look at, you know a stock assessment.

It's probably just a standard statistical catch at age model, and they would build either, create a model that could incorporate climate information, just for sake of argument, temperature, maybe impacts on recruitment. Hopefully you get the gist of what I'm getting at, but is the idea that you would have a team that might take the existing tools that are being used, and modernize them, you know to kind of provide the climate element into the information that's produced out of that process, or is this something that has a longer arc than that, something that is not quite as immediate as I started thinking about.

DR. HARE: I think it's in the immediacy. You get all the pieces. You know we've been trying to sort of advance climate informed advice for a number of years, Climate Science Strategy in 2015, building on that. In the Northeast Region, I think we're in an excellent place to start taking advantage of this immediately.

There is the Woods Hole Assessment Model, which is a state-spaced model, which can include environmental components and any number of parameters. What we have been missing in applying that model to projections, is the environmental projections of what the future will be. The climate modeling, the high-resolution climate modeling will provide that environmental forecast going forward.

That we can then link to this existing Woods Hole Assessment Model, to provide climate informed projections in the stock assessment arena. There are other examples where we can play that sort of scenario out. But using our current tools in the immediate, and then using that to help build momentum to further advance those tools, and bring new tools on board. I really see this as a helping now and in the future initiative.

CHAIR WOODWARD: Any other questions for Dr. Hare? I don't see any. Thank you for being here. We look forward to it, it's another ambitious undertaking, but certainly one that is going to be vitally important for us to move forward and make the best decisions we can. Thank you.

DR. HARE: Thank you very much for the opportunity.

UPDATE ON THE RISK AND UNCERTAINTY POLICY

CHAIR WOODWARD: All right, at this point I'm going to turn it over to our resident guru of risk and uncertainty, Dr. McNamee, for his presentation.

DR. McNAMEE: I was thinking self-appointed risk and uncertainty Tzar, if that is okay. Thanks everybody. I've got a presentation here. It's a little long and it is stuff you've all seen, maybe more than once at this point, so I'm going to kind of cruise through it. The point of what we're kind of giving you this update for. Start thinking about a couple of questions, which I'll kind of pose up front, and then again at the back end of the presentation.

Is Maya controlling the slides? Thank you so much, Maya, and you can flip to the next one. We'll kind

of cruise through a couple things in this presentation, a little bit of background, just to, you know maybe you're thinking about risk and uncertainty incessantly like me. But if not, I'll kind of reintroduce it.

We'll talk about the tautaug pilot case that we went through, and then these are the questions that we want to kind of focus in on at the end. We're just trying to find a path forward here on this. Some next steps, do you want us to conduct another pilot case? You know what about a data poor version of this? Do you want us to kind of start looking in to that? We've been generally we've been dealing with data rich situations so far. Should we be looking at only ASMFC managed species? Then could we broaden this out? So far, we've been kind of talking about it in a context of reference points and projections, but this could be broadened a little bit. Those are the questions, so I'm introducing them to you now, and we'll put them back up at the end. Just recall that the draft Risk and Uncertainty, we've got a policy and a decision tool, and the point of all of that is to get us to an appropriate and kind of defined and transparent risk tolerance level for some sort of a management decision.

One important distinction is, this isn't management strategy evaluation, it's a little different. This isn't a tool to kind of look at Management Idea 1, and Management Idea 2, and kind of look at the tradeoffs. That is not what this is. That would be a Management Strategy Evaluation. This is more to get us to a point where we can make a more informed decision about, you know generally what we offer as a starting point is, we want our 50 percent probability of reaching the reference point, for instance.

Then sometimes we'll kind of throw in a continuum, but it's not thought about in the context of, it is thought about in the context of risk, but how we're getting to these numbers is not very transparent. That is the point of this, the tool that we're using. Just a schematic of what the tool is. You've got a series of technical inputs there on the box, if you're looking up at the screen, the left that go in.

Then on the top right-hand side you have a series of weightings. That is the management board's opportunity to say, this one is important and this one is less important. We kind of weight these things in the model, grind it all up in the tool, and out pops a risk tolerance out of the tool. Again, that is usually the goal probability of achieving a reference point is what we've been kind of focused on. It's a simple one to kind of think about.

When we're looking, you know we've gotten a stock assessment and we get some projections. What we're often looking at is, you know a point estimate, which is usually just kind of the center of a distribution of some uncertainty in these projections, so we'll conduct like 1,000 runs with these uncertainties, and you get these different potential outcomes.

Right in the center of it is usually the value that we kind of focus in on. Kind of a default that we use a lot is to say, we are going to use a 50 percent probability. Basically, what we mean by that is, so in the case of fishing mortality you're going to take that uncertainty around the center, and you're going to split half of it will be above that point estimate, and half of it will be below it.

You have equal probability of being above or below the middle of all of that uncertainty. Often what we want to do though is modify that a little bit, depending on the situation that we're in with a particular species. You know the question we often wonder is, well, what is better, a higher or a lower probability?

In the case if we wanted to be more conservative, what we would do is we would set a 60 percent probability, and what we mean by that is all of that uncertainty around that you see up there in these different shades of blue. Those are all potential outcomes, given the uncertainties that we have in the species that we're looking at in the projections. What we're saying is, we want 60 percent of those

potential outcomes to be in the good zone, so below the F target that we're looking at. In a smaller number of those, 40 percent will be above it, so there is still a chance that you're going to be above the reference point of where you want to be, but more of the probability is putting you in the zone where you want to be. That is just a quick trip through the probability discussion that we often have, when we're trying to decide what to do with these projections that we get from stock assessments.

We did a tautaug pilot case, and again the tautaug situation is there are four regional areas, four regions for the tautaug fishery. You can see them up there. This is another schematic, so we had the Tautaug Board got together and we did some online surveying, and we came up with these weightings, so that is a process that we kind of worked on with the Tautaug Board.

It seemed to work pretty good, and so we might try and implement that again. Then we have the technical inputs that came in from the stock assessment folks, and the Committee for Economic and Social Science. They weighed in to fill in those technical inputs, and then we produced a goal probability.

There are kind of two phases. Phase 1 is the development of the decision tool, which is species specific as we have it crafted now, and we did all that for tautaug, so that was great. Then we were ready to move into Phase 2, which is after you develop the decision tool you want to use it. We got to that Phase 2, and what happened was we had the unfortunate situation of good stock status for tautaug across all of the regions.

There was no management action needed for tautaug, so it kind of blew up our pilot test case here. What we did instead was we said, well okay, we can make believe. We provided a couple of different hypothetical scenarios, just to kind of show what could have happened with tautaug had the news been bad and not good.

Just another schematic. We got through Phase 1, we did all of those boxes, and we ended up producing some projections, and because we didn't have kind of a real-world situation to work with, because there was no management action that was triggered by the outcome of the last tautaug assessment. We developed these hypothetical scenarios.

The main things we looked at were, you know no difference, if we needed no difference in harvest, or if we needed between 5 and 10, you know a reduction of 5 to 10 percent in harvest for tautaug. We were able to do that, and this is what came out of that. These were the goal probabilities.

This is without the socioeconomic consideration, so it includes everything, all the technical elements of stock status information, all of these different types of uncertainties that we wanted to incorporate, ecosystem importance. This is where we came out is that table on the bottom there. For the Mass/Rhode Island Region we were at 54 percent.

These are the goal probabilities. Were we to take management action, this is where we would want to kind of end up. Just for reference, tautaug is one of these cases where the default is 50 percent. You can see in the case of Mass/Rhode Island, we would have wanted to be slightly more risk averse in that situation, if you were talking about fishing mortality. Again, we did a couple of scenarios of different potential changes in harvest levels, and the other thing we did was we used some alternate weightings for the socioeconomic components. The Board went through a weighting process, and we got those directly from the Board. What we did here was we showed you, just to show the effects of the tool and what could happen, we changed those up a little bit, just to kind of to show you what the potential outcome is.

This table just shows you that, I think the take- home here, I won't walk through all of it, I did that last time we talked about this. It's there, and I'm happy to answer any questions on it if you have any. But what I want to do is look up there, look at the numbers, and notice that even with, in some

cases, some pretty dramatic changes to like the weightings, or the amount of harvest reduction.

Those risk probabilities don't change all that much, a couple of percentage points here and there. The point is, you know you're not going to get wild swings in this stuff outside of those, the technical inputs. I think some people were worried, in the discussions we've had on this about kind of instability. You know you're going to get wild swings. What we found in this hypothetical situation is no. You know a couple of percentage points, which can be meaningful of course, but not like 10 to 15 to 20 percent. We weren't getting wild swings like that.

Okay, I got through it all. I will stop there. That was kind of a trip through where we've been. If you go to the next slide, Maya, here are those questions again, and so you could read them, we put them onto two slides here, so we'll kind of flip back and forth. But we're basically looking for a little guidance, and there is kind of like two main paths that we could go down here.

You could say, Hey Jay and Sarah, please do some more pilot cases, you know do some more testing before we adopt this, or we could go ahead and move forward with adoption, not today. But if that was something you are interested in, I think between now and even the annual meeting, I could confer with Sarah.

We could kind of scope out what that looks like, and come back to you to sort of give you at least our idea of what kind of finalizing this would look like, and then how it would move forward from there. The reason I pose it that way is, you know there is really not anything coming up in the very near future. My personal fear is, you know red drum is like one we could potentially test, and that's one of the earlier ones, and that is 2024.

If we wait until then, and we don't talk about this again until then, I'm going to have to go through this whole presentation again, and walk you through all the stuff that we did. You know it's been a long time that we've been working on this already, and this would push it out even further. But understandably, and this was the advice we got after the tautaug version was, you should test it on another species. The problem is that the next species is kind of a ways off.

We're looking for guidance on, move forward or do another test. There is a notion of how about data poor species. We haven't really tinkered with that yet at all. Again, there is nothing on the horizon that would give us sort of a real-world version of that, but we're good at make believe, so we could kind of come up with something. Then next slide, a couple of remaining questions there, like should we just be thinking about this? You know the jointly managed species, they have their own risk policy already built in, so maybe we don't need to do anything there. Although I would suggest maybe it could be valuable in some of the specification work that we do at the Commission, with regard to the jointly managed species, which I don't think would necessarily interfere with the existing risk policy.

Again, so far what we've worked on have been kind of data rich situations. Another one, we could test it out on a data poor situation as well. Mr. Chair, that's it from me. Hopefully that didn't take too long, and happy to take any questions.

CHAIR WOODWARD: Thank you, Jay. Questions. Lynn.

MS. LYNN FEGLEY: Thank you, Jason, it's great. It's just really fun to see this go into implementation. I have a few questions, and the first one is, in the tautaug example. The Decision Tool was created, but you didn't get to implement, because you didn't have to, because stock status was fine. The question is, how long does that Decision Tool stay in play? Is it in play for the next assessment? Is it done, or is it an idea that it would be rerun every time a new management action happened?

DR. McNAMEE: That's an awesome question. I don't know that we've talked too much about that. I suppose, this has a shelf life. I don't know that it's

a super long shelf life, but there is not reason to think that you would have to redo, for instance the weightings over and over again, unless there was some impetus to.

Maybe what could happen prior to a management decision is just a quick half an hour review of those weightings, to see if they still make sense to people, or maybe the situation has changed, and you wanted to tweak one. We could have that discussion at the Board, and that was always the intent is that we're having these discussions, they get recorded.

We know why we changed these things, it's sort of documented. I think once you get it developed, it's like tinkering, but not like a full-blown redo each time. I think Sarah might be out in radioland somewhere, if she wanted to weigh in on that. But hopefully that was adequate.

MS. SARAH MURRAY: Hi, yes, I am here, and can chime in if that is all right with you, Mr. Chair.

CHAIR WOODWARD: Sure, go ahead, Sarah.

MS. MURRAY: Thank you. Yes, all of what Jason said was correct. I think it depends on different species to a certain extent. But a lot of these components, for example ecosystem importance. They are not likely to change, so it would be more a case of the TC taking a quick review of something.

If they happen to know that some new study came out that really changed the scientific world's thinking of a species role in the ecosystem, then for example that might change, or the environmental uncertainties run, if there was a new study that indicated a species was a lot more sensitive to temperature than previously thought, then that might change. But some of those otherwise can stay pretty static. The socioeconomic components would be updated, based on the current data and the stock assessment components would obviously be updated with the current stock assessment information. However, I think once the TC and CESS has gone through this the first time, it should be relatively straightforward. I think a lot of it is getting used to the process.

CHAIR WOODWARD: All right, thanks, Sarah. I've got Joe Cimino and then Justin Davis and then Pat Keliher.

MR. CIMINO: Lynn, that was a great question. Thanks, Jay. I agree, I'm worried about like the timing of this. But I do think cobia is a great candidate species, and I'm kind of wondering about its partner. Spanish and cobia are their own Board now, and Spanish just went through an assessment. You know looking back at some of the more recent assessments that just happened, if other Board members think that Spanish might be a potential candidate.

Then you know I don't know about data poor, Jay, but I agree with you. I kind of would be interested to see how this would play into our jointly managed species with the Council's Risk and Uncertainty Policy. Lastly, Jay, I just want to thank you for the probability illustration. I think we need that at all our striped bass public hearings, to kind of counter the, we're just managing on the flip of a coin.

CHAIR WOODWARD: All right, Justin.

DR. JUSTIN DAVIS: This follows a little bit from Lynn's question, but Jay, am I correct that even if we left the weightings in place and didn't touch those, that the probability recommended by this process could ultimately change over time, because some of the technical inputs, I think, come from the stock assessment, so as stock status changes, we could end up with a different probability, even without changing the weightings.

DR. McNAMEE: Yes, thanks, Justin. No, absolutely, and thanks to Sarah for kind of broadening out. I was thinking Lynn's question was directed towards what the Board might have to do. The technical inputs would get updated, right. They would be

different for each new process. But that again would be sort of an automated process. They have these numbers, they just kind of plug them in. The CESS information that's a little different. I think that is a bit more work. Those technical inputs get updated, so yes, those would change.

CHAIR WOODWARD: All right, Pat Keliher.

MR. KELIHER: Jay, this is great. Those of you around the table are going to be much more in depth about commenting on the technical side of this. But from a policy perspective, I'm looking at your last question to the Board, should we require the Commission to conduct this process when a relevant action is being expected. But then you talk about the data-rich component of this. I think that speaks to the fact that we probably should look at a data- poor species, to make sure that we have the information that we need or the comparison that we need.

CHAIR WOODWARD: We've got a request before us, and you've got the Tautaug Board has obviously expressed their opinion of applying this to another species and fishery. What is the general consensus of the Policy Board here regarding at least that question? Lynn.

MS. FEGLEY: I hope I'm going to address that question. I might not. But I was just going to say that I think I like the idea of doing another test case, and maybe cobia, red drum, I think either one of those would be great. But I also wanted to flag that I think part of this too needs to link to, because part of the idea of this was transparency.

But codifying to the public how we're arriving at the uncertainty level. I also think we need to think a little bit about how we're transmitting this Decision Tool to the public, and whether that goes as a piece on the species website. You know if you look up tautaug, where it's got all the stock status fishery. Maybe there is a little section add-in that says, you know what's our risk tolerance. I just wanted to slide that, but I think another test case would be good.

CHAIR WOODWARD: Sort of what I think I'm hearing is another test case in a real-world situation, and maybe a data poor simulation would be informative. It sounds like, I think at least from what I'm hearing, John Clark, go ahead.

MR. CLARK: Just based on Jay's presentation. If we do ask Jay to do those test cases, given the timeframe he was talking about there. That would push finalization of this off for another two, three years, correct? Is it possible to kind of do both to finalize the policy while those would be the first cases that you used; you know kind of an actual tool in the management of those species?

CHAIR WOODWARD: I guess that's a question for us, really. If we approve it for use, and we don't like what happens with it, because we don't feel like it was necessarily vetted to a satisfactory level to understand it. You know I don't have strong feelings one way or the other, but go ahead, John.

MR. CLARK: As Jay showed with tautaug. It doesn't change things that much, but it does add more inputs to the model, which I think would help with the public, to show that we were considering everything. Personally, I don't have a problem with going ahead and finalizing it, just because, and I would like to see those other species done, but you know as Jay said, we're pushing the whole decision off then for several more years, if we do that.

CHAIR WOODWARD: Cheri.

MS. CHERI PATTERSON: I agree with John. I think we should finalize this as far as it has gone. I presume that it will be going through modifications considering its infancy at this point in time. In the future it will go through future modifications as we learn more. I agree. I think that a data poor species would be very informative for me to see how this acts, and I certainly don't mind having one of the southern species cobia, red drum brought forward.

But I would like to see how the data-poor species reacts. Thanks.

CHAIR WOODWARD: Sorry, Erika, for skipping over you.

MS. BURGESS: It's okay, Mr. Chair. This is very interesting. I don't know if everyone around the room knows that the South Atlantic Council has been working for the last four years on their ABC Control Rule, which is intended to set the management uncertainty, so very similar to this. But this considers different parameters, more parameters than what the South Atlantic Council is looking at. To that first question up there, it makes me wonder. It makes me a little hesitant to think that Spanish mackerel might not be the best first test case for this.

Spanish mackerel is being reviewed by the SSC today, and we expect there to be some revisions to the assessment, hopefully by NOAA Fisheries after the SSC has their discussion on it. Reading the last sub-bullet there that it's only applicable to data rich quota managed species. I think that red drum then isn't a candidate, because the management goal for red drum is an SPR target, it doesn't produce a quota for the stock to be managed at.

CHAIR WOODWARD: All right, Chris Batsavage.

MR. CHRIS BATSAVAGE: Yes, I was wondering if Spanish mackerel, how that would work, being a Council managed species first and foremost. Although the timing for the stock assessment would be good. Maybe an idea to close the gap between the 2024 assessments and now.

It might cover the data poor aspect too is, we have a black drum stock assessment that should be available by early 2023. I'm not sure if that is a good candidate. I mean I think timing wise it might be, but assessment wise to the risk and uncertainty tool, maybe not. I'm just throwing that out there as a potential idea.

CHAIR WOODWARD: Go ahead, Jay, you want to respond.

DR. McNAMEE: I had actually started to think in the same way as Chris, so that could be sort of a middle way here is, we don't have to wait all the way into some point in 2024, we could, you know black drum I hadn't realized was coming up that quickly. But I was even just thinking, we could take a data poor species and just apply it to that.

Now again, we would get into the situation like tautaug, where there wouldn't be like impending management action. But maybe with black drum there would be. That might be a way to kind of keep the momentum going, and not have to wait, but not get too far out over our skis. It sounded like there was some hesitancy amongst the Board.

CHAIR WOODWARD: Erika.

MS. BURGESS: In that case with black drum, we're in the same scenario with red drum, so would you look at your risk and uncertainty for achieving your SPR goal, rather than basing on a quota. Because I think about red drum. We actually are aiming to exceed that SPR, and so that's kind of like a minimum threshold.

DR. McNAMEE: It's a good question. It seemed like the same situation that you brought up for red drum. I think it should work. It's just a different metric. But I think, I would have to understand a little bit more about the kind of technical infrastructure there, to know if it applies directly. But that makes it fun to look at and try and figure that out. I think we could investigate it at least.

CHAIR WOODWARD: Thanks, we sort of need to wrap this up. I know I certainly don't want to give this short shrift, because it's extremely important. How about contingent approval of the policy, and do as has been suggested to run black drum through as a data poor, see how that comes out. Revisit after we get the results of that, and see whether or not we need to tweak it. Does that sound like a reasonable sort of middle ground, as Jay described?

MS. MURRAY: Apologies, Mr. Chair, I don't have a way to raise my hand, since I am an organizer. But would it be all right if I chimed in here on timing?

CHAIR WOODWARD: Sure.

MS. MURRAY: I may be, someone correct me if I'm wrong, but I think I was hearing an early 2023 deadline for black drum assessment. I just want to point out that the process, especially as we are running this through the first time with Boards and TCs takes a bit of time to get going. I think we went through six or nine months with tautaug.

I don't think in the long run it will take that long to do, but especially as Board's are getting comfortable with doing this the first time, and TCs are getting comfortable with doing this the first time, and setting up the decision tools. It takes some time to do. Also, without knowing specifically the nature of the assessment, the tool that is ready to go is specifically designed for the data rich.

I would want to confirm that this tool wouldn't need to be altered significantly, before promising that we can use it on any data poor. Not that we can't in the future, it just may add additional time if there is adaptation needed beyond something pretty straightforward.

CHAIR WOODWARD: Yes, I see Jay's head nodding, so I think our expectations are based on that. We don't have any unrealistic expectations of a product delivery. Is everybody still fairly comfortable with that approach? I see heads nodding, so okay. Thank you. Thank you, Jay, thank you as always for your work, and if you want to be called the Tzar, you can be called the Tzar of Risk and Uncertainty.

TZAR. McNAMEE: Thank you, Mr. Chair.

COMMITTEE REPORTS

CHAIR WOODWARD: All right, our next agenda item, I want to call on Nicole Costa to give us a NEAMAP Report.

NEAMAP

MS. NICOLE LENGYEL COSTA: I'm going to be brief; this is just a sort of update to the Board on NEAMAP activities and our next steps for the program. I'll just give a brief overview of NEAMAP, cover our mission and goals, talk briefly about the NEAMAP name, and the efforts of our Survey Criteria Working Group, and then I'll get into the bulk of what we want to update you on, which is the NEAMAP Survey definition, and our next steps for the Operations Committee. We continually like to remind the Board and others that NEAMAP is in fact a program, it's not one specific survey. It's a cooperative state federal program facilitating fishery independent data collection, analysis and dissemination in the Northeast from Maine to North Carolina, and the current NEAMAP Surveys include the Southern New England/Mid-Atlantic Nearshore Trawl Survey, operated by VIMS. The Maine/New Hampshire Inshore Trawl Survey, and the Massachusetts Division of Marine Fisheries Bottom Trawl Survey.

Our NEAMAP partners include state marine fisheries agencies from Maine to North Carolina and DC, ASMFC, PRFC, both the Science Center, New England Council, Mid-Atlantic Council and Fish and Wildlife Service. We also have quite a bit of collaboration with the SEAMAP program on programmatic and process advice. Collaboration on technical workshops, including a vessel collaboration workshop and sampling protocols. This slide is just to acknowledge our NEAMAP partners.

Again, thank you all and the various committee members from these partners for their continued efforts. Where a particular fishery usually operates on a small spatial scale, NEAMAP covers a much larger geographic range, and this makes the data particularly useful in a variety of ways in stock assessments, including developing indices of

abundance used in the models, fecundity estimates, developing length/weight relationships, size or age composition outside of the fishery, stock structure in areas where the fishery doesn't operate, and evaluating shifts in stock distribution.

Here are some specific examples of NEAMAP data uses. The full list of species is quite a bit longer, but for the Maine/New Hampshire it's been used in lobster, shrimp, herring, and ground fish. The Massachusetts survey for black sea bass, scup, cod, lobster, summer and winter flounders, and the Southern New England/Mid-Atlantic for summer and winter flounders, black sea bass, spot, croaker, weakfish, river herring and lobster.

I know these plots are rather small. It's not intended for you to actually be looking specifically at the plots, this is just an example of how some of the data were used in a coastal ocean and Chesapeake Bay trend comparisons, using the VIMS data. A few years back the NEAMAP Mission and Goals were revised to shift from design and implementation to enhance coordination and methodology.

The goals and objectives specifically addressed collection and analysis of fishery independent data for assessments in management, enhancing coordination among the fishery independent surveys, and promoting use and dissemination of this data, identifying and prioritizing the short and long term needs of the program, and securing funding for NEAMAP activities.

A little bit about the NEAMAP name. As I stated earlier, the current NEAMAP surveys included the Maine/New Hampshire, Mass DMF, and the Southern New England/Mid-Atlantic. These surveys have built a relatively robust reputation for NEAMAP. In having the meetings of the Operations Committee, it became clear that there are a lot of additional fishery independent surveys run by NEAMAP partners, that also address the NEAMAP goals and objectives. These include surveys run by Rhode Island, Connecticut, New York, Delaware, Maryland, and North Carolina. We begin putting a lot of careful consideration into whether or not we should add these surveys to the NEAMAP name. We previously presented this idea to the Policy Board, and they urged us to use caution in doing so.

We definitely have taken that and have been thinking really considerably, about how to do this if we should do this. Additionally, we've seen increased reference to following NEAMAP protocols, and wind energy development surveys that are coming online up and down the east coast. This kind of caught us off guard, because NEAMAP doesn't have any official protocols.

The surveys under NEAMAP individually have protocols and sampling protocols that they follow. This kind of flagged us that perhaps there is a need to think about and develop some specific NEAMAP protocols or survey criteria, so we could one, ensure that any additional surveys added to the NEAMAP name are using consistent methodology, and two, safeguard the NEAMAP name, and make sure that any survey following NEAMAP protocols has sources that they could properly cite.

We decided to develop a survey criterion working group as a starting point. The working group was tasked with reviewing NEAMAP survey data elements, and determining common baseline survey criteria. This was a large effort by our Technical Committees and Dustin Gregg at VIMS did a tremendous amount of work on this, so I wanted to just give a shout out to him.

It became quite clear after this working group got together that there are still a lot of differences when you get down to the details in all the surveys. Maybe it was a little, I'll say maybe we bit off more than we could chew, in just trying to dive right into specific criteria. We decided to take a step back, and maybe come up with a more holistic approach.

At our annual meeting we decided to move forward with developing a broad definition of what a NEAMAP survey is, and then develop some guiding

documents for specific topics, such as gear sampling methods, biological sample tracking, and QA/QC protocols. When developing this definition, we thought it was important to highlight who conducts the surveys, who designs the surveys, and what they are designed for.

The spatial coverage, as well as who reviews the surveys and decides whether they fall under the NEAMAP name or not. This is the definition we came up with. NEAMAP surveys are conducted by NEAMAP partners. They include both partner and committee designed surveys, and operate on local and regional spatial scales.

They're designed to collect long-term fishery independent data on species abundance, distributions and life history, as well as related ecosystem and environmental information. NEAMAP surveys are reviewed and approved by the NEAMAP Operations Committee. NEAMAP data are collected to support fisheries management, as well as to enhance knowledge of marine fish and invertebrate stocks and the ecosystem.

I realize this is a rather long definition. This was designed specifically with the existing surveys in mind. I'll give you just a sec to digest that. For our next steps, now that we have this definition. We would like to establish a high- level set of NEAMAP principals. Right now, our Operations Committee members have each signed up for sort of topics, and they are starting to flesh out what these guiding principles for the different topics could be. Again, those could be vessel and gear, QA/QC protocols, actual sampling methods, biological sample tracking.

We're going to meet and then talk about further steps, but it could be a very high-level set of principles. We could get into more detailed criteria. But we essentially want to develop some guidance documents for these specific technical topics, and then review the other existing fishery independent trawl surveys for possible inclusion under NEAMAP.

It's not our intent that when a survey becomes an official NEAMAP survey there would be any funding implications or expectations. The purpose and value added is to promote consistent, high quality data collection and dissemination through collaboration among all the surveys, and additionally the development of these specific protocols will provide the proper resources for other surveys to follow, and cite, should they choose to do so. With that I will take any questions.

CHAIR WOODWARD: Thank you, Nichole. Questions? Jim Gilmore.

MR. GILMORE: Thanks, Nicole, good presentation. If we standardize this, do you think or has the group thought anything about maybe some conflicts with, for instance New York. We do our nearshore trawl survey with State University of New York at Stonybrook, and we've got principal investigators.

Now, if essentially, we're going to go out and we're going to have, well, here is a principal investigator, we want you to do this. But here is your set of rules, and they maybe don't like those rules, because they are different professors, and they have different approaches to things. Do you think there will be any issue with that if we standardize this?

MS. COSTA: That's a very good question. We've talked a lot about this. We want to develop this definition and these guiding principles, not to have anybody change their existing surveys. We want to be inclusive of additional surveys, and we want to at the same time make sure that everybody is operating consistent methodologies.

We plan on developing these guiding principles, first looking at the existing surveys under NEAMAP, and then as well looking at these additional fishery independent surveys that are already operating. When the Survey Working Group went through the criteria, they primarily were focused on the NEAMAP surveys.

But we had all of the other state partners fill out the Excel spread sheets as well. We are going to be looking holistically at all the surveys, and then unfortunately, it will take some time. I can't give you a direct answer now how it will shake out. But we do intend on considering that.

CHAIR WOODWARD: Follow up, Jim?

MR. GILMORE: Yes, just on the broader issue. I really would like to see it just called NEAMAP, because it has such a history, if you go back to when they first started. NEAMAP, I think when I first started, was going down. Nobody had money for it, and I know my state came up with a half-million dollars to keep it going. Then I think Massachusetts jumped in there, and they were going to try to take and fund it, whatever.

Then all of a sudden, years down the road it's like, well, I'm not even sure we're a NEAMAP partner anymore. It just got to be, it's a great cooperative effort for everybody, and then saying NEAMAP partners, they think we're all partners in this, and I think it's time to maybe just say NEAMAP is us, not NEAMAP is this group of folks, or whatever. Just a suggestion.

CHAIR WOODWARD: All right, Jay.

DR. McNAMEE: Thanks, Nichole, nice presentation. I'm kind of like processing what Jim was just saying. Maybe I'll start with, this is going back a couple years. I was a proponent, just because I thought NEAMAP was awesome. You know as I go, if New Hampshire and Maine are in there, you know Rhode Island should be too.

I really like the idea, mainly because I wanted to kind of attach our great survey with another great survey. Since then, though, I kind of, you know there's a, and I'm being a little tongue in cheek, but there is magic in NEAMAP right. It's a survey, and has a lot of industry buy-in. Like people when you talk about an assessment, and you know people will scowl at you. Then you tell them NEAMAPs in there, and all right, now it's good.

That is great. I mean that's what we want. I worry about watering that down, and in particular if the idea that you and Jim just discussed is that there wouldn't be any sort of omnibus standardization. I guess I don't kind of see the point then. Like, we can keep NEAMAP as NEAMAP, and the Rhode Island Trawl will be the Rhode Island Trawl.

We're all partners, just like Jim said, and that is fantastic, and there are all sorts of now statistical tools to kind of weave these things together, thinking of things like bass, all sorts of hierarchical modeling that we can do to kind of patch the indices together, if we want to. I don't see a lot of efficacies in trying to incorporate all of these other satellite surveys into, and calling it NEAMAP.

I just wanted to offer; it wasn't a question. I just wanted to offer that comment that maybe things are okay. I think we have the tools we need to be able to pull things together when we want. But they are different surveys, and so I don't see a lot of need to call them the same thing. One final comment is, I really like the idea though of developing, kind of the NEAMAP principles, because of now these external entities that are kind of kicking that name around a little bit. That part I think is good and invaluable.

CHAIR WOODWARD: Eric, I assume you're moving in the microphone, because you want to talk.

MR. REID: You would be correct, so thank you. Yes, I agree with Jay. But I am concerned about the use of the brand by the wind people. That does concern me. You know when they say they're following NEAMAP protocols, my understanding, in my little narrow view of the world is, they might be towing the same gear.

You know they are towing the Bigelow gear, which is the NEAMAP gear, essentially. But I don't know if we should, you know there is no protocol, so what are they following? They're towing the same gear. I can tell you, there is one vessel that's doing a

survey, and I can tell you, he is very on top of making sure the gear is set just right and the spread is just right.

But I know for a reasonable fact that not everybody does that. That in itself is concerning to me. I don't know, NEAMAP should send a letter to BOEM saying, you can't be doing this, because they shouldn't be doing it. To cite something, one that doesn't exist, and pretend like they're doing a stellar job like NEAMAP does. I would disagree with that. I don't know, Mr. Chairman.

MS. COSTA: I think the Committee at our annual meeting had similar discussions. We, you know recognized, if you do a quick search, you can see there are a multitude of surveys that are using that language, and they're not going into details like you said, about what specific protocols they are following.

Before we could really question what protocols they were following, the Committee felt, well maybe it is time for us to develop protocols, so then we can go to perhaps an individual survey or, you know ASMFC could go to them and say, you know here are our protocols, are you in fact following them, and if not, perhaps that language isn't appropriately used.

CHAIR WOODWARD: Pat Keliher.

MR. KELIHER: I just want to echo what Jason brought up for points. I am in complete agreement with those, and I think by developing those protocols, it helps to address the issues that Eric is raising. If they are just doing one portion of the work, and it's not all of those protocols that have been developed by NEAMAP, then we can have something to stand on if we did have to send a letter.

CHAIR WOODWARD: All right, it sounds like copyright infringement to me. Any other questions or comments for Nicole? I don't see any, so thank you very much.

LEGISLATIVE

CHAIR WOODWARD: All right, we're going to move on to some committee reports. I'm going to call on Bill Hyatt, our Legislative Committee Chair to give us a report on that committee, as well as a request for approval of a letter of support for House Resolution 7801. Bill.

MR. WILLIAM HYATT: Thank you, Mr. Chair. I do have a very brief report, one sort of ask to make to the group. Then as you mentioned, that one action item, assuming that the support letter is an action item. Our Committee, the Legislative Committee, has been very active this year. We've had eight meetings. A big thank you goes out to everybody, all the folks that have been involved, and especially to Deke, for keeping us organized and on task. We have engaged on a number of different pieces of legislation, engaged with members of Congress. We've also engaged with members of Congress and agencies relative to appropriations for fiscal year '22 and '23, and we've prepared a number of different background documents and talking point documents for distribution to the Commissioners. That is kind of a very quick, in a nutshell summary of what we've done.

One of the pieces of legislation that we've engaged in most deeply, is the Recovering America's Wildlife Act. That brings me to my ask for this group, and those of you who were at the luncheon yesterday, this is somewhat of a repeat of that. Basically, that piece of legislation has been six years in the making.

I'm going to assume everybody around the table is well versed in the Recovering America's Wildlife Act, and that it is aiming to bring 1.3 billion dollars on an annual basis of permanent funding to state Fish and Wildlife Agencies, which will undoubtedly have some very significant impacts to marine programs in all of our Atlantic Coast states.

This piece of legislation has now progressed through. It's been voted out of committees in both the House and the Senate. It has been voted on the House floor. The House has approved it, and it is only awaiting approval in the Senate, before it will

be enacted into law. There is an "if" though associated with that.

It definitely needs to come to a vote in the Senate during the month of September. As you can imagine, I'm sure all of your experience tells you at the very end of a session there is a pretty big log jam, in terms of getting things approved and up for a vote. My ask to all of you is to consider and do what you can, to get the word out to your Senators.

A very simple message/ask that you really need to, and really support and your constituents really need and support for the Recovering America's Wildlife Act to get on the agenda for a vote. In addition to you reaching out as you are able, I would ask that you reach out to those organizations amongst your constituents, who would have similar desire to have this legislation pass.

Simply because the more people that these Senate officers hear from, the more people that staffers hear from over the next month, the greater the likelihood that this bill is going to come to a vote in September. We're entirely confident that if it does come to a vote, that it will pass. That is my ask to each of you. If you take home anything from what I said today, please take that message with you.

I think that brings me to the action item, which is a support letter for H.R. 7801, the Resilient Coast and Estuaries Act. This is a piece of Legislation that we discussed at the Legislative Committee, that is something that we thought the Commission should support. We brought it to the Executive Committee at a previous meeting, discussed it there.

It was consensus that it was something that the Executive Committee wanted to consider. They asked us to draft a support letter, which we did, and which was brought to the Executive Committee yesterday, and now as I understand it, the next step is to get approval from the Policy Board, in order for that to happen.

Briefly, just to go over a few things in H.R. 7801, The Resilient Coast and Estuaries Act, bill summary, it reauthorizes funding for the Coastal and Estuarine Land Conservation Program at 60 million dollars per year for fiscal years '22 through '26, and it authorizes funding for the National Estuarine Research Reserve System, at 47 million dollars per year for fiscal years '22 through '26.

In addition, it directs the Secretary of Commerce to designate at least five new national estuarine research reserves during that period. Background that I'm sure most of you are familiar with. Nationwide there are 30 of these reserves, and 17 of them are located along the states along the Atlantic Coast.

That is a very brief 10,000-foot summary of the Legislation. With regard to the support letter, it is a letter of support. Our intent is for the Commission to send that to the Committee Chair and the ranking member. Then simply for those of us in the Commission to have both the letter and some talking points that Deke has prepared in their back pockets, for opportunities to have those conversations. With that, Mr. Chair, I assume that is what you need to get approval here today.

CHAIR WOODWARD: Yes, thank you, Bill. As you said, you know this is an important and very relevant piece of Legislation. I know the state of Georgia has benefited from Kelp Grants in the past. You know it's been an important source of information for critical habitat acquisitions. This expands it out to allow funding of restoration, which obviously is part and parcel of us dealing with climate change, and lots of other things.

You know as Bill said, the Executive Committee gave it a unanimous support. What I'm asking for here, is there any opposition to this letter of support from the Policy Board? I don't see any heads shaking. We'll consider that supported by the Policy Board, and we'll get this letter out. As Bill said, we'll make it available to everybody.

If you have an opportunity to weigh in on it, just as he suggested, with the Recovering America's

Wildlife Act. As he said, that one has gone on a long time, and it is literally sitting, the ball is perched on the goal line, and it would be a shame to have a goal line defense stop it from getting across. But it's going to take a lot of effort to get that ball across that line. Anything you can do would be appreciated, so thank you, Bill. Pat Keliher.

MR. KELIHER: Yesterday at the Executive Committee meeting we had a presentation from ROSA that was referenced earlier in your report, where they were asking for additional funds. Over the last two days I've been getting information from my Governor's office on the fact that there is going to be a press conference on another federal bill that is going to be heard, that was submitted by Representative Whitehouse.

It's called the RISEE Act, it's a reinvestment act for offshore wind lease revenues, and it will be a revenue sharing concept that will also allow states, territories, tribes to apply for grants. It's a fairly significant pot of money. Considering the conversation yesterday, and considering the work that all of us are doing from a wind perspective. I would request that we spend some time, the Legislative Committee spend some time on this particular topic as well, and bring something back to the Board, and potentially support this piece of legislation.

CHAIR WOODWARD: Thanks, Pat, for making us aware of that. Bill, I'll trust that you all will take that under your umbrella.

MR. HYATT: Absolutely. That is a piece of legislation, vaguely familiar with, Deke put together a synopsis really quick and looked at it, and I think it's something we would very much like to take up and discuss. I think one of the items we would want to discuss, probably out of the gate, is some of the definitions in the act about the eligible states, and take it from there, but absolutely.

CHAIR WOODWARD: Thanks again, Bill.

ATLANTIC COAST FISH HABITAT PARTNERSHIP

CHAIR WOODWARD: All right, I want to call on Dr. Lisa Havel, she is online. She's got a couple of committee reports from the Habitat Committee, as well as the Atlantic Coast Fish Habitat Partnership. Lisa, the floor is yours.

DR. LISA HAVEL: I'll start with ACFHP, since that's just informational, then move on to Habitat Committee, where there is a possible action. I'll try to be as quick as possible. The ACFHP Steering Committee met July 20 to 21, where you all are right now, in Arlington, Virginia. We mostly focused on our Strategic Planning.

We had discussions on operational funding and grant administration over the next five years, and also how the next five years are going to be different than our previous five years, especially in regards to funding opportunities, in particularly infrastructure bill funding that is coming out, compared with our strength/weaknesses and what makes us unique.

Now these discussions are being taken into consideration for our next plan. We'll release the plan in December of 2022. Since I last provided an update, the fiscal year 2022 NFHP projects were approved, and ACFHP was able to fund five on the ground projects plus operational funding with this funding, and $250,000.00 went for on-the-ground restoration, and this is the highest amount to date for us.

We have projects in Maine, Massachusetts, Connecticut, New Jersey and Maryland. Combined, these projects will open over 185 river miles, provide access to over 9,000 acres of spawning habitat, and restore over 4.5 acres of benthic habitat. The first project is Baskahegan Lake and Crooked Brook Flowage.

This is led by Atlantic Salmon Federation. It's a pool and weir fishway at Baskahegan Dam in the Penobscot Watershed in Maine. The Dam is a complete barrier to alewives and other species, and access will be restored to 8,960 acres, and 137 river

miles. They anticipate that 2 million alewives will benefit from this project.

Here is the current barrier, the Dam. Our next project is the Ames Pond Dam Removal and Fishway Construction. This is led by the town of Braintree, and it will remove the Ames Pond Dam and install a pool and weir fishway around Rock Falls on the Monatiquot River in Massachusetts.

This will restore access to 180 acres of spawning habitat, and 36 river miles, will benefit river herring and American eel, and these two barriers are two of three on the river, and the third barrier was the Armstrong Dam, and we helped to fund that removal last year. Here is an aerial view of both of those barriers. The third project is dam removal and restoration at Merwin Meadows Park. This project is led by Save the Sound, and it consists of the removal of the Dana Dam, which is also partial channel realignment, on-site sediment use on the Norwalk River in Connecticut.

It will reconnect 6.5 upstream miles, forming 17 miles of free-flowing river to Long Island Sound, will benefit river herring and American shad, and will remove a safety hazard, reconnect 1.13 acres of floodplain, reduce physical and chemical impact and educate visitors about the benefits as well.

Here are two images of the Dana Dam ready to be removed. This is our fourth and final Dam project. This is the Paulina Dam removal is led by the Nature Conservancy in New Jersey, and they will remove the Paulina Dam on the Paulins Kill, combined with the Colombia and County Line Dam removals, which we previously funded in 2018 and 2021.

This will open up a total of 45 river miles of mainstem and tributary, to benefit American shad, American eel and sea lamprey. The project will enhance recreation and public safety, improve water quality, restore hydrology, and improve terrestrial and aquatic connectivity. Here is the Pauline Dam that hopefully soon will not exist.

The final project that we funded was the South River and Herring Bay Oyster Restoration project, which is led by the Chesapeake Bay Foundation. This project will augment existing hard bottom within two protected oyster sanctuaries along mainstem and tidal tributaries of the Chesapeake Bay.

It will increase the oyster reef in Herring Bank from 0.68 to 2 acres, and it will increase the reef in Glebe Bay from 0.86 to 3 acres, and this work will combat overfishing and sedimentation, and they are working to engage two communities in the restoration plan, oyster gardening, and throughout more of the project as well.

Here is a Google Earth image of the two locations for the augmentation. As always, ACFHP would like to thank ASMFC for your continued operational support, and then I'll jump right into the Habitat Committee report and save questions for the end.

HABITAT

DR. HAVEL: The Habitat Committee met virtually on May 23. We had a discussion about the update on the Acoustic Impact Habitat Management Series, which is moving along slowly but surely.

We also had a presentation on the state of Delaware River sturgeon, and the Northeast Regional Habitat assessment. We selected our habitat hotline topic for 2022, which will be promoting resilience in vegetative coastal habitats. As usual, that will be released in December. We continued working on State Climate Change Initiatives Document, and the Fish Habitats of Concern.

As far as the Fish Habitats of Concern, a brief update. The Habitat Committee has drafted Fish Habitat of Concern designations for all Commission- only managed species, plus Atlantic sturgeon. The thinking with sturgeon was that eventually sturgeon hopefully will go back to being managed under the

Commission, eventually. The thinking for only focusing on Commission-only species were those jointly managed with the Councils have EFH and Habitat Area of Particular Concern definitions already. For Fish Habitat of Concern designations, some species have specific designations, where the other species have less-specific designations, and this is due to species characteristics, and also data availability.

We did not want to just describe all of the habitat, but we used the HAPC guidelines in the designation. A draft Fish Habitat of Concern designation example was provided in supplemental materials, and that was Atlantic croaker. When creating the designations, the Habitat Committee considered current Commission documents, including FMPs, species habitat factsheets, habitat management series publications and more.

They considered current literature, they also considered ACFHP species habitat research. The draft designations were discussed and agreed upon, and then shared with the Technical Committees for edits. All but two of the species have been completed, and so the plan is to share the full document with the Policy Board within the next few weeks.

Then hopefully you'll have time to review it before the annual meeting, and we can vote on whether or not to approve it in November. The final update is the State Climate Change Initiatives document. This was provided in briefing materials, and it's an update to the 2018 publication.

It contains information on current climate change initiatives, and identifies high level progress along the coast since our 2018 publication. It's meant to be informational, and provides a snapshot of initiatives underlaying each state. These initiatives do not necessarily reflect the views of the Commission, and that is stated in the introduction of the document.

As we did in our 2016 and 2018 publications, we grouped state initiatives into eight categories. They are listed here, for time I won't go into all the details. But they are provided in the briefing materials. For each of the eight categories, the blue in this graph represents the number of states who initiated that task by 2018.

The orange is the number of states that have initiated it by 2022. The gray is the number of states that have not initiated that task. You can see that most states are active in each of the eight initiatives. There are only a few initiatives where one or two states have not taken any action on them. You can see a breakdown of each state's work in the table provided in the briefing materials. That table will be exhibited as an appendix in the final document.

For today I am hoping to have this climate change document approved, and then if it is approved the next steps will be formatting, and then sharing it, releasing it likely. With that I'm happy to take any questions on either ACFHP or Habitat Committee, and I am open to a motion to approve the climate change document as well. Thank you.

CHAIR WOODWARD: All right, thank you, Lisa, any questions for Lisa about her presentation? I don't see any. We do need Policy Board approval of the update, as she referenced in there. I don't know that we need to do a formal motion. Is there any opposition to approving the update document as was in your briefing materials? I don't see anybody shaking their heads, so all right, we'll consider that approved by unanimous consent. All right, well thank you very much, Lisa.

ASSESSMENT SCIENCE

CHAIR WOODWARD: All right, next I'm going to call on Patrick Campfield for update on the Stock Assessment Committee, and then I think after him we'll have Dr.'s Drew and Anstead give us an update on the progress of River Herring and American eel stock assessments.

MR. PATRICK A. CAMPFIELD: Thank you, Mr. Chairman. The Assessment Science Committee met in May. Their three main topics were to receive a final presentation on the red drum simulation assessment. That was a big project that finished earlier this year successfully. The Committee also discussed assessment training workshops that we will be planning for this winter, and into 2023, and also, the usual business of reviewing the Commission's stock assessment schedule.

The schedule is in your Policy Board supplemental materials on Pages 36 and 37. This is a little tough to read, but the major proposed changes for the short term in 2023 and 2024, are that the black sea bass research track assessment shifted from this fall into spring of '23. That will be followed by a management track assessment in June that will, if everything is successful, provide management advice and reports to be received in next July.

Also, in 2024 and assessment update was recommended by the Assessment Science Committee for tautaug. I won't read through them, but these are all the proposed changes for the longer term in 2025 and 2026. Notably there was a request last time the Committee provided an update to the Board for a cobia stock assessment.

That has been added as a benchmark through SEDAR in 2025. But that is the full list of stock assessments that have been added either through SEDAR or NRCC, the Northeast process or otherwise recommended by the Assessment Science Committee. If we could just go to the final slide, please.

Just two take-home messages. The assessment activity continues to be very busy, 2022 was I think our business year in the past decade, and there are several species on the horizon. I think the action for today, Mr. Chairman, is to see if you all have any requests or modifications to the stock assessment schedule, and if not to seek your approval of the Assessment Science Committees recommendations.

CHAIR WOODWARD: Thank you. All right, any questions, concerns about the proposed stock assessment schedule? I don't see any. Chris Batsavage.

MR. BATSAVAGE: Not a concern, but I certainly support considering the addition of weakfish for 2025 for an assessment update. I think the terminal year for the last assessment was 2017, so it's probably good to just get a check on where we are now compared to then, thanks.

RIVER HERRING STOCK ASSESSMENT UPDATE

CHAIR WOODWARD: Anyone else? Any opposition to accepting the proposed stock assessment schedule as presented by Pat? All right, I don't see any, so Pat, consider it approved as presented. Thank you. All right, so I'll go to Dr.'s Drew and Anstead for their update.

DR. KATIE DREW: The River Herring stock assessment is proceeding apace. We just had our data workshop in mid-July, where the TC got together to review the available datasets, and decide on things like the terminal year, as well as a set of terms of reference. Because there was no River Herring Board meeting this meeting, the terms of reference and the Stock Assessment Subcommittee will be approved via e-mail. If you are on that Board keep an eye out. We're still on track to complete this, and present it at the annual meeting in 2023. Happy to take any questions about that.

CHAIR WOODWARD: Any questions for Dr. Drew on that? All right, I don't see any.

EEL STOCK ASSESSMENT UPDATE

DR. KRISTEN ANSTEAD: The Eel Stock Assessment Team has finished the benchmark stock assessment, and it is now in the hands of the TC. We will be presenting the stock assessment to the Technical Committee next week for their comments, edits, and hopeful approval to go to peer review, which

we hope will happen this fall, and then we would bring the assessment to the Eel Board in the annual meeting.

We have developed a delay difference model, as recommended by the previous peer review, as well as addressed some of the other work that the peer reviewers discussed in their last report. We've tried a bunch of methods, and also evaluated the young of the year data, to make some recommendations about where states might be able to cut back, to take away the burden of those surveys, while still maintaining the time series.

WE also have evaluated some index-based methods for setting catch advice, because I know that has been a concern for the Board for a while. How do we set a coastwide cap for eel? We used a Northeast Fishery Science Center paper, and developed one of the methods that they recommended to set catch advice, and I'm happy to take any questions about the process of the Eel Assessment.

CHAIR WOODWARD: Any questions for Kristen? John Clark.

MR. CLARK: Thank you, Kristen. Will the new model be similar to the last one, given I don't think the data has really improved that much, that it will just give us an either depleted or not depleted type of designation?

DR. ANSTEAD: You are correct that we had the similar challenges with the delayed difference model that we had with the DB/SRA. We have developed it. We did develop reference points for it. But the way it stands now, is we're suggesting the index-based methods for sending catch advice, rather than the Delayed Difference Model as it is in its current edition.

But we'll see how that goes through with the TC, the peer review. Maybe there will be some suggestions coming out of that. It is fully developed, so it's available for their consideration. But I think probably we will fall back on the index methods.

CHAIR WOODWARD: All right, any other questions? Seeing none; thank you both for your reports, I appreciate it.

CONSIDER PROVIDING COMMENTS TO NOAA FISHERIES ON ATLANTIC STURGEON BYCATCH

CHAIR WOODWARD: All right, now I'm going to go back to Toni. Yesterday we had a presentation about the Atlantic Sturgeon Bycatch Working Group draft Action Plan, and were asked if we had any comments on behalf of the Commission. I want to turn to Toni for an update on that.

MS. KERNS: I did receive a request for us to provide comments on the draft Action Plan. This individual wanted to emphasize the improved coordination with the TRT, the Right Whale TRT and their activities ongoing with making changes to the gillnet fishery, and to make sure that the actions that are occurring through the Sturgeon Bycatch Plan is coordinated with the TRTs action, to make sure that we're not taking double action on the gillnet fishery.

In addition, they wanted the letter to convey the Commission and state's interest in planning and conducting the science proposed in the draft Action Plan. You know the Commission is the one that completes the stock assessment for sturgeon, so it feels that it's in our best interest and the state's best interest to work towards the research questions.

Having us do that research is important. I think that was the general gist of it. Jason, I don't know if you had anything in addition to add to Conor's request or not, and if anybody else had any additional requests for a comment on this, I am happy to take them.

CHAIR WOODWARD: All right, Pat Keliher.

MR. KELIHER: I certainly don't have any objections to the TRT component of the request. I am

concerned about the research piece, because I don't know what that means for the states. Without having a better understanding of what that is going to mean from a state perspective, I'm a little leery about agreeing to having that language in there.

CHAIR WOODWARD: What is the timing on this comment letter, I guess is the other question.

MS. KERNS: I'm going to have to talk with Spencer, to see if we have time for an actual letter or if I just need to talk to him about where the Commission's concerns are. Obviously, he heard the concern yesterday, about the overlap of the TRT, so he is aware of that. They are going to be posting the draft Action Plan in early September, to my understanding.

There is not a ton of time to return. I don't think this is an official comment period type of situation, where we have a date that we have to give them comments by. I'll have to check with him on that. I don't know what Conor's intention was on the state's responsibility for the science, so I can't answer that question.

CHAIR WOODWARD: But suffice it to say that certainly we need to make sure that whatever we're putting in that letter is within everybody's comfort zone. Okay, if you want to call on him, yes.

MS. KERNS: Spencer, I have unmuted you.

MR. SPENCER TALMAGE: Hi, thanks folks. I just joined, so I heard the comment about timing. Toni was pretty much right, we plan on getting the final Action Plan released and online, at least ahead of the New England Council meetings in September. We need to wrap up anything that we need to do to make changes to the plan, at least by the last couple weeks of August, in order to get things through review, and to make sure that whatever changes we've made to the Action Plan are acceptable and make sense, and things like that. The assessment that there is not a ton of time is probably accurate. Unfortunately, the timing of this meeting came out with our schedule and the New England Council meeting in September.

CHAIR WOODWARD: All right, thanks, Spencer. It sounds like we can at least draft up something with the concern we know about, and maybe you can circle back with Conor, or if Jay can inform that.

DR. McNAMEE: Yes, maybe not. I just pulled up the e-mail and kind of reread it. I think his intent was just, thinking about it now, you know the concern of, are you asking us to do anything? I don't think that was necessarily the intent, but just to involve the states directly, since the Commission is the one that does the assessment, and they're talking about areas in our state waters or in proximity to them that we should be informed. I think that is all he meant, not sort of obligating us to any sort of work. Hopefully that helps.

CHAIR WOODWARD: Does that increase your comfort level over there, Mr. Keliher?

MR. KELIHER: Yes, I don't have to take any extra blood pressure medicine, Mr. Chair, I'll be good.

CHAIR WOODWARD: Well, your health, mental and physical, is always in the forefront, as it was when I was Vice-Chair. All right, well it sounds like we at least have something that we can build on that we're comfortable with.

MS. KERNS: I'll touch base with Spencer offline, to see if the timeline that I think it would take us to get a letter together does not work with what he needs, and if he and I just need to talk through what our major concerns are for them to address, prior to them meeting to posting for the Council meeting.

CHAIR WOODWARD: All right, thanks, Toni.

REVIEW OF BLUE CATFISH SCIENCE IN CHESAPEAKE BAY

CHAIR WOODWARD: Our next agenda item is Review of Blue Catfish Science in Chesapeake Bay. I

think we have; this is a two-person presentation. I think the third person is not going to be available. We have Mandy Bromilow, and Christine Densmore. I'll turn it over to you.

MS. MANDY BROMILOW: Thanks, can you all hear me, okay?

CHAIR WOODWARD: Yes, go ahead.

MS. BROMILOW: First, I just want to thank you all for inviting us to speak today. My name is Mandy Bromilow. I'm the Fisheries Specialist at the NOAA Chesapeake Bay office, and I also coordinate the Invasive Catfish Workgroup. Today I'm going to talk a little bit about who is in the workgroup and how we're trying to combat the issue of invasive catfishes. I should note that the Workgroup is not solely focused on blue catfish, as many people talk about. But we are also concerned with flatheads. Again, the majority of the attention and work is placed on blue catfish at the moment. But the flatheads are more of an issue in our upper tributaries, and up in Pennsylvania. The Invasive Catfish Workgroup is a large, multi- stakeholder workgroup within the Chesapeake Bay Program. We have numbers ranging from North Carolina to Pennsylvania, and they include not only managers, but folks from other state and federal agencies, nonprofits, academic institutions, as well as industry, including both commercial and recreational fisheries and processors.

This stakeholder diversity is very intentional when we were putting together the workgroup. We wanted to make sure that the interest and perspectives of everyone involved in the issue were representative within the group, in the hopes that we would come up with some collaborative solutions that would meet the needs of many stakeholders.

The Workgroup first met at a workshop in January of 2020, to discuss the issues and talk about some strategies for dealing with them. Those discussions at the workshop resulted in a Chesapeake Bay Program management strategy for invasive catfishes. At the workshop the Invasive Catfish Workgroup identified two primary objectives.

First to reduce the abundance of invasive catfish in the bay, and second to mitigate the spread and ecological impacts to the ecosystem. Management strategy lays out four approaches for addressing these objectives. The first approach is to increase public awareness, not just that these fish are invasive and have negative impacts, which is obviously an important aspect of this issue.

But we're also letting people know that blue catfish are a tasty white fish that are great to eat, so we want to get more people interested in eating blue catfish, in order to improve the market, and hopefully the fishery. The second approach is to remove processing barriers. Currently the USDA requires inspections during processing operations, and this increases cost and puts extra burden on the processors.

We want to remove the barriers, particularly for those wild caught catfish in the Bay, and try to get more people into the fishery. The next approach is to continue conducting and synthesizing research. There has been a lot of great work that's been done on invasive catfishes in the Bay. But we still have a lot of data gaps when it comes to their biology and ecology, and particularly their population dynamics in the Bay.

We have some other really important questions that we need to address, however, to effectively manage them. Finally, we recognized at the workshop that each tributary is very different. Each tributary is at a different stage of invasion, and there may even be different fishing interests across the tributaries.

Our final approach is to develop, we'll call it tributary-specific management plans. To organize the Invasive Catfish Workgroup for action, we developed three subcommittees to focus our efforts. The Outreach and Marketing Committee

has been working with partners to develop fact sheets and public perception surveys. They are attending public outreach events like seafood festivals and expos, and they are generally trying to get the word out about those big impacts of invasive catfish, and get more people interested in eating them. The Science and Research Synthesis Committee has been compiling a lot of the information from previous studies, and identifying available sources, to better understand what we already know, and what resources we have for future studies. They're using that information to identify and address knowledge gaps. Some of the work that our members have done include diet studies, to quantify impacts on other species, and studying the current studies to assess their potential to spread.

The Tributary-Specific Management Committee is focused on cross-jurisdictional coordination efforts, to develop catfish fishery management plans, or at least incorporate some language of invasive catfish in their existing fishery management plans. They are working to make sure that management is a bay-wide, or even a watershed-wide effort.

They are also helping to develop an invasive catfish data hub and map, where we can keep up to date on information, so the areas where blue and flathead catfish have been found in the Bay, and sort of harvest numbers in the different tributaries, and things like that. That's a super brief overview of the Invasive Catfish Workgroup.

But as I'm sure you know, there is a lot more to this issue, there are a lot of different sides to it. If you want to learn more about the workgroup and what we're doing, you can e-mail me. My e-mail is up on the screen at mandy.bromilow@noaa.gov, or you can visit the Invasive Catfish Workgroup webpage on the Chesapeake Bay program website.

The website also has the management strategy and all the minutes from previous meetings, if you are interested in those details as well. But that's all I have for the overview, so let's turn it over to Christine to talk a little more about the research that the workgroup has been doing.

DR. CHRISTINE DENSMORE: Okay, thank you, Mandy, and thank you everyone. I am Dr. Christine Densmore, I'm a veterinary medical officer with the Eastern Ecological Science Center with USGS. I'll just to kind of follow what Mandy was telling you, the broader scheme of things with the Invasive Catfish Workgroup.

I wanted to give you kind of a more closeup of a small piece of the work that's going on, some of the newer work we're doing for research and support of the management of blue catfish across the area. Again, I am with USGS, but this is a multi-agency effort that we're doing. A lot of this in some of the southern tributaries, and now moving into some of the northern. The blue catfish have moved north, the research has gone along with it also.

First, I guess the triple arm of things that we're doing within USGS right now, with the Eastern Ecological Science Center. First of all, we're looking at diet of blue catfish around the area, and this work that are evolving in USGS is largely just in support of our partner agencies and organizations that are doing diet-based studies.

The main one I'll be discussing today is Salisbury University in Salisbury, Maryland, on DelMarVa. They are working on looking at blue catfish diet in the Nanticoke River. Mary Groves, who couldn't be here today with Maryland DNR, has done that as part of their scope of work looking at blue catfish influences on the Pawtuxet River in Maryland. With the diet portion of this study on the Salisbury, we're also working with Maryland DNR Brett Coakley on that part of the study on the Nanticoke River, as well as Johnny Moore and his team in Delaware DNREC. Elsewhere I'll be talking about things we're working with Virginia Commonwealth University on some of their help for perspective things we're doing, and UMCES Appalachian Lab is involved in some of the molecular analyses for diet that we are doing also. Again, diet is the first arm of this.

Health and Disease, looking at other potential impacts through, just kind of cohorts, just other fish in the area, what could they be passing back and forth. What type of health ramifications are there, not only among blue catfish populations, other catfish populations, and you know other fisheries or sources?

We're also looking at reproduction and spawning behavior. Again, as Mandy mentioned, you were looking at kind of a tributary-specific basis as we're doing this research, because tributaries vary so much throughout the Chesapeake. Now we're moving this work that has been done a lot in some of the further southern tributaries in Virginia areas, and moving this a little north into the Nanticoke.

Okay, here is a nice, gross slide for you all just before lunchtime. In talking about what we're seeing on the Nanticoke River, this is just kind of a sampling of some of the preliminary results we've gotten so far. Again, the Nanticoke work is largely being done as a study through Salisbury University with support of USGS, Maryland DNR, and Delaware DNREC.

Dietary impacts of blue catfish on other resources are pretty high on the list of concerns of management agencies for good reason. They are nonselective feeders, omnivorous, transitioning to a more piscivorous diet as they grow larger. There is a lot of this work that has been done assessing diet and potential impacts on fisheries resources in the Virginia tributaries further to the south.

Again, as the fish are moving north, we're transitioning some of this to the north. Mary has done a lot of this on the Pawtuxet River, and now we're looking at the Nanticoke. Here is just again a sampling. This is preliminary, because the work that Salisbury is doing is going through the end of 2022, so we only really have the first half of this study in right now.

But you can see there are a variety of types of critters there, again nonselective feeders. We're finding a lot of detritus and plant matter in stomachs. We're finding some things we really can't identify as yet. Hopefully the molecular analysis we're doing to kind of buffer the study will help that also.

But we are finding clavicular clams. They are going after Asian clams also to a good degree. Blue crabs are in there a little bit. That one in the upper left is a hog choker. Then a few of the other species again unidentified right now. Data collection is ongoing, and will be through the end of this year.

This slide pretty much exemplifies that what we're seeing so far is consistent with what has been reported in other tributaries that these critters are fairly nonselective and they'll go after what's there. I'll also note in the middle in the top there, thought you may not be able to see that too well from the back. But those are actually corn kernels in the guts of that specimen there. We think that fell off probably a barge in the Nanticoke River, so again, very opportunistic in their feeding behavior throughout. Here again is some of Zach Crum, the graduate student's preliminary data. He has this laid out here as percent weight, of course he's also looking at it by frequency of occurrence, and a few other metrics also, and this is based on just the 218 positive stomach samples we have so far through May.

Also, note on this again, it is preliminary. We will have some molecular data to back this up for some of the unidentified species later on. They're also going to be doing some stable isotope work to further trophic relationships in blue catfish from the Nanticoke River, comparing with other species.

Based on what we're seeing so far, again, we're seeing a lot of consistency with what has been reported for the more southern tributaries. We're seeing a lot of detritus and plant matter in the gut. We're seeing white perch, as far as a large makeup of both percent weight and frequency of occurrence. We're seeing a lot of gizzard shad.

To a lesser degree there is some unidentified alosine species, and some that they have identified. I think it was a blueback herring in there, and I think an alewife from some of the reports that Zach has given with us so far, and the occasional blue crab, even in the Nanticoke. To be continued, once this work should be wrapping up toward the end of calendar year 2022, and hopefully coming to fruition in about a year from now.

One other thing I thought you might find interesting, just related to diet is, one of their more interesting findings from this past year was the remains of an adult wood duck in the stomach of one of the larger catfish specimens. You can see there on the left-hand side of the slide a lot of the feathers and the actual bill of the duck that came out of that.

Yes, they'll eat what's there. Okay, just a quick overview of some of the other things with my laboratory and my background as a veterinarian. Of course, we're interested in health of critters across tributaries, and invasive species of concern, because of what they may be bringing with them, what may be disseminated along with them to other native species, or other important resources.

What we are doing is working across three different tributaries. We're working with VCU in the James River, we're working with Mary Groves and her crew in the Patuxent, and then with these folk in the Nanticoke right now. Just to get some idea of what we consider normal health status, both grossly and histologically, so on a microscopic scale. What are we seeing, as far as the health of the tissues, what type of parasites might be there as a normal abnormality, as you see that on the lower left there?

That is a myxosporean from the gill of blue catfish we're finding throughout all three tributaries we're examining. We're looking a little further into that to try to speciate it, and perhaps even see where it is in some other catfish in the region. What might be the implications of something like that? Above that is an unusual case that we saw last fall, actually the Salisbury University folks picked this up working, when we're seeing these kinds of cystic blister-like lesions on the exterior of the catfish. They kind of came and went in late fall, haven't seen them since, wondering if we'll see them again later this year. We have no actual ideology identified for them right now, but we are still looking and prepared to look a little harder if they do occur again in the fall. Yes, we're going to look and see what is normal across the tributaries, and what implications there might be.

Again, for not only the blue catfish population, but for health and disease of other species, as well as any potential human health implications there might be, that we're going to do a little bit of microbiology along with this, just to see what type of pathogens they might carry, and if any would have any human health significance for a fish in a developing fishery in the region.

This one, sorry the text isn't coming through on there very well, but this is just another example of something that is an unusual health presentation that we saw, just from folks that had been out fishing, with this type of hemorrhagic lesion around the face and the mouth. This was off Barren Creek in the Nanticoke River.

We are working to identify, actually to confirm the identity. We think we've identified a bacterial pathogen. It's a little unique to find in catfish, so again, we're kind of interested in the implications of this for not only catfish health, but for other types of aquatic animals in the region.

Again, that type of thing that we're considering as we're looking into health within this species in the area. The final arm of this is the reproductive biology that we're looking at, more in the Nanticoke River right now. Again, there has been some work done on reproductive biology by the folks at VIMS, further south in some of the Virginia tributaries.

But we're taking another look at it in the Nanticoke, just to compare reproductive staging and gonadal histology, so looking at it on a microscopic level. At the same time doing some blood plasma sampling, looking for estradiol and calcium levels in the females, as indicators of spawning and of basically the annual cycle of reproductive hormonal change, and seeing how that correlates with what we're seeing in the actual gonadal development.

Yes, we're looking at it through seasons, as we're collecting for the diet analysis, we're also collecting for blood sampling and gonadal sampling. That is in process right now, so what we have here is some preliminary data, showing what we've seen in some other tributaries, what we're seeing basically a tend towards spawning peaking in the May to July area, and we had that the highest levels that we saw last time in June.

We'll see how it continues as this unravels, as the year goes on, and we collect the rest of the data, looking at how this compares from the Nanticoke to some of the other tributaries, and what consistencies and inconsistencies there may be. I think that's it. Again, that was just a whirlwind tour of some of the newer research that's going on in the blue catfish community.

As you all are probably aware, there is quite a large body of research that has been more concentrated, again in the southern part of the Bay in the Virginia tributaries, and as the fish have moved. As in keeping with the aims of the Invasive Catfish Workgroup, for looking at tributaries specifically for management. We're aiming to do the same thing with these southern tributaries a little further north. Now, Mandy and I are happy for any questions or discussion points you all may have.

CHAIR WOODWARD: Thank you all very much for that presentation. It's an annoying and also interesting predicament, you know when you have to deal with things like that. I've got John Clark and Bill and then Jay.

MR. CLARK: Thank you for the presentation, Christine. The Nanticoke there, I know just from some of the trawl sampling we've done. The biomass of blue catfish now is absolutely staggering. I just can't believe how quickly they've reached this huge amount of biomass. I was just wondering, A, are you seeing cannibalism among them?

Because some of the trawl we bring up there is nothing else there except the blue catfish, from this size up to you know the ten-pound size, and we've had several new state records for catfish set, just in the past couple of years with blue catfish. Then second, I noticed you did have shad as one of the dietary items. We do have a shad hatchery on the Nanticoke, and I'm just wondering if we're spending all this money just to feed blue catfish.

DR. DENSMORE: Hopefully not. To answer your first question, yes. We are seeing some evidence of cannibalism there. On the Nanticoke they have reported blue catfish in the stomach so far. Secondly, yes, and actually I've been at that hatchery for working there on site with Johnny, so that is a great place.

It was central for where we were working up the fish. I hope not. What they have found in some of the work that's been done, I think by Joe Schmidt and the folks out of Virginia Tech in the southern part, is while some of the alosines have been found as contents, they haven't represented a huge, huge amount of that.

But they made a cautionary note in that too, of course it's going to be very density dependent; it's going to just depend on how things go. They are not one of the, I guess the top things that we found so far. Again, on the Nanticoke that is all preliminary. We'll have to wait and see how this all washes out later on, but they are there, but they are not there in as huge a quantity, gizzard shad much more so than the other alosines, I think so far.

CHAIR WOODWARD: All right, Bill Hyatt.

MR. HYATT: Yes, just a couple of quick questions. The first one that comes to mind, what is known, understood or maybe speculated about the cumulative impact of the different invasive species, in addition to the blue cats and the flat head cats in the area? I'm asking that because oftentimes you look at, like for example the diet of a single invasive species.

You don't see the full picture. You don't see the full picture, because you're not seeing the other invasive species layered on top of it, and sometimes you're not seeing the dietary shifts that are forced onto native predators, in order to develop a real understanding of a cumulative impact that it might have. That is the first question, and I guess speculative is probably where you might have to go with that. Then the second one is, I thought I saw in the report some mention of there being a canal or water connection between Chesapeake and parts of the Delaware Bay system. I'm wondering what preventative methods are in place or contemplated. (Faded response from unknown person) Okay, so only one question.

DR. DENSMORE: Okay. I wish I had an answer for you. I actually don't. I think that's an excellent question, as far as the cumulative impacts, and certainly something we could be looking at a little harder. Something else to consider with blue catfish. The more we tend to get into the dietary analysis is, they don't seem to be quite the apex predator we had once feared.

That's not to say they are not going to have impacts. Certainly, in the density of the numbers they have, you can anticipate that is a good possibility. But they are more of I guess a mesopredator, as far as again, this paper by Joe Schmidt and his colleagues out of Virginia Tech had examined this in some of the Virginia tributaries, and found just the amount of plant matter, the amount of detritus, the amount of invertebrates and other things there.

Some of the, I guess fish species that aren't as much of interest from a managed resource perspective, tended to be a little bit higher in fact than other items. Yes, when you look at them kind of in conjunction with the flathead catfish, the northern snake at some of the other priority invasive fish species in Chesapeake.

That is a great question, as far as what overall might they be doing kind of cumulatively for individual species. I think, and again it just may depend a little bit too on where your focal point is, because that's the whole reason for the tributary-specific management that we're looking to in the Invasive Catfish Workgroup is, it is going to vary tributary by tributary.

CHAIR WOODWARD: All right, Jay.

DR. McNAMEE: Actually, I'll start with, and just to be clear I mean this as a biologist as a compliment. You win the award for most gross pictures in a presentation. Well done! I had a question about some of the diet work that you guys are doing. You mentioned some molecular techniques, and so I'm assuming the molecular techniques can ID species.

But can you also tell the contribution to that gut, like the proportion that unidentified species is in the gut. This idea comes up a lot in the context of ecosystem management, because we work with a lot of diet information, and that is kind of something I've been wondering about, if the molecular technics are that good yet.

DR. DENSMORE: First of all, thank you. As a veterinary pathologist, yes, a gross picture is a plus. I take that as a compliment, thanks. Secondly, yes. For the molecular analysis we are looking at some gene sequence analysis. We're working with, again the folks out of UMCES to help us with this long pipeline of processing

Then turning this around with bio informatics, to take these gene sequences and tell us what species that we cannot identify, because it is so gross, that they may be having in the stomach.

For that, as far as looking at proportions. I think, and again I have to apologize, because it's not my specialty, as far as the diet analysis thing. I think them looking at it through both percent weight and frequency of occurrence, helps get to some of that information, as far as how much is there.

Individually, when we're looking at the molecular for the purposes of this study, we're looking at samples from individual specimens that we just can't identify grossly. We hope to just get one answer back that this is a sequence from, you know a blueback herring or what have you, as far as that.

Again, something else they are doing to get to more of a broader trophic interaction answer for the Nanticoke River is that the Salisbury University folks are going to be doing some stable isotope work along with that also, so they are collecting some fishery samples from the blue cat fish specimens, as well as from some of the other native and some other nonnative species that we're encountering in the area too, to do some stable isotope comparisons.

CHAIR WOODWARD: All right, Eric.

MR. REID: Thank you for the presentation. I just have a quick question about one of your bullet points. What are the processing barriers, is it regulatory or is it the fish itself?

MS. BROMILOW: Yes, so the barrier is really just that inspection requirement that I had mentioned. Essentially, they need to have an inspector in the processing area. It's a matter of having to pay folks to work overtime, to stay there for when they're doing the processing, and then they also have to, it's overtime and then it increases the cost and the burden on the processors.

It actually was such an issue that there were even more like smaller processing operations in the Bay that stopped processing catfish because of that inspection requirement. It was just too much. It wasn't worth having to go through that inspection requirement and the cost and all that to continue to process catfish.

Now we're down to like a few major operations that are doing it. I know it's also been sort of a burden for some of the fishers as well, because they had to work, or collect fish and like turn it in at a certain time, but it wasn't when the processor was there it sort of messed up the whole operation.

It's really just that inspection requirement for catfish that we're trying to work through somehow, but again, it's just more of a political thing, so we haven't really been able to do anything specifically as a workgroup to get through that. But we do have folks, like we have processors and other folks on the workgroup that are trying to provide information for folks who can lobby for that change.

CHAIR WOODWARD: All right, Eric.

MR. REID: Yes, I'll be brief, Mr. Chairman. Yes, I would like to talk to you about that a little bit, because it doesn't make any sense to me. I'll give you a call offline, to save everybody. Thank you very much.

CHAIR WOODWARD: I think Lynn or John, to that point.

MR. CLARK: Go ahead.

MS. FEGLEY: Thank you, Mr. Chair. I just wanted to clarify a little bit from what Mandy said, and Marty can help, but this is a federal requirement, it's incorporated into the Farm Bill. If I understand, it was put in place. It was aimed at catfish processors in the south, but this is an unintended consequence of a federal piece of legislation that we're trying to work through.

MR. REID: This is a USDA thing?

MS. FEGLEY: Yes.

MR. REID: Oh, God help you, that's all I've got to say.

MS. BROMILOW: I was going to mention, actually, Maryland Congressman Harris put in some new language in that, some catfish language in the Appropriations Bill for the House. That would essentially transfer that inspection requirement to the FDA. It would basically give the processors a waiver for wild caught blue catfish in the Bay, so that was a potential solution, at least to start with helping remove that processing barrier in the Bay. I'm not sure where that has ended up at this point.

CHAIR WOODWARD: All right, I'm going to go to Loren and then to Pat Geer.

MR. LUSTIG: Thank you for that fascinating report regarding rivers that I have personally have enjoyed, including the tidal area of the Patuxent River. About 40 years ago, I remember doing recreational fishing for channel catfish there, and really enjoyed it. Do the blue catfish displace the channel catfish when they arrive?

DR. DENSMORE: Yes, I'm not sure about that, but I'm seeing some nods from around the room, so.

MR. PAT GEER: The answer is yes.

MS. BROMILOW: Yes, I was going to mention that. They have seen sort of a competition with white catfish. As blue catfish have increased in their abundance, white catfish have decreased. But I haven't actually heard about channel catfish impacts, but it sounds like other folks are aware of that.

CHAIR WOODWARD: All right, Pat Geer.

MR. GEER: Yes, I'll try to wrap this up, because we could talk about this all day, between the three of us. In Virginia we have a unique problem that our freshwater fisheries agency has developed a world class trophy fishery for this. It's multi-million dollars, people come to the James and catching 90-to-100-pound fish.

However, the biomass of the subadults is so large, that it is starting to stunt the growth, it's affecting its trophy fishery. They've asked us, they've come to VMRC and asked us, how can you increase your commercial harvest. We've come up with some ideas. We're trying to work with them on that.

Getting back to Bill's concern about predation on other species. Mary Fabrizio just finished this study for us that found that in a small area on the James, about 200 kilometers, the blue cats were eating 2.3 million crabs. If anyone knows, in the Chesapeake Bay we're having problems with blue crabs right now.

There are impacts, there are also impacts probably potentially to striped bass, because these fish are in the nursery grounds as well. As you said, they eat anything. They'll eat anything that they can get a hold of. But further down a lot of the studies that have been done in fresher water, but Mary's study was in the meseo area, which was between, I think 6 and 15 parts of 1,000. It is a problem we could talk all day about this if you want.

CHAIR WOODWARD: Thanks, Pat, and thank you Mandy and thank you, Christine. Like I said, it's an intriguing and vexing issue, and we appreciate the presentations.

REVIEW OF NOAA FISHERIES DRAFT EQUITY AND ENVIRONMENTAL JUSTICE STRATEGY

CHAIR WOODWARD: All right, at this point I'm going to go to Sharon Benjamin for a review of NOAA Fisheries Draft Equity and Environmental Justice Strategy.

MS. SHARON BENJAMIN: Hi there, can you hear me?

CHAIR WOODWARD: Yes, we've got you loud and clear.

MS. BENJAMIN: Wonderful, thank you. Sorry, I don't have such fabulous fish photos in my presentation. But I really appreciate you having me, thank you very much. My name is Sharon Benjamin; and I am a NEPA Policy Analyst in my day job at the Greater Atlantic Regional Fisheries Office in Gloucester. But today I'm here to share some background on this NOAA Fisheries Equity Environmental Justice Strategy.

It's a draft strategy that we've been working on for a few months, and I really appreciate the chance to share it with you and members of the public tuning in. Today I'm looking to share some background on the working group that wrote the strategy draft document, and explain some of the equity and environmental justice mandates that we're working under, and that motivated the formation of this working group.

I can provide some context on how the strategy was developed, and how it's framed out, and I'll wrap up with some information on how you can provide feedback if you would like. This is great, this is the right slide. As I said, well this working group was launched in response to the Executive Order signed in January, 2021, the EO 13985, which is the Advancing Racial Equity and Support for Underserved Communities through the federal government's executive order. The Working Group is comprised of staff representing each of the Science Centers, Regional Offices, and Program Offices, such as the Highly Migratory Species Office. As I mentioned, this group was launched in response to the Executive Order 13985.

This work has come about because we're newly motivated with this executive order, and another executive order to take a closer look at how we can achieve equitable outcomes through our work, with these executive orders listed here. The first one, as I mentioned, and the second is 14008, which is tackling the climate crisis at home and abroad.

We've actually been doing work incorporating equity and environmental justice for a long time, because it's the right thing to do, and we're been working under several mandates, including the 1994 Executive Order related to environmental justice. Several of our mandates that we work under normally, such as the Magnuson-Stevens Act, Endangered Species Act, the Marine Mammal Protection Act, all have elements of environmental justice in their mandates, and how we do our work.

We've been doing this for a little while, but this is a new fresh take on what we're doing and how we can make it better. I just wanted to take a moment here to highlight key terms. I don't have a different slide for it, but the three terms that are mentioned in these executive orders. The first is underserved communities, and that term describes groups that have been systemically denied opportunities to participate.

These are geographic communities, and populations that share a particular characteristic, including for example, women and girls, black and indigenous populations, LGBTQIA plus individuals, and others who fit that category. The next term is equity, which is the consistent and systemic fair treatment for everyone, including those who belong to underserved communities.

Then finally, the last term is environmental justice, which is the fair treatment and meaningful involvement of all people. Simply put, we want to ensure both equal access to benefits, as well as equal protection from environmental harm and hazards for all communities. That is a quick rundown of those terms. I'm trying to move quickly.

As I mentioned, we launched the Working Group in spring 2021. We developed it with some input we solicited from federally and non-federally recognized tribes, territories, and indigenous communities in November, 2021, and went through an internal review process. The big red arrow points to where we are now, which is looking for public feedback on this strategy document. We rolled it out publicly in May, and we are accepting comments and feedback through the end of this month, August 31.

We're hoping this fall to take in all the feedback incorporated, improve the document, and publish a final EEJ strategy by the fall, and by spring 2023, we hope to be able to incorporate elements of these strategic goals into each regional offices operating plan. Here is the meat of it. This is where it gets more interesting. I wanted to explain how the strategy is framed out. To achieve equity and environmental justice in our work, we serve a diverse array of communities, and we realize not all communities have equal opportunities and access to our services. To get there we have three overarching goals. The first is the meaningful involvement of all underserved communities, and that includes identifying them, ensuring equitable treatment, and engaging them meaningfully in our work. The second is the equitable delivery of services, and the third is prioritizing EEJ work in our mandated mission work.

The strategy is going to require step down implementation plans, as I mentioned. These will be tracked with annual progress reports, and we hope this is going to really help us make improvements in our work in six core areas. You can see there is an overarching goal of creating and empowering environment. This is referring to making it realistically possible and truly practically possible to help NMFS staff, NOAA Fisheries staff accomplish these goals.

That means meaningfully integrating EEJ into our day-to-day work, with institutional support such as training, resources, things like translations services, things that make it possible to improve our EEJ work. Then the five goals under that, I'll go through them briefly. The first is policy, which is referring to incorporating equity environmental justice into our policies and plans, and thinking about for example, what additional flexibility we can provide in our policies, to incorporate local language and customs, for example, to help make these programs better.

The second is research, and for instance this includes identifying underserved communities, addressing their needs, and assessing the impact of management choices on them. For example, we could improve this by surveying, to understand barriers to entry in things like fisheries and the aquaculture industry, and through that, identifying potential policy changes to address that.

The next is outreach, which includes for example, building relationships with underserved communities. We're hoping that we can find ways to engage underserved communities through outreach, such as with mentorship programs. For instance, training programs that might navigate a permit application process for grant programs, or a grant proposal process.

The next is benefits, and we're hoping to achieve an equitable distribution of benefits. An example of this is assessing our grant programs, our projects and disaster declarations, and assessing anywhere our funding is going to ensure that it's reaching underserved communities. Finally, for inclusive governance, this is trying to reach an inclusive access to the decision-making process.

One example is having the hybrid meeting style is one way to ensure virtual participation. Why am I sharing this today? I wanted to update you on this effort that NOAA Fisheries has undertaken. We're also requesting feedback. We're looking for feedback from you and from the public, if possible, by the end of the month.

Some of the things we can think about, some example questions you might consider, when thinking about this document is for example, who are our underserved communities, and how can we better communicate with them. We want to improve this document to make it as strong as possible, as we implement it in our day-to-day work.

This slide, so I provided a couple of pieces of material ahead of the presentation to Toni, just to provide the strategy itself, a PDF of the strategy, some frequently asked questions, and links to those

materials. But if you didn't see that or you don't know where those are, that's okay. This slide I put together to try to make it easy to find the materials quickly. If you go to fisheries.noaa.gov, and search EEJ in that search tab where there is the orange. It didn't quite format correctly, so I apologize for that. But if you search EEJ, the third link that pops up is where that red arrow is pointing to the NOAA Fisheries invites public comment link, and you see the nice picture of the family fishing together.

That page gives you access to the EEJ strategy. It gives you executive summary translations into several languages, including Chinese, French, Haitian, Hawaiian, Portuguese, Spanish, and several others. There is also a link to the comment form, where we're hoping folks will consider providing feedback.

If all else fails, please feel free to e-mail me. Again, my name is Sharon Benjamin, and you can e-mail me at sharon.benjamin@noaa.gov , and I would be very happy to answer any questions by e-mail, or if we have time, I will do my best to answer them today. We can leave this slide up, and thank you again for your time, and I'm happy to take any questions. Thank you.

CHAIR WOODWARD: Thank you, Sharon, any questions for Sharon. I don't see any hands raised yet, so thank you for the presentation, and thank you for providing us with the information to follow up on this. We appreciate it.

MS. BENJAMIN: Thank you so much, thank you, have a great day.

CHAIR WOODWARD: Yes, I guess a question for those who are left in the room and conscious is, do we want to comment as a Commission or is this something that might be bet left to individual states, agencies, individuals, so forth, so on? I'm not sure how we would necessary coalesce everybody together as a Commission comment. I mean you all know your own backyards better than the Commission does. Just a question. Dan.

MR. McKIERNAN: I suspect many of our states have similar initiatives, so it may be difficult for us to say sign on to a letter that is not aligned with our state policies and initiatives. But that is just one thought.

CHIAR WOODWARD: All righty. Well, we are at the end of our agenda, we have no noncompliance findings, thankfully, and we'll have no need for a Business Session, but we do have one other matter of business, and I want to call on Toni, and this is a very important matter of business.

MS. KERNS: Thank you, Mr. Chairman. Maya has been the master behind the screen, the voice of God from above this week. She couldn't make it in person. I'm sorry to say that, because this is Maya's last week with the Commission. She has accepted a spot at the University of Maryland Center for Environmental Science Master's Program.

We are super excited for her to be joining that team. Perhaps she'll work on some spot project with Mike Wilberg or Jenny Nesslage, and be coming back to the Board to present her findings, we don't know. But Maya has been just an instrumental support of so many of the Commission's programs, for me personally, and the ISFMP team. We are so grateful for all of the work that she does for us. I know the Science Team is incredibly grateful as well, and you know working under Tina as the Communications Director, Maya has been instrumental in pulling together the story maps that the Commission has produced over the past couple of years.

Then I don't know anybody that can take motions as well as Maya does. I am so sad to see her leaving us, but really excited for her. Maya, we wish we could send you off in person, but you know thank you again for all that you've done for us over the years. (Applause)

CHAIR WOODWARD: Yes, thank you, Maya, and we wish you the best as you go forward into a graduate

program. As Toni said, we might just cross paths again one day. Maybe not some of us who are a little longer in the tooth, but some of the other ones.

ADJOURNMENT

CHAIR WOODWARD: All right, is there any other business to come before the Policy Board? I do not see any, any objection to adjournment? Don't you dare! I do not see any, so we will stand adjourned. Thank you, and I look forward to seeing everybody in New Jersey.

(Whereupon the meeting adjourned on Thursday August 4, 2022 at 1:15 p.m.)

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Fish Habitat of Concern Designations for Fish and Shellfish Species Managed by the Atlantic States Marine Fisheries Commission

Month XX, 2022
Prepared by the ASMFC Habitat Committee and Habitat Program Coordinator

Introduction

The Atlantic States Marine Fisheries Commission (Commission or ASMFC) serves as a deliberative body that coordinates the conservation and management of the Atlantic coastal states' shared fishery resources for protection and sustainable use. The Commission's Habitat Committee functions to promote and support cooperative interstate conservation, restoration, and protection of vital habitats for Commission-managed species. One of these functions includes the development of recommendations for Habitat Areas of Particular Concern (HAPC) for each species. The Commission renamed HAPCs 'Fish Habitats of Concern' (FHOC) in October 2017 to distinguish the Commission term from the federal term defined by the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson Act). FHOCs are a subset of fish habitat that are particularly ecologically important, sensitive, vulnerable to development threats, and/or rare. FHOCs are defined based on the same criteria as federally designated HAPCs, but since species managed only by the Commission do not fall under the Magnuson Act, their habitats are not afforded federal legal protection and no consultation with the National Marine Fisheries Service (NMFS) is required. Defining HAPC and FHOC for federally- and Commission-managed species, respectively, is intended to focus conservation efforts on specific habitats that are most ecologically important, vulnerable, and/or necessary to support each life stage of a species.

Goals

This report has two primary goals:

1. To describe the regulatory and policy context for habitat descriptions in Commission Fishery Management Plans;
2. To draft text descriptions of FHOC for species managed only by the Commission, plus Atlantic sturgeon. Atlantic sturgeon management will become the responsibility of the Commission once it is declared recovered. Given that the Commission wishes to affirm NMFS's designation of Critical Habitat (CH) for the species, the Habitat Committee elected to includes the species in this document.

Commission Policy on Habitat Descriptions in Fishery Management Plans

The Commission recognizes the importance of habitat conservation as a critical component of fisheries management and that thriving habitats produce abundant fish populations. While the Atlantic Coastal Fisheries Cooperative Management Act does not grant the Commission regulatory authority over habitat of Commission-managed species, the Commission does require habitat descriptions be included as part of each Commission Fishery Management Plan (FMP) in recognition of the critical role habitat plays in fisheries production and ecosystem function.

Guidance and process for the development of habitat sections to be included in FMPs is outlined in the ASMFC's Habitat Committee Guidance Document (2013).

The basic elements of an FMP's habitat section include:

1. Description of the Habitat;
2. Identification and Distribution of Habitat and HAPC (*since re-named FHOC*);

3. Present Condition of Habitats and HAPCs (*since re-named FHOC*);
4. Recommendations and/or Requirements for Fish Habitat Conservation/Restoration; and Information Needs/Recommendations for Future Habitat Research.

This document focuses on designations under Section 2: Identification and Distribution of Habitat and HAPC (*since re-named FHOC*), and under Section 3: Present Condition of Habitats and HAPCs (*since re-named FHOC*) where appropriate.

Commission-managed species are not subject to requirements imposed by the Magnuson Act which mandate designation of Essential Fish Habitat (EFH) and evaluation of federally-permitted projects that may impact that habitat[1]. However, the NMFS and U.S Fish and Wildlife Service (USFWS) do have obligations to consult on a broader array of trust resources under the Fish and Wildlife Coordination Act, which includes Commission-managed species.

Guidelines for Identifying Fish Habitat of Concern, formerly known as HAPCs
The Commission's guidelines for identifying FHOCs (formerly HAPCs) in FMPs are stated in the box below. The subsections were combined to create the current designations.

The text is taken from Appendix 3 to the Habitat Committee Guidance (2013, pp. 30-31). *Note: "Habitat Area of Particular Concern" has been changed to "Fish Habitat of Concern" in the text below where appropriate.*

1.4.1.2: Identification and Distribution of Fish Habitat of Concern

The intent of this subsection is to identify habitat areas or [fish] habitat area of concern that are unequivocally essential to the species in all their life stages, since all used habitats have already been identified in Subsection 1.4.1.1.

Habitat Areas of Particular Concern, or HAPCs, are areas within EFH that may be designated according to the Essential Fish Habitat Final Rule (2002) based on one or more of the following considerations: (i) the importance of the ecological function provided by the habitat, (ii) the extent to which the habitat is sensitive to human-induced environmental degradation, (iii) whether, and to what extent, development activities are, or will be, stressing the habitat type, or (iv) the rarity of the habitat type. Descriptions of EFH are not currently being included in FMPs prepared for species solely under Commission management. The definition of FHOC is therefore modified to be areas within the species' habitat that satisfy one or more of the aforementioned criteria. ***When an FHOC is described for a species solely under the management of the Commission, the designation does not have any regulatory authority. Please refer to the ASMFC HAPC document for a list of species under Commission management only and description of the corresponding HAPC (ASMFC 2013b)[2].***

[1]Federal agencies proposing or authorizing projects within EFH areas are required to consult with NMFS to determine the impact of those projects on EFH. This EFH consultation is required only for federally managed species, not for species solely under the management authority of the Commissions. Regulatory guidelines for EFH consultations can be found at 50 C.F.R. §600.905 2015.

[2] The referenced document is referring to this current document (ASMFC 2022).

A FHOC is a subset of the "habitats" described in Subsection 1.4.1.1, and could include spawning habitat (e.g., particular river miles or river reaches for striped bass populations), nursery habitat for larvae, juveniles and subadults, and/or some amount of foraging habitat for mature adults. FHOC are geographic locations which are particularly critical to the survival of a species. Determination of the amount of habitats (spawning, nursery, subadult, adult residence, and adult migration routes) described in Subsection 1.4.1.1 that should be classified as FHOC may be difficult.

Examples of FHOC include: any habitat necessary for the species during the developmental stage at which the production of the species is most directly affected; spawning sites for anadromous species; benthic areas where herring eggs are deposited; primary nursery areas; submerged aquatic vegetation in instances when species are determined to be "dependent" upon it; and inlets such as those located between the Atlantic Ocean and bays or sounds, which are the only areas available for providing ingress by larvae spawned offshore to their estuarine nursery areas.

The extent of habitats or FHOC for a species may depend on factors such as habitat bottlenecks, the current stock size and/or the stock size for which a species Management Board and Technical Committee establishes targets, etc. Given the current state of knowledge with regard to the relationship between habitat and production of individual species, this information may not be available for many species.

If known, the historical extent of FHOC should also be included in this subsection, in order to establish a basis for Subsection 1.4.1.3. Use of GIS is encouraged to depict the historical and current extent of HAPCs, and determine the amount of loss/degradation, which will assist in targeting areas for potential restoration.

1.4.1.3: Present Condition of Habitats and Fish Habitat of Concern

This subsection should include, to the extent the information is available, quantitative information on the amount of habitat and FHOC that are presently available for the species, and information on current habitat quality. Reasons for reduction in areal extent (either current or historical), should be addressed, for example, "dam construction has eliminated twenty percent of historical spawning habitat" (ASMFC, 2008), "forage habitat bottleneck has reduced the young-of-year populations by thirty percent", or "fishing gear continues to disturb fifty percent of the forage habitat", etc.

Any habitats or FHOC that have diminished over time due to habitat bottlenecks should be incorporated to the extent information is available. Habitat bottlenecks can occur due to natural disasters, fishing disturbance, impacts of development, or other complex processes that can cause habitat shifts. This subsection can further address options to reverse or restore current known habitat bottlenecks. All current threats to the species' habitat should be discussed in this subsection. If known, relative impacts from these activities should be identified and prioritized. For example, addressing hydrological alterations and their impacts are a high priority for anadromous species. These may include freshwater inflow/diversions; changes in flows due to hydropower, flood control, channel modifications, or surface/aquifer withdrawals; and saltwater flow or salinity changes due to reductions in freshwater inflows or deepening of navigation channels, which facilitate upstream salinity increases. Threats should also be assessed for their effect on the ability to recreationally and commercially harvest, consume, and market the species (e.g., heavy metals or chemical contamination which results in the posting of consumption advisories, or prohibition of commercial fisheries for a species, e.g. striped bass in the Hudson River, NY).

This subsection will serve as a basis for the development of recommended or required actions to protect the species' habitat, which will be outlined in Section 4.4. For example, the effectiveness of water quality standards should be reviewed in this subsection. If they are ineffective or inappropriate at protecting water quality at a level appropriate to assure the productivity and health of the species, then a recommendation should be included under the recommendations section (Section 4.4) for improvement of water quality standards.

Purpose of this Report

Although habitat information is required for each FMP, the amount of information compiled for each species varies, as does the extent of the underlying habitat-related science. Also, FMPs are written and amended as management needs arise, and the frequency of updates is not consistent between plans. Consequently, FHOC designations range from non-existent to specific and recent. This report was initiated to assess the current FHOC designations and make updates, clarifications, and improvements where possible.

The Habitat Committee drafted text descriptions of FHOC for each Commission-managed species drawing on information from the current description of FHOC in the FMPs, species fact sheets, other ASMFC publications, and current literature. Descriptions were reviewed and modified by the species technical committees for accuracy and approval.

FHOC will not be designated for species managed jointly with the Councils, instead deferring to federal designations for EFH and HAPCs. FHOCs will be designated on a case by case basis for ASMFC species which may be listed under the Endangered Species Act (the presumption being that ASMFC would still be responsible for management of the species, once it is declared recovered).

As FMPs and other Commission documents are updated, 'Habitat Areas of Particular Concern (HAPC)' will be replaced with 'Fish Habitats of Concern (FHOC)' as appropriate.

American Eel Fish Habitats of Concern

Although no current anthropogenic threats to the functional health of the Sargasso Sea have been reported (aside from climate change), it is a FHOC for spawning adults and eggs because this is where reproduction for the panmictic population occurs exclusively. *Sargassum* seaweed was being harvested in U.S. waters by surface trawling primarily by one company, but such harvest has ceased. Historically, the harvesting of *Sargassum* began in 1976, but only occurred in the Sargasso Sea since 1987. Since 1976, approximately 44,800 dry pounds of *Sargassum* were harvested, 33,500 pounds of which were from the Sargasso Sea (SAFMC 1998). It is unknown whether this harvest had a direct or indirect influence on American eel mortality. Harvesting *Sargassum* was eliminated in the South Atlantic Exclusive Economic Zone and state waters on January 1, 2001, through a management plan adopted by the South Atlantic Fishery Management Council (SAFMC 1998). The extent of eel bycatch in these operations was not documented.

The drift of leptocephalus larvae from the Sargasso Sea towards the Atlantic coast may be impacted by changes in ocean currents. Such changes have been predicted to be possible due to climate change (Knights 2003, Caesar et al. 2018, Thornalley et al. 2018, Peng et al. 2022). The potential impact on the drift of larvae is unknown at this time, but the predicted weakening and positioning of the Gulf Stream (Ezer 2015, Rypina et al. 2016) may reduce larval transport to coastal and fresh waters. Currents,

primary production, and potential influence of toxins transferred from the adults to the eggs influence the success of hatch, larval migration, feeding, and growth.

Glass eel survival (growth, distribution, and abundance) on the continental shelf is probably impacted by a variety of activities. Channel dredging, shoreline alterations, and overboard dredged material disposal are common throughout the Atlantic coast, but currently the effects on glass eels are unknown. Additionally, these activities, along with impacts from mobile fishing gear, may damage American eel benthic habitat. However, the significance of this impact also remains unknown. Changes in salinity in embayments, as a result of dredging projects, could alter American eel distribution.

Elver and yellow eel abundance is impacted by physical changes in the coastal and tributary habitats. Lost wetlands or access to wetlands and lost access to the upper reaches of tributaries have significantly decreased the availability of these important habitats with wetland loss estimated at 54% (Tiner 1984) and Atlantic coastal tributary access loss or restriction to American eel nursery habitats estimated at 84% (Busch et. al 1998).

Habitat factors are probably impacting the abundance and survival of elver, yellow, and silver eel life stages. The nearshore, embayments, and tributaries provide important feeding and habitat for growth. The availability of these habitats influences the density of the eels and may influence the determination of sex. Therefore, since females may be more common in lower density settings (Vladykov 1966; Columbo and Rossi 1978; Liew 1982; Holmgren and Mosegaard 1996; Roncrati et al. 1997; Krueger and Oliveira 1999) it is crucial that the quantity and quality of these habitats be protected and restored (including upstream access). The blockage or restriction to upstream migration caused by dams reduces or restricts the amount of available habitat to support eel distribution and growth, and therefore tributary headwaters are a particular FHOC. Fish that succeeded to reach upstream areas may also face significant stresses during downstream migration. For example, if eel have to pass through turbines, mortality rates can range from 10 – 60% (J. McCleave, U. of Maine, personal communication) and the amount of injury is not well documented. In the future, it is possible that “fish-friendly” turbines which provide much higher survival rates for American eels may greatly reduce this source of mortality (Peter Sturke and Corey Chamberlain, Dominion Energy, personal communication).

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American Lobster Fish Habitats of Concern

There has been widespread increase in the area and duration of stressful water temperatures (>20°C) throughout Southern New England inshore waters (ASMFC 2010, ASMFC 2020). This loss of optimal thermal habitat in inshore waters throughout this region has caused the stock to contract into deeper waters. Furthermore, young-of-year recruitment throughout historically productive inshore areas have shown dramatic declines throughout the past two decades are now at sustained low levels. Much of the Southern New England fishery has moved to deeper offshore areas in this region. The contraction of

thermal habitat in Southern New England to rising ocean temperatures is a major concern for this species. The Gulf of Maine is still within the optimal temperature range for American lobster, though it is warming at unprecedented rates and there have been recent declines in young-of-year recruitment and older juvenile indices in recent years (ASMFC 2015, ASMFC 2020). Though the Gulf of Maine/Georges Bank stock is still near a time series high level of reference abundance, declines in recruitment and other older life stage indices have prompted ASMFC to consider management changes to protect spawning stock biomass. The Gulf of Maine will be monitored closely over the coming years to detect population changes, though other than concerns of recent declines, continues to be in generally good condition. In contrast, the Southern New England population is at historic low levels and a major concern is lack of optimal thermal habitat for all life stages.

Other American lobster FHOCs include gravel, cobble, boulder, and embedded rock for young-of-year, juvenile, and adult life stages. Areas where these habitats are limited and in close proximity to offshore shoals are susceptible to various types of anthropogenic impact. American lobster metamorphose through four larval stages before settling to the bottom. Research has shown they need shelter providing habitat to protect them from predators during this vulnerable time (Wahle and Steneck 1991, Wahle and Incze 1997). These shallow water cobble/boulder areas are critical to protect from coastal development. Furthermore, egg-bearing female lobsters tend to aggregate in offshore and nearshore shoal areas (Campbell 1990, Carloni and Watson 2018, Jury et al. 2019). This likely provide access to warm water for brooding eggs and close proximity to deep offshore areas for releasing larvae. Areas such as Grand Manan, Canada; Monhegan Island, Maine; Isles of Shoals, Maine/New Hampshire; and Georges Bank have all documented large aggregations of female reproductive lobsters. These areas need to be taken into consideration with any coastal development.

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Atlantic Croaker Fish Habitats of Concern

FHOCs for juvenile Atlantic croaker include low salinity estuarine habitats along the Atlantic coast in early spring, to higher salinity estuarine habitats in summer and early fall, in areas with mud and detrital bottoms rich in benthic prey and dissolved oxygen (DO) levels consistently higher than 2.0 mg/L. Estuaries such as Pamlico Sound and Chesapeake Bay serve as important nursery and spawning areas (Schloesser and Fabrizio 2018). Adult Atlantic croaker are also dependent upon estuarine habitat in spring through fall, in areas with salinities ranging from 3-27 ppt and DO greater than 2.0 mg/L, but are less limited than juveniles by bottom substrate type due to an ontogenetic diet shift.

Along the Atlantic coast, juvenile Atlantic croaker are typically found in estuaries. Young-of-year less than 50 mm total length (TL) inhabit low salinity or upriver areas (Haven 1957; Dahlberg, 1972; Chao and Musick 1977; White and Chittenden 1977; Miller et al. 2003). Juveniles are positively correlated with mud bottoms that have large amounts of detritus and high amounts of benthic prey (Cowan and Birdsong 1985). Juveniles migrate downstream as they develop; by late fall, most juveniles emigrate out of the estuaries to coastal ocean habitats (Miglarese et al. 1982). In spring (after spending winter in the coastal ocean) through fall, adult Atlantic croaker are found in estuaries over muddy and sandy substrates, seagrass beds, and near oyster, coral and sponge reefs (White and Chittenden 1977; TSNL 1982).

Studies have shown that Atlantic croaker are virtually absent from waters with DO levels less than 2.0 mg/L, suggesting they are very sensitive to the amount of DO present (Eby and Crowder 2002). This can become a factor that limits habitat quantity and quality in the warmer summer months in estuarine systems that experience nutrient enrichment and eutrophication issues. Bottom-tending fishing gear may also impact Atlantic croaker FHOCs (Able et al. 2017, Odell et al. 2017).

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Atlantic Menhaden Fish Habitats of Concern

Estuarine-subtidal and riverine-tidal systems are FHOCs for larval and early juvenile life stages of Atlantic menhaden. Atlantic menhaden production is heavily dependent on estuarine-subtidal and riverine-tidal systems (constrained to the upstream limit of the tidal zone) and the water quality of those systems is threatened by climate change, toxicants, nutrient pollution, and altered freshwater flows. A further threat to estuarine water quality is lower DO associated with increasing average annual temperatures due to climate change. Both the Neuse River Estuary and Chesapeake Bay have been prone to hypoxic or anoxic conditions during summer (Cooper and Brush 1991), resulting in significant episodic mortality of juvenile Atlantic menhaden, particularly in the Neuse (Carpenter and Dubbs 2012).

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Atlantic Striped Bass Fish Habitats of Concern

Adult striped bass are highly concentrated and most vulnerable to exploitation in their offshore wintering grounds (historically from the Outer Banks of North Carolina northward through Virginia and Maryland waters, but in recent years shifting more northward and further offshore) and riverine spawning areas (for the Atlantic migratory stock, most major coastal rivers from the Roanoke in North Carolina through the Kennebec in Maine). While exploitation of striped bass aggregations impacts the spawning stock, the determinant factor in striped bass abundance (year class strength) is the survival of their eggs and larvae. For this reason, spawning areas are a FHOC for striped bass.

Striped bass spawn in freshwater or nearly freshwater of Atlantic Coast rivers and estuaries. Such sites provide the critical ecological function of reproduction; are sensitive to anthropogenic impacts such as dam emplacement, nutrient and sediment loading, and pollution; are susceptible to navigational dredging and other coastal development activities; and are relatively small in extent and extremely rare in comparison to the areal extent of other migratory striped bass habitats. According to Hill et al. (1989) and citations within: striped bass spawn above the tide in mid-February in Florida but in the St. Lawrence River they spawn in June or July. The bass spawn in turbid areas as far upstream as 320 km from the tidal zone. The tributaries of the Chesapeake Bay are the primary spawning areas for migratory striped bass, but other major areas include the Hudson River, Delaware Bay, and the Roanoke River. Spawning is triggered by increased water temperature. Spawning occurs between 10 and 23°C, but optimal temperature for spawning is between 17 and 19°C.

A temperature range of 17-19°C is important for egg survival as well as for maintaining appropriate DO levels (Bain and Bain 1982). Minimum water velocities of 30 cm/s are needed to keep the eggs suspended, and fluctuations in the water velocity cause changes in the size of the oil globule surrounding the eggs (Albrecht 1964). Without the buoyancy, the eggs sink to the bottom, where the sediment may smother them. It is possible for the eggs to hatch if the sediment is coarse and not sticky or muddy, but survival is limited (Bayless 1968). Eggs hatch from about 30 hours at 22°C to about 80 hours at 11°C (Hill et al. 1989).

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Atlantic Sturgeon Fish Habitats of Concern

The FHOCs for Atlantic sturgeon include the NMFS CH designations for the five discrete population segments (DPS) which comprise the species range. The designations can be found here: https://www.fisheries.noaa.gov/action/critical-habitat-designation-atlantic-sturgeon. The designations include the reaches of Atlantic Coast rivers where spawning migrations, egg deposition, and larval and early juvenile nursery habitats occur. Threats to these habitats are multiple and include altered river flows and thermal regimes due to hydropower operations, water withdrawals, and increased incidence of storms owing to climate change; low DO, ocean acidification, altered salinity due to navigational dredging, and ship strikes, among others.

Information regarding Atlantic sturgeon use of spawning reaches at a finer scale has increased since CH designation in 2017 as a result of ongoing long-term studies using acoustic telemetry of sexually mature Atlantic sturgeon (e.g., see Breece et al. 2021, for the Hudson River population; Hager et al. 2020 for the York River population in Virginia; and additional information is currently being gathered for North Carolina rivers under a NMFS Section 6 grant, see McCargo et al. 2019). These studies may allow further refinement of Atlantic sturgeon FHOC beyond what is presently designated as CH by NMFS.

When the initial CH designations were made, the NMFS indicated that they believed they did not have enough data to designate estuarine or offshore habitats where sturgeon aggregations occurred as CH for reasons that were not unequivocally associated with particular physical or biological features. Specifically, they stated, "We cannot designate critical habitat based on the presence of the species alone. Therefore, while we acknowledge there is literature that identifies aggregation areas where Atlantic sturgeon are generally found, it does not provide specificity as to the purpose of the aggregations or the features that support those purposes. Therefore, we do not believe it provides the information we need to meet the statutory and regulatory requirements to designate critical habitat" [Federal Register / Vol. 82, No. 158 / Thursday, August 17, 2017 / Rules and Regulations, Page 39172].

While we do not disagree with the NMFS conclusions with respect to sturgeon aggregations and CH designation(s), the Commission believes that sufficient justification and data currently exist to designate habitats FHOC for ASMFC purposes, in particular Atlantic sturgeon nursery habitats within estuaries outside of the current NMFS CH designations, where fishery-independent sampling has persistently shown juveniles to be present. Most natal rivers discharge into estuaries, and these areas, part of the migratory pathway for juveniles to the ocean, are of significance for juveniles as they migrate from their birthplace. The NMFS CH designations in most cases already include the estuarine portions of many rivers (i.e., Haverstraw Bay as documented as a significant Atlantic sturgeon nursery area, see Pendleton and Adams 2021; and the Delaware River estuary, see Hale et al. 2016); however, we believe additional

estuarine areas further downstream merit FHOC status, based on the persistent and documented presence of juvenile Atlantic sturgeon within them and their importance as part of the migratory pathway.

Our recommendations are based in large measure on the comprehensive review of Atlantic sturgeon life history by Hilton et al. (2016), supplemented by additional published information and in some cases unpublished data (specific references cited below). We also rely on the review by Dunton et al. (2010) of Atlantic sturgeon within the Northwest Atlantic Ocean as derived from five fishery-independent surveys. In particular, they note: "Our analysis of habitat preferences indicated that depth was the primary environmental characteristic defining the Atlantic sturgeon distribution. Thus, essential habitat for juvenile marine migrant Atlantic sturgeon can broadly be defined as coastal waters <20 m depth, and it is concentrated in areas adjacent to estuaries such as the Hudson River–NY Bight, Delaware Bay, Chesapeake Bay, Cape Hatteras, and Kennebec River. This narrow band of shallow water appears to represent an important habitat corridor and potential migration path."

These estuarine FHOC areas which were not included within the NMFS CH designations include (from north to south): Long Island Sound (Dunton et al. 2010, citing Bain et al. 2000 and Savoy and Pacileo 2003); Delaware Bay (Dunton et al. 2010; Brundage and O'Herron 2009; Breece et al. 2018); Chesapeake Bay (Musick 2005; Greenlee et al. 2017), including the Nanticoke River-Marshyhope Creek estuary (see Secor et al. 2022); western Albemarle Sound (based on a decades-long time series documenting young-of-year production and subadult habitat use, from captures in the NCDMF fishery-independent striped bass gill net survey, NCDMF unpublished data; and Armstrong 2003); Pamlico Sound (Atlantic sturgeon use also documented through NCDMF fishery-independent unpublished data); and Winyah Bay (Collins et al. 2000, Simpson et al. 2015, Crane 2021). Such estuarine areas are important not only as nursery habitat for juveniles produced within natal rivers tributary to these estuaries, but also for juveniles and subadults which may migrate into them from other spawning populations (e.g., see Waldman et al. 2013).

Finally, several long-term fishery-independent data time series (Laney et al. 2007 and unpublished data; Dunton et al. 2010), as well as analysis of fishery-dependent data derived from observation of Atlantic sturgeon bycatch (e.g., see Stein et al. 2004, ASMFC 2007, and NMFS 2022) have consistently documented aggregation sites for subadult and adult Atlantic sturgeon in the nearshore marine environment. In the spring and fall, juveniles are found off the Rockaways and Sandy Hook (Dunton et al. 2010, 2015, unpublished acoustic data). We believe these areas also merit designation as FHOC. Stein et al. (2004) mapped multiple areas from Cape Hatteras northward. Dunton et al. (2010) also mapped multiple sites. Analysis of the complete time series (1988-2016) of data from Atlantic sturgeon captures during the Cooperative Winter Tagging Cruises (see Laney et al. 2007) by Wickliffe et al. (2019) further documents the Atlantic sturgeon "hot spots" in the nearshore Atlantic Ocean off NC and VA. Such aggregation sites are not only used by sturgeon from nearby natal rivers, but are also frequented by sturgeon from other DPSs as well (Wirgin et al. 2015, Kazyak et al. 2021). "Hot spots" should be designated FHOCs once specific locations are identified.

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Black Drum Fish Habitats of Concern

Black drum are habitat generalists, so no FHOCs are designated at this time. At various life stages they can be found in the following habitats: tidal freshwater, estuarine emergent vegetated wetlands (flooded salt marshes, brackish marshes, and tidal creeks), estuarine scrub/shrub (mangrove fringe), submerged rooted vascular plants (seagrasses), oyster reefs and shell banks, unconsolidated bottom (soft sediments), ocean high salinity surf zones, and artificial reefs. The estuarine system as a whole serves as the species' primary nursery area. In the future, we may elect to specify documented spawning sites as FHOC for black drum, should acoustic surveys be able to accurately pinpoint such habitats (e.g., see Rice et al. 2016).

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Cobia Fish Habitats of Concern

Important habitats for cobia include estuarine and nearshore spawning areas and live reefs and artificial structure. Good water quality in high salinity sounds in South Carolina and Virginia where spawning aggregations occur and eggs and larvae develop are critical for the sub-population of cobia that spawn inshore. Oceanic spawning sites off Virginia to Georgia may extend from just outside inlets and sounds to the Gulf Stream (Brown-Peterson et al. 2001). Offshore spawning was determined through the

presence of eggs and larvae, thus exact locations are not known but cobia often associate with structure provided by live reefs, artificial reefs, oil platforms, and navigation markers.

Designation of FHOCs should be considered for Port Royal Sound, St. Helena Sound, Beaufort Inlet, Barden's Inlet, Hatteras Inlet, Pamlico Sound, and the mouth and lower portion of the Chesapeake Bay, especially for the months of April through June, when extensive eggs and larvae have been documented (Lefebvre and Denson 2012). Movement data show that cobia can exhibit site fidelity to spawning areas, returning to the same sites across multiple years. Four genetically distinct groups of cobia are found along the Atlantic coast, two of which are associated with spawning inshore in South Carolina and inshore Virginia/North Carolina (Darden et al. 2018), further supporting the areas listed above. Additional locations could be considered as potential FHOCs in the future as research on cobia spawning habitat and movements expands.

As for many species, protection of spawning habitat can help to ensure population viability. Seasonal cobia migrations that occur along coasts, and between inshore and offshore waters, are driven by water temperature; thus, interannual variation in water temperature, and climate change, could affect the timing of spawning and recruitment (Crear 2021). Protection of spawning habitat is warranted in areas subject to urbanization, eutrophication, and dredging. In the Chesapeake Bay, one of the spawning sites of cobia, nutrients along with warmer water has led to more frequent and severe hypoxic events (e.g., Hagy et al. 2004).

Along the Atlantic coast, cobia are divided into two stocks at the Florida/Georgia border (GMFMC 2014) with a mixing zone from southern Georgia to Cape Canaveral FL (Darden et al. 2014, Perkinson et al. 2019). The east coast of Florida is considered a migratory zone and is managed by the Gulf of Mexico Fishery Management Council. Hence, Florida is not considered in habitats of concern for the ASFMC.

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Horseshoe Crab Fish Habitats of Concern

Habitat requirements change throughout the horseshoe crab life cycle, extending from intertidal beach fronts and tidal flats in coastal embayments for eggs and larvae, to the edge of the continental shelf for adults. The distribution of high quality spawning beaches, which are exposed to minimal human disturbance, presents a potential bottleneck to reproductive success for this species. Beach areas that provide spawning habitat are Fish Habitats of Concern for adult horseshoe crabs. Spawning adults prefer sandy beaches in low wave energy areas, usually within bays and coves. The ideal beach habitat for spawning horseshoe crabs includes a sufficient depth of porous, well-oxygenated sediments to provide a suitable environment for egg survival and development, although nest depth and location on the beach vary among the Atlantic states depending on local habitats available for spawning. Spawning beach characteristics can vary along the coast, with beaches in Florida typically having a finer grain size and larger area of tidal inundation and saturated zones. This causes the sediment to hold more water, though these beaches have also shown to hold oxygen farther from the water line than in Delaware (Penn and Brockman 1994).

Juvenile horseshoe crabs use nearshore, shallow water, and intertidal flats as they develop. Larger juveniles and adults use deep water habitats to forage for food, but these are not considered Fish Habitats of Concern. Of these habitats, the beaches are the most critical (Shuster 1996). Optimal spawning beaches may be a limiting reproductive factor for the horseshoe crab population.

The densest concentrations of horseshoe crabs in New Jersey occur on small sandy beaches surrounded by salt marshes or bulkheaded areas (Loveland et al. 1996). The spawning beaches within Delaware Bay are critical habitat because they support the highest density of spawning horseshoe crabs along the U.S. Atlantic Coast. Prime spawning beaches within the Delaware Bay consist of sand beaches between Maurice River and the Cape May Canal in New Jersey and between Bowers Beach and Lewes in Delaware (Shuster 1996). Horseshoe crab eggs play an important ecological role in the food web for migrating shorebirds and the Delaware Bay is an important stopover location for the threatened red knot. Good spawning habitat is widely distributed throughout Maryland's Chesapeake and coastal bays, including tributaries. In South Carolina and Georgia, horseshoe crabs spawn in substantial numbers on a variety of substrates including sandy beaches, salt marshes, and coarse-grained oyster shell. These sites

are also known stopover locations for red knot. While viability of eggs deposited in salt marshes are slightly reduced compared to the sandy beaches, horseshoe crabs apparently use these habitats for spawning frequently in South Carolina (Kendrick et al. 2021). Florida has less dense concentrations of horseshoe crabs but there are still prominent spawning populations on both the Atlantic and Gulf Coasts. The Indian River Lagoon has the highest densities of horseshoe crabs in Florida.

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Jonah Crab Fish Habitats of Concern

Currently there is not enough information available to designation Jonah crab FHOC.

Northern Shrimp Fish Habitats of Concern

Deep, muddy basins (generally 90-180 m, but found down to 300 m) in the southwestern region of the Gulf of Maine act as cold-water refuges (4-6°C) for adult shrimp during periods when most water in the Gulf reaches sub-optimal temperatures and are therefore a FHOC. Sub-optimal temperatures are considered over 8°C, with temperatures over 12°C being considered highly stressful for northern shrimp and potentially causing mortality if exposed to these temperatures over longer time periods (ASMFC 2017, Richards and Hunter 2021). Temperature serves as a habitat bottleneck for this species (Apollonio 1986).

Nearshore water provides habitat for larval and juvenile stages of northern shrimp, however the specific habitat requirements and spatial distribution are not well known (ASMFC 2017).

See Figure 10 in Amendment 3 of the northern shrimp FMP (ASMFC 2017) and Figure 6 in Richards and Hunter 2021, showing temperature regimes and shrimp populations respectively, further than 10 miles from shore. Also see “Offshore Habitat Preferences” in Apollonio et al. 1986, p. 18 for general discussion.

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Red Drum Fish Habitats of Concern

Red drum FHOCs vary based on life stage. FHOCs for early juveniles include protected marsh (tidal fresh, brackish, and salt water) and tidal creek habitat (Peters and McMichael 1987; Wenner, 1992; FWCC 2008). Subadults, while they can use a wide range of estuary habitats, exhibit highest abundances and apparent productivity in association with submerged aquatic vegetation, oyster reef, tidal creeks, and marsh (tidally fresh, brackish, and salt) habitats (Pafford et al. 1990; Wenner 1992; Adams and Tremain 2000). Highest concentrations tend to be found in areas with dense reefs and/or shell hash in association with tidally flooded marsh habitat where these habitats exist. FHOCs for adults include inlets, channels, sounds, outer bars, and within estuaries in some areas (e.g. Indian River Lagoon, FL), due to their importance for red drum spawning activity (Murphy and Taylor 1990; Johnson and Funicelli 1991; Reyier et al. 2011).

A species' nursery areas are indisputably essential to its continuing existence. Nursery areas for red drum can be found throughout estuaries. Larvae and early juveniles seemingly prefer shallow waters of varying salinities that offer a certain degree of protection. Such areas include coastal marshes, shallow tidal creeks, bays, tidal flats of varying substrate, tidal impoundments, and seagrass beds (Pattillo et al. 1997; Holt et al. 1983; Rooker and Holt 1997, Rooker et al. 1998; Levin et al. 2001). Since red drum larvae and juveniles are ubiquitous in such environments, it is impossible to designate specific areas as deserving more protection than others. Moreover, these areas are not only nursery areas for red drum, but they fulfill the same role for numerous other resident and estuarine-dependent species of fish and invertebrates, especially other sciaenids. Similarly, subadult red drum habitat extends over a broad geographic range and adheres to the criteria that define HAPCs and FHOCs. Subadult red drum are found throughout tidal creeks and channels of southeastern estuaries. The subadults utilize submerged aquatic vegetation, tidal creeks, oyster reefs as well as tidally fresh, brackish, and salt marsh (Pafford et al. 1990; Wenner 1992; Adams and Tremain 2000). The entire estuarine system, from the lower salinity reaches of rivers to the mouth of inlets, is vital to the continuing existence of this species.

While there is currently no supporting evidence to suggest a particular habitat type limits red drum populations, it should be noted again that seagrass beds are vitally important for newly settled individuals, and oyster reefs, tidal creeks, and coastal rivers are of critical importance to red drum during the juvenile and subadult life stages. Data from Georgia's Marine Sportfish Health Survey indicate over 80% of juvenile red drum in Georgia waters are associated with shell habitats. Changes in water flow and conditions due to watershed activities may also limit recruitment of larvae at a local scale.

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River herring and Shad: Alewife (*Alosa aestivalis*), Blueback Herring (*Alosa pseudoharengus*), American Shad (*Alosa sapidissima*), and Hickory Shad (*Alosa mediocris*) Fish Habitats of Concern

NOTE: Due to the dearth of information on FHOCs for alosine species, this information is applicable to American shad, hickory shad, alewife, and blueback herring combined. Information about one alosine species may be applicable to other alosine species and is offered for comparison purposes only. Certainly, more information should be obtained at individual FHOCs for each of the four alosine species.

Metapopulation structure, meaning groups of the same species that are spatially separate, but may interact at some level, is evident in river herring. Metapopulation structure is important because individuals may be locally adapted. Adults frequently return to their natal rivers for spawning but some limited straying occurs between rivers (Jones 2006, ASMFC 2009). Critical life history stages for American shad, hickory shad, alewife, and blueback herring, are the egg, prolarva (yolk-sac or pre-feeding larva), post-larva (feeding larva), and early juvenile (through the first month after transformation) (Klauda et al. 1991a, b). Spawning grounds and nursery habitat where these critical life stages grow and mature broadly includes freshwater ponds, rivers, tributaries, and inlets. The substrate preferred for spawning varies greatly and can include gravel, detritus, and submerged aquatic vegetation. Blueback herring prefer swifter moving waters than alewives do (ASMFC 2009). Nursery areas include freshwater and semi-brackish waters. Access to these spawning and nursery habitats may be blocked or impeded by dams or other barriers. Juvenile alosines, which leave the coastal bays and estuaries prior to reaching adulthood, also use the nearshore Atlantic Ocean as a nursery area (ASMFC 1999).

See Greene et al. 2009 for tables that detail environmental, temporal, and spatial values/factors affecting the distribution of alewife, blueback herring, American shad, and hickory shad.

Habitat quantity

Thousands of kilometers of historic anadromous alosine habitat have been lost due to development of dams and other obstructions to migration. In the 19th century, organic pollution from factories created zones of hypoxia or anoxia near large cities (Burdick 1954, Talbot 1954, Chittenden 1969). Gradual loss of spawning and nursery habitat quantity and quality and overharvesting are thought to be the major causative factors for population declines of American shad, hickory shad, alewife, and blueback herring (ASMFC 1999).

It is likely that American shad spawned in all rivers and tributaries throughout the species' range on the Atlantic coast prior to dam construction in this country (Colette and Klein-MacPhee 2002). While precise estimates are not possible, it is speculated that at least 130 rivers supported historical runs; now there are fewer than 70 systems that support spawning. Individual spawning runs may have numbered in the hundreds of thousands. It is estimated that runs have been reduced to less than 10% of historic sizes. The 2020 American Shad Benchmark Stock Assessment Summary reported that the percentage of historic riverine habitat that is currently unobstructed varies from 4-100% in 23 river systems from Maine to Florida, with 12 systems at 75% or less unobstructed and seven river systems at 50% or less

unobstructed (see table in ASMFC 2020a). One recent estimate of river kilometers unavailable for spawning is 4.36 x 10^3 compared to the original extent of the runs. This is an increase in available habitat as compared with estimates from earlier years, with losses estimated at 5.28 x 10^3 in 1898 and 4.49 x 10^3 in 1960. The increase in available habitat has largely been due to restoration efforts and enforcement of pollutant abatement laws (Limburg et al. 2003).

Some states have general characterizations of the degree of habitat loss, but few studies have actually quantified impacts in terms of the area of habitat lost or degraded (ASMFC 1999). It has been noted that dams built during the 1800's and early to mid-1900's on several major tributaries to the Chesapeake Bay have substantially reduced the amount of spawning habitat available to American shad (Atran et al. 1983, CEC 1988), and likely contributed to long-term stock declines (Mansueti and Kolb 1953). North Carolina characterized river herring habitat loss as "considerable" from wetland drainage, stream channelization, stream blockage, and oxygen-consuming stream effluent (NCDENR 2000). Sixteen state and cooperative river basin habitat plans that provide greater local detail on American shad habitat and are available at http://www.asmfc.org/species/shad-river-herring.

Some attempts have been made to quantify existing or historical areas of anadromous alosine habitat, including spawning reaches. Most recently, the American shad benchmark assessed and compared the amount of currently available habitat for American shad in Atlantic coast rivers to historic habitat availability (ASMFC 2020b). See section 2.7.2 for a description of this analysis. Results are presented for individual systems in each system stock section (Section 3), and overall coastwide results are provided in section 4.4.2. Previously, Maine estimated that the American shad habitat area in the Androscoggin River is 2,111 acres. In the Kennebec River, Maine, from Augusta to the lower dam in Madison, including the Sebasticook and Sandy rivers, and Seven Mile and Wesserunsett streams, there is an estimated 6,510 acres of American shad habitat and 24,606 acres of river herring habitat. Lary (1999) identified an estimated 1,877 acres of suitable habitat for American shad and 6,133 acres for alewife between Jetty and the Hiram Dam along the Saco River, Maine. Above the Boshers Dam on the James River, Virginia, habitat availability was estimated in terms of the number of spawning fish that the main-stem area could support annually, which was estimated at 1,000,000 shad and 10,000,000 river herring (Weaver et al. 2003).

Although many stock sizes of alosine species are decreasing or remain at historically low levels, some stock sizes are increasing. It has not been determined if adequate spawning, nursery, and adult habitat presently exist to sustain stocks at recovered levels (ASMFC 1999).

Habitat quality

Concern that the decline in anadromous alosine populations is related to habitat degradation has been alluded to in past evaluations of these stocks (Mansueti and Kolb 1953, Walburg and Nichols 1967). This degradation of alosine habitat is largely the result of human activities. However, it has not been possible to rigorously quantify the magnitude of degradation or its contribution to impacting populations (ASMFC 1999).

Of the habitats used by American shad, spawning habitat has been most affected. Loss due to water quality degradation is evident in the northeast Atlantic coast estuaries. In most alosine spawning and nursery areas, water quality problems have been gradual and poorly defined; it has not been possible to link those declines to changes in alosine stock size. In cases where there have been drastic declines in alosine stocks, such as in the Chesapeake Bay in Maryland, water quality problems have been implicated, but not conclusively demonstrated to have been the single or major causative factor (ASMFC 1999).

Toxic materials, such as heavy metals and various organic chemicals (i.e., insecticides, solvents, herbicides), occur in anadromous alosine spawning and nursery areas and are believed to be potentially harmful to aquatic life, but have been poorly monitored. Similarly, pollution in nearly all of the estuarine waters along the East Coast has certainly increased over the past 30 years, due to industrial, residential, and agricultural development in the watersheds (ASMFC 1999).

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Spot Fish Habitats of Concern

FHOCs for larval spot include brackish and saltwater marsh as well as submerged aquatic vegetation in mesohaline and polyhaline waters. From Delaware to Florida, primary nursery habitat for juveniles includes low salinity bays and tidal marsh creeks with mud and detrital bottoms that contain their epifaunal and infaunal prey. Seagrass habitats, where present, appear to be most important for young-of-year spot in early spring. In the Chesapeake Bay and North Carolina, juveniles can be found in eelgrass. FHOCs for adult spot include tidal creeks and estuarine bays with mud and detrital substrates which support abundant prey (epifauna and benthic infauna). Bottom-tending fishing gear may impact spot FHOCs (Odell et al. 2017).

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Spotted Seatrout Fish Habitats of Concern

Submerged aquatic vegetation, salt marsh, and oyster reefs, especially where submerged aquatic vegetation is not available, are FHOCs for spotted seatrout. Seagrass beds provide important habitat for both juvenile and adult spotted seatrout, but are in decline along much of the Atlantic coast (Orth et al. 2006; Waycott et al. 2009; Adams et al. 2019; Morris et al. 2022). Salt marsh and oyster reef habitats provide FHOCs for juvenile and adult spotted seatrout, particularly in areas where submerged aquatic vegetation naturally does not occur. These habitats are also in decline, and are under continuing threats due to coastal development, sea level rise, and ocean acidification. Spawning takes place on or near seagrass beds, as well as sandy banks, natural sand, shell reefs, near the mouths of inlets, and off the beach (Daniel 1988; Brown-Peterson and Warren 2002). Environmental conditions in spawning areas may affect growth and mortality of egg and larvae, as sudden salinity reductions cause spotted seatrout eggs to sink, thus reducing dispersal and survival (Holt and Holt 2002).

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Tautog Fish Habitats of Concern

All structured habitats that are used by juvenile and adult tautog (e.g., outcrops, rock piles, boulders, shells, reef, hard and soft corals, and sea whips), as well as inlets adjacent to estuaries serving as important refuge and spawning sites are FHOCs. Submerged aquatic vegetation is a FHOC for larvae, young-of-year, and juveniles.

Weakfish Fish Habitats of Concern

Important habitats for weakfish include estuarine and oceanic nursery and spawning areas distributed along the coast from Maine through Florida. The principal spawning area is from North Carolina to Montauk, NY (Hogarth et al. 1995), although extensive spawning and presence of juveniles has been observed in the bays and inlets of Georgia and South Carolina (D. Whitaker, South Carolina Department of Natural Resources, personal communication) as well as in nearshore areas off North Carolina and Virginia (ASMFC and USFWS, unpublished data; Osborne 2018).

Spawning sites include coastal bays, sounds, and the nearshore Atlantic Ocean. Nursery areas include the upper and lower portions of the rivers and their associated bays and estuaries, as well as nearshore areas in the Atlantic Ocean. While disturbance to a nursery area will affect the overall coastal weakfish population it would be expected to have the greatest impact on the specific sub-population and the local fisheries that depend on it. There is evidence that indicates that weakfish engage in natal homing (Thorrold et al. 2001). Natural geochemical signatures in otoliths indicated that spawning site fidelity ranged from 60 to 81%, comparable to estimates of natal homing in birds and anadromous fishes (Thorrold et al. 2001). That being the case, estuaries with significant concentrations of weakfish juveniles should be designated as FHOCs (i.e., Pamlico Sound in North Carolina; see Barbieri 2016). Egg and larval habitats include the nearshore waters as well as the bays, estuaries, and sounds to which they are transported by currents or in which they hatch.

Juvenile weakfish inhabit the deeper waters of bays, estuaries, and sounds, including their tributary rivers. They also use the nearshore Atlantic Ocean as a nursery area (Osborne 2018). In North Carolina and other states, they are associated with sand or sand/seagrass bottom. In Chesapeake and Delaware Bays, they migrate to the Atlantic Ocean by December.

Adult weakfish reside in both estuarine and nearshore Atlantic Ocean habitats. Warming of coastal waters in the spring keys migration inshore and northward from the wintering grounds to bays, estuaries and sounds. Larger fish move inshore first and tend to congregate in the northern part of the range. Catch data from commercial fisheries in Chesapeake and Delaware Bays and Pamlico Sound indicate that the larger fish are followed by smaller weakfish in summer. Shortly after their initial spring appearance, weakfish return to the larger bays and nearshore ocean to spawn. In northern areas, a greater portion of the adults spends the summer in the ocean rather than estuaries. Weakfish form aggregations and move offshore as temperatures decline in the fall. They move generally offshore and southward. The Continental Shelf from Chesapeake Bay to Cape Lookout, North Carolina, appears to be the major wintering ground. Winter trawl data indicate that most weakfish were caught between

Ocracoke Inlet and Bodie Island, NC, at depths of 18-55 m (59-180 ft). Some weakfish may remain in inshore waters from North Carolina southward.

The quality of weakfish habitats has been compromised largely by impacts from human activities. It is generally assumed that estuarine weakfish habitats have undergone some degree of loss and degradation; however, there are few studies that quantify impacts in terms of the area of habitat lost or degraded. Estuarine nursery habitat is impacted by bottom-tending gear (Odell et al. 2017).

Loss due to water quality degradation is evident in the northeast Atlantic coast estuaries. The New York Bight is one example of an area that has regularly received deposits of contaminated dredged material, sewage sludge and industrial wastes. These deposits have contributed to oxygen depletion and the creation of large masses of anoxic waters during the summer months.

Some habitat losses have likely occurred due to the intense coastal development that has occurred during the last several decades, although no quantification has been done. Losses and/or degradation have likely resulted from dredging and filling activities that have both eliminated shallow water nursery habitat and negatively impacted weakfish spawning activity. Further functional losses have likely occurred due to water quality degradation resulting from point and non-point source discharges. Intensive conversion of coastal wetlands to agricultural use also is likely to have contributed to functional loss of weakfish nursery area habitat.

Other functional loss of riverine and estuarine areas may have resulted from changes in water discharge patterns resulting from withdrawals or flow regulation. Estuarine nursery areas for weakfish, as well as adult spawning and pre-spawning staging areas, may be affected by prolonged extreme conditions resulting from inland water management practices.

Power plant cooling facilities continue to impact weakfish populations. In recent rules regarding these facilities, the Environmental Protection Agency estimates that the number of total weakfish age 1 equivalents lost as a result of entrainment at all transition zone cooling water intake structures in the Delaware Bay is over 2.2 million individuals. Other threats stem from the continued alteration of freshwater flows and discharge patterns to spawning, nursery, and adult habitats in rivers and estuaries. Threats in the form of increased mortality resulting from placement of additional municipal water intakes in spawning and nursery areas will occur, although the impacts may be mitigated to some degree with proper screening.

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