

Atlantic States Marine Fisheries Commission

ISFMP Policy Board

August 4, 2022
10:15 a.m. - 1:15 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*) 10:15 a.m.
2. Board Consent (*S. Woodward*) 10:15 a.m.
 - Approval of Agenda
 - Approval of Proceedings from May 2022
3. Public Comment 10:20 a.m.
4. Executive Committee Report (*S. Woodward*) 10:30 a.m.
5. Consider Changes to the Appeals Policy (*R. Beal*) **Final Action** 10:40 a.m.
6. Report from *De Minimis* Work Group (*T. Kerns*) **Possible Action** 10:50 a.m.
7. Update on East Coast Climate Change Scenario Planning (*T. Kerns*) 11:05 a.m.
8. Review of NOAA Fisheries' Climate Ecosystem Fisheries Initiative (*J. Hare*) 11:15 a.m.
9. Update on the Risk and Uncertainty Policy (*J. McNamee*) 11:25 a.m.
10. Committee Reports 11:40 a.m.
 - Legislative (*B. Hyatt*)
 - Habitat (*L. Havel*) **Action**
 - Atlantic Coast Fish Habitat Partnership (*L. Havel*)
 - Assessment Science (*S. Murray*) **Action**
11. Consider Providing Comments to NOAA Fisheries on Atlantic Sturgeon Bycatch Working Group Draft Action Plan, if necessary (*T. Kerns*) **Possible Action** 12:25 p.m.
12. Review of Blue Catfish Science in the Chesapeake Bay 12:30 p.m.
(*M. Bromilow, C. Densmore, M. Groves*)
13. Review of NOAA Fisheries' Draft Equity and Environmental Justice Strategy 1:00 p.m.
(*S. Benjamin*)
14. Review Noncompliance Findings (If Necessary) **Action** 1:10 p.m.
15. Other Business/Adjourn 1:15 p.m.

The meeting will be held at The Westin Crystal City (1800 Richmond Highway, Arlington, VA; 703.486.1111) and via webinar; click [here](#) for details

MEETING OVERVIEW

ISFMP Policy Board
Thursday August 4, 2022
10:15 a.m. -1:15 p.m.
Hybrid Meeting

Chair: Spud Woodward (GA) Assumed Chairmanship: 10/21	Vice Chair: Joe Cimino (NJ)	Previous Board Meetings: May 5, 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 May 5, 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 (10:30-10:40 a.m.)

Background

- The Executive Committee will meet on August 3, 2022

Presentations

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

Board action for consideration at this meeting

- none

5. Consider Changes to the Appeal Process Final Action (10:40-10:50 a.m.)

Background

- The ISFMP Charter includes an opportunity for a state to appeal species management board decisions. A process was implemented in 2003 and revised to clarify appeal criteria.
- After the 2021 appeal decision regarding black sea bass commercial allocation, it was suggested additional improvements to the process may be appropriate.
- The Executive Committee has discussed and drafted a revised Appeals Process (**Briefing Materials**).

Presentations

- R. Beal will present the revised Appeals Process

Board action for consideration at this meeting

- Approve the revised Appeals Process

6. Report from De Minimis Work Group Possible Action (10:50-11:05 a.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.

Presentations

- T. Kerns will present the De Minimis White Paper (**Supplemental Materials**)

Board action for consideration at this meeting

- Consider White Paper Options

7. Update on East Coast Climate Change Scenario Planning Initiative (11:05-11:15 a.m.)**Background**

- In November 2020, the Northeast Region Coordinating Council (NRCC) initiated a region-wide scenario planning initiative. Through this East Coast Climate Change Scenario Planning Initiative, fishery managers and scientists are working collaboratively to explore jurisdictional and governance issues related to climate change and shifting fishery stocks.
- The specific focus of this scenario project is (i) to assess how climate change might affect stock distribution, availability and other aspects of east coast marine fisheries over the next 20 years, and (ii) to identify what this means for effective future governance and fisheries management.
- [A scoping process](#) was conducted in Fall of 2021 to introduce the initiative to stakeholders, to seek input on the draft project objectives, and to solicit input from stakeholders on factors and issues that might shape the future of East Coast fisheries. A summary of the scoping process and input received can be found [here](#).
- The Exploration Phase was conducted in spring, where three webinars were held that focused on identifying and analyzing the major drivers of change in depth which served as the “building blocks” for the scenario creation workshop.
- A [Scenario Creation Workshop](#) was held in June, where through a series of conversations and exercises, over 70 participants created a set of scenarios that describe how climate change *might* affect East Coast fisheries in the next 20 years.

Each scenario describes a different way in which changing oceanographic, biological, and social/economic conditions could combine to create future challenges and opportunities for East Coast fisheries.

Presentations

- T. Kerns will provide an update of the initiative and next steps

Board action for consideration at this meeting

- None

8. Review of NOAA Fisheries' Climate Ecosystem Fisheries Initiative (11:15-11:25 a.m.)

Background

- [The Climate, Ecosystems, and Fisheries Initiative](#) is a cross-NOAA effort to build the operational ocean modeling and decision support system needed to reduce impacts, increase resilience, and help marine resources and resource users adapt to changing ocean conditions.

Presentations

- J. Hare will present the initiative

Board action for consideration at this meeting

- None

9. Update on Risk and Uncertainty Policy (11:25-11:40 a.m.)

- At the 2020 Summer Meeting, Commissioners supported the continued development of the draft Risk and Uncertainty Policy and Decision Tool. The Policy Board tasked the Risk and Uncertainty Policy Workgroup with further refining the criteria for the Risk and Uncertainty Decision Tool and updating the striped bass example.
- In the Winter of 2021, the Board reviewed the draft Risk and Uncertainty Policy. The Board determined the Policy was ready for a test run and tasked the Tautog Management Board to use the Policy in conjunction with 2021 Tautaug Stock Assessment Update.

Presentations

- J. McNamee will present a summary of the pilot of the Policy and recommendations

Board action for consideration at this meeting

- none

10. Committee Reports (11:40 a.m.- 12:25 p.m.)

Background

- In 2022, the **Legislative Committee** has engaged Congress on the Recovering America's Wildlife Act, the Forage Fish Conservation Act, the Shark Fin Sales Elimination Act, and FY22, FY23, and 24 Appropriations. It provided talking points and background information for Commissioners to interact with Congressional staff and facilitated several virtual interactions.
- The **Habitat Committee** met in June. The Committee has completed the update to the 2018 ASMFC State Climate Change Initiatives Gaps and Recommendations Report (**Briefing Materials**) and the Fish Habitats of Concern designations for Commission-managed species and Atlantic sturgeon

- Atlantic Coast Fish Habitat Partnership’s Steering Committee met in Summer 2022. The FY2022 National Fish Habitat Partnership funded projects were announced earlier this year.
- The Stock Assessment Committee met to review the upcoming Commission stock assessment and made adjustments due to work load.

Presentations

- B. Hyatt will provide an update of the Legislative Committee’s work in 2022
- L. Havel will provide an update of the Habitat Committee’s work and present the two reports
- L. Havel will provide an update of the ACFHP’s work
- S. Murray will provide an update of the Stock Assessment Committee’s work
(Supplemental Materials)
- K. Drew and K. Anstead will update on the progress of the River Herring and American Eel stock assessments

Board action for consideration at this meeting

- Consider approval of the update to the 2018 ASMFC State Climate Change Initiatives Gaps and Recommendations Report
- Consider approval of the updated stock assessment schedule

11. Consider Providing Comments to NOAA Fisheries on Atlantic Sturgeon Bycatch Working Group Draft Action Plan Possible Action, if necessary (12:25-12:30 p.m.)

Background

- NOAA Fisheries will review the Atlantic Sturgeon Bycatch Working Group Draft Action Plan on Tuesday August 2.

Presentations

- T. Kerns will provide an update of the Commissions discussion regarding the Draft Action Plan

Board action for consideration at this meeting

- Consider Comments to NOAA Fisheries on the Draft Action Plan

12. Review of Blue Catfish Science in the Chesapeake Bay (12:30-1:00 p.m.)

Background

- The NOAA Invasive Catfish Working Group, the U.S. Geological Survey’s Eastern Ecological Science Center, and Maryland DNR are conducting science related to invasive blue catfish predation/diet, life history, movement, and mitigation strategies in the Chesapeake region **(meeting materials)**.

Presentations

- M. Bromilow will provide an overview of the NOAA Chesapeake Bay Office Invasive Catfish Workgroup and related science activities.
- M. Groves will present on blue catfish monitoring and biological data collection in Maryland’s tidal tributaries of the Chesapeake Bay.
- C. Densmore will present on USGS science examining blue catfish health and disease, reproduction, and diet

Board action for consideration at this meeting

- None

13. Review of NOAA Fisheries' Draft Equity and Environmental Justice Strategy (1:00-1:10 p.m.)

Background

- NOAA Fisheries is committed to advancing equity and environmental justice, including equal treatment, opportunities, and environmental benefits for all people and communities, while building on continuing efforts and partnerships with underserved and underrepresented communities. To help guide their work, they developed the [Equity and Environmental Justice Strategy](#). This strategy describes the path that we will take to incorporate equity and environmental justice into the vital services we provide to all stakeholders.

Presentations

- S. Benjamin will provide a review of the draft strategy

Board action for consideration at this meeting

- None

14. Review Non-Compliance Findings, if Necessary Action

15. Other Business/Adjourn

**DRAFT PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
ISFMP POLICY BOARD**

**The Westin Crystal City
Arlington, Virginia**

May 5, 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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1. **Approval of agenda** by Consent (Page 1).
2. **Approval of Proceedings of January 27, 2022 Webinar** by Consent (Page 1).
3. **Move to adjourn** by Consent (Page 53).

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ATTENDANCE

Board Members

Megan Ware, ME, proxy for P. Keliher (AA)	Roy Miller, DE (GA)
Steve Train, ME (GA)	Craig Pugh, DE, proxy for Rep. Carson (LA)
Sen. David Miramant, ME (LA)	Mike Luisi, MD, Administrative proxy
Cheri Patterson, NH (AA)	Dave Sikorski, MD, proxy for Del. Stein (LA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)	Pat Geer, VA, Administrative proxy
Dan McKiernan, MA (AA)	Shanna Madsen, VA, proxy for Sen. Mason (LA)
Raymond Kane, MA (GA)	Chris Batsavage, NC, proxy for K. Rawls (AA)
Jason McNamee, RI (AA)	Jerry Mannen, NC (GA)
David Borden, RI (GA)	Bill Gorham, NC, proxy for Rep. Steinberg (LA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)	Mel Bell, SC (AA)
Matt Gates, CT, proxy for Justin Davis (AA)	Chris McDonough, SC, proxy for Sen. Cromer (LA)
Jim Gilmore, NY (AA)	Doug Haymans, GA (AA)
Joe Cimino, NJ (AA)	Spud Woodward, GA (GA)
Tom Fote, NJ (GA)	Hannah Hart, FL, proxy for J. McCawley (AA)
Kris Kuhn, PA, proxy for T. Schaeffer (AA)	Marty Gary, PRFC
Loren Lustig, PA (GA)	Karen Abrams, NMFS
John Clark, DE (AA)	

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

Staff

Robert Beal	James Boyle	Jeff Kipp
Toni Kerns	Pat Campfield	Sarah Murray
Tina Berger	Emilie Franke	Caitlin Starks
Maya Drzewicki	Lisa Havel	Deke Tompkins
Kristen Anstead	Chris Jacobs	

Guests

Debra Abercrombie, US FWS	Michelle Duval, MAFMC	Kathy Knowlton, VMRC
John Almeida, NOAA	Lynn Fegley, MD DNR	Wilson Laney
Max Appelman, NOAA	Cynthia Ferrio, NOAA	Meghan Lapp, Seafreeze Ltd
Pat Augustine, Coram, NY	Dawn Franco, GA DNR	Tom Lilly
Linda Barry, NJ DEP	Alexa Galvan, VMRC	Chip Lynch, NOAA
Julia Beaty, MAFMC	Lewis Gillingham, VMRC	Kim McKown, NYS DEC
Rick Bellavance, Kingstown, RI	Angela Giuliano, MD DNR	Nichola Meserve, MA DMF
Alan Bianchi, NC DENR	Jay Hermsen, NOAA	Steve Meyers
Colleen Bouffard, CT DEEP	Helen Takade Heumacher	Mike Millard
Jeff Brust, NJ DEP	Jesse Hornstein, NYS DEC	Henry Milliken, NOAA
Laura Cimo, NOAA	Robert Jeter	Brandon Muffley, MAFMC
Heather Corbett, NJ DEP	Ellen Keane, NOAA	Thomas Newman
Kiley Dancey, MAFMC	Emily Keiley, NOAA	Adam Nowalsky, NJ
Maureen Davidson, NYS DEC	Adam Kenyon, VMRC	Derek Orner, NOAA

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Guests (continued)

Jainita Patel, VIMS
Michael Pierdinock
Nicholas Popoff, US FWS
Will Poston, SGA
Jill Ramsey, VMRC

Kathy Rawls, NC (AA)
Jason Rock, NC DENR
Tara Scott, NOAA
Alexei Sharov, MD DNR
Somers Smott, VMRC

Carrie Upite, NOAA
Craig Weedon, MD DNR
Chris Wright, NOAA
Renee Zobel, NH FGD

The Interstate Fisheries Management Program Policy Board of the Atlantic States Marine Fisheries Commission convened in the Jefferson Ballroom of the Westin Crystal City Hotel, Arlington, Virginia, a hybrid meeting, in-person and webinar; Thursday, May 5, 2022, and was called to order at 8:30 a.m. by A.G. "Spud" Woodward.

CALL TO ORDER

CHAIR A. G. "Spud" Woodward: Well good morning, everyone. For those of you that are participating virtually, this is Spud Woodward, Commission Chair. I want to call to order the meeting of the ISFMP Policy Board.

APPROVAL OF AGENDA

CHAIR WOODWARD: Our first order of business this morning is approval of the agenda.

We do have one modification to the agenda under Other Business, and that is to discuss the proposed CITES listings of some shark species, as well as dogfish and eel, and we'll do that at the end of the meeting.

Everyone should have received a copy of the proceedings from our January, 2022 meeting. Excuse me, let me back up. Any opposition to accepting the agenda as I just described it and modified? I don't see any, we'll consider it accepted by consent.

APPROVAL OF PROCEEDINGS

CHAIR WOODWARD: Next would be approval of the proceedings from our last meeting.

Any modifications, edits to the proceedings, if so, raise your hand or let us know virtually. I don't see anything, none virtually, no hands raised, so any opposition to accepting the proceedings as presented? I don't see any hands, so we'll accept those by consent.

PUBLIC COMMENT

CHAIR WOODWARD: Now is our opportunity for public comment. Anyone present or virtual that would like to make public comment? I see we have one person virtually, Mr. Lilly. We'll give you three minutes for your comment, so you can proceed whenever you're unmuted.

MR. THOMAS LILLY: This morning I will be discussing the fact the Menhaden Board is proceeding with state allocations just based on historic landings, and not based on how the allocation to Virginia affects Chesapeake Bay or the social and economic life of Marylanders, as Charter Section 6A requires.

The Committee on Economics and Social Services should be asked to determine the social and economic consequences of moving the factory fishing to the U.S. Atlantic Zone, compared to continuing to allow it to fish in the Chesapeake Bay. That is a basic thing they should be doing. There is no evidence that removing 50,000 tons of menhaden from the Bay's food supply benefits the fish and wildlife of Chesapeake Bay.

But, that Committee can determine the social consequences of the scientifically proven fact that menhaden depletion in the Bay is causing widespread osprey chick starvation. They can find that sick and starving ospreys diminish the quality of life for the estimated 30 million contacts people have with the Bay's 5,000 nesting ospreys each year. There is no evidence that removing the menhaden from the Bay is good for the striped bass spawning stock or the watermen, the charter captains or the anglers, and the CESS could well determine the economic and social cost to Marylanders of decreased abundance of wildlife in their Bay over the last ten years.

There is evidence from which the CESS can find that ensuring a stable, plentiful supply of menhaden to protect the spawning striped bass could aid in the stock's recovery. Having them fish in the U.S. Atlantic would implement the advice you got from your consultant 13 years ago. If fishing got fun

again, just a 10 percent improvement in fishing for stripers, which is very poor right now in Maryland, could lead to a million more days salt water fishing for Marylanders, as fishing success improves.

A hundred thousand days for children and seniors at least, that is what the CES should be looking into, folks. That is the thing that is important. Really important for our natural resources is how it effects the people and their children. They could find that this would generate hundreds of millions of dollars of economic activity in Maryland.

As I said it would impact a million anglers, hundreds of thousands of children, and a hundred thousand jobs on the Atlantic Coast. The CES should determine if more day's fishing and enjoying the wonders of Chesapeake Bay would lead to scientifically proven mental and physical health benefits, especially for tens of thousands of Maryland children who would be fishing more or just learning how.

I'm almost done. All of this research is available, and should be put together for the Menhaden Board by the CESS, to fulfil your charter obligations to allocate menhaden where it does the most ecological, economic and social good. Thank you all very much, have a great meeting.

CHAIR WOODWARD: Thank you, Mr. Lilly. Any other hands raised virtually, Toni? All right, we don't see any more public comment so we'll move along.

EXECUTIVE COMMITTEE REPORT

CHAIR WOODWARD: Our next agenda item is my Executive Committee Report. The Executive Committee met yesterday morning. After approval of the agenda and the proceedings we had no public comment.

Laura Leach presented the proposed budget for fiscal year 2023. That budget was based on the

Action Plan that the Commission had approved earlier, as well as current staffing and administrative needs, and was unanimously approved by the Executive Committee. The next item we had was to review the latest proposed revisions to the Appeals Policy.

The Executive Committee has talked about this for, I guess the last six months to a year during our online meetings, and after some discussion those proposed revisions were accepted, and we're bringing that to the Policy Board, and you'll see that a little later in the agenda. We also discussed the results of the De Minimis Work Group's efforts. Toni presented that.

She will give you an update on that, so I don't want to steal her thunder. Then, we actually went to Other Business, and Jim Gilmore discussed briefly some letters of concern that are going out to Secretary of Commerce and the NOAA Assistant Administrator for Fisheries on scup and black sea bass. I'll give him an opportunity if you want to discuss that later on under Other Business as well. Last, but certainly not least, we did the Executive Director's Performance Review. I think you would all agree with the findings of the Executive Committee that we found Bob continues to do a great job, we're glad to have him. He continues to help us navigate through some difficult waters. With that, that concludes my report.

CONSIDER CHANGES TO THE APPEALS POLICY

CHAIR WOODWARD: Any questions about the Executive Committee? Okay, not seeing any, the next agenda item is, as I mentioned, to consider changes to the appeals policy. Bob sent out the latest draft of the policy last night, and I'm going to turn it over to him so he can walk us through it. My hope is that we can make a decision and approve that, and that will become our new policy.

EXECUTIVE DIRECTOR ROBERT E. BEAL: I'll be working off the document that I sent around last night. If you didn't get it, raise your hand and we can forward that to you. The quick background on this issue is, obviously the Commission has had the

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appeals process for a while. However, we've only had one example of the appeals process being used from start to finish, if you want to call it that, and that was a black sea bass appeal from the state of New York.

That one was brought forward. Just to review how the process works, if a state feels aggrieved or concerned about a decision at a species management board, they file an appeal. That appeal has an initial review by the Chair, the Vice-Chair and the immediate past Chair, and they decide if it's a viable appeal and it should move forward to the Policy Board.

If it is viable, moves forward to the Policy Board, the Policy Board reviews the appeal, and determines if any corrective action is needed. If the Policy Board finds in favor of the appeal and corrective action is needed, they refer that back to the species management board that originally made the decision, with some guidance on what needs to be changed and what corrective action needs to be taken.

The species management board then gets together, considers the appeal, considers the guidance from the Policy Board. The species management board is obligated to take action. They can't get the appeal back from the Policy Board, go meh, you know we looked at it. We really feel our original decision was good enough, we're going to stick with it.

They have to make the change consistent with what the charge is from the Policy Board. All those steps happened in the case of black sea bass from New York. It went through all those steps to the species management board, and corrective action was taken and the addendum was modified. Following that experience, as John Clark put it yesterday, sample size of one.

You know there were some concerns and some process things that a number of states wanted to talk about and kind of review, and say, you know did the appeals process work, kind of as we all had envisioned it when it was developed

over the years. There were a few things that the Executive Committee has agreed would probably benefit from some updating and some changes, and I'll go through those pretty quickly.

As I mentioned in my e-mail last night, you know everything is kind of memorialized here through tracked changes. The first change is on Page 3, and in the New York instance there was, since Jim Gilmore was the immediate past chair in that instance, the initial review of the Chair, Vice-Chair and immediate past Chair, obviously it didn't make sense to have one-third of those votes coming from the state that actually filed the appeal. We added language that if Chair, Vice-Chair, immediate past Chair is a signatory to the appeal, the Chair of the Commission can select an alternate, and that is what happened in this case. We asked Mel Bell to participate in that as a southern representative with kind of not a dog in the fight, so to speak.

That is a suggested change. Also, a little bit higher in that paragraph, early on when we developed this document the idea was certified mail, you would actually have to get a receipt and sign for it and all these other things. But the reality is, we communicate a lot with e-mail now, and there is a time stamp and everything else on that, so e-mail works just fine, or at least it is suggested that way.

When you get on to Page 4, this is kind of really the meat of the significant changes that are being proposed. In the black sea bass example, there was some question about the range of alternatives and the latitude that the species management board had to operate in when the appeal was referred from the Policy Board back to the species board.

How much operating room did they really have? Did they really have to just pick one of the options that was presented in the Public Hearing Document? Could they go within the range of those documents? Could they sort of hybridizes some of the different issues that were there, and mix and match so to speak?

That is one of the main areas of concern is that range that the management board had to operate

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in. You know we've talked about that quite a bit at the Executive Committee, and came up with a few options, sort of the species board, Option Number 1 would be limited to the management options as written in the draft amendment.

Very strictly, you pick one of those options and that's what you go with. Option 2 is that the species management board would have sort of the ability to operate within the range of alternatives that were presented in the draft amendment or addendum. Then the third option is that 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 as provided in a public draft amendment or addendum.

Option 3 is what the Executive Committee is recommending that the Policy Board approve, as part of the changes to this document. Option 3 kind of creates the scenario where it obligates staff and the management boards to take action early in the process, where as we develop a draft addendum or amendment for public comment, we need to include a very specific description of how the different options interact. Do you just pick A, B, or C, or can you pick something within that range of A, B, and C?

Can you mix Issue 1 and Issue 2 and kind of smear those together a little bit? That has to be up front in any new addenda or amendments that are going to go out for public comment or new FMPs. Then when we get to the appeals process, we just refer back to that section that very specifically says what can and can't be done, as far as mixing and matching options and picking within the range and those sorts of things. That is the idea with Number 3. Again, that's what's recommended by the Executive Committee for the Policy Board to consider and potentially approve. Moving on down through Page 4. There was a lot of discussion about kind of what if. What if you get to the management

board and they can't make a decision? They can't take the corrective action that they're obligated to do by the direction from the Policy Board.

There are kind of three scenarios, and all three of these are being recommended to be added to the appeals process. This isn't select one or the other, it's let's add all three of these and provide that latitude to the species management board, and I'll quickly go through those. The first scenario is that the management board, species board gets together and they can't decide.

They now have the ability to go back and request additional information from the Policy Board, say we don't exactly understand what you're asking us and obligating us to do. They can go back to the Policy Board, ask some questions, and then be redirected by the Policy Board or clarified by the Policy Board on what they need to do.

Second scenario is that the management board gets together, and they simply can't come to a resolution. They can't meet the obligation of the Policy Board. Then the issue would refer back to the Policy Board, and the Policy Board would make the final decision on what changes to accommodate the appeal and make corrective actions would take place.

Then the third scenario is, management board gets together, they are considering different options. They say you know what, we need some more analysis. We need more technical information on exactly the different impacts of some of these different options that we have the ability to pick.

They can request back to one of the technical support groups, either Technical Committee for that species or Management Science Committee or Assessment Science Committee, or whatever the right group is to provide some information that they need, to be able to take that final action and corrective action that they are obligated to take.

Again, the suggestion is to add all three of those, rather than pick one or two of them. All three of them can be added, and they are all different sort

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of courses that could take place in the future. Then moving on to Page 5, there is just some added language about sort of the timeline of, if the management board requested one of those different three scenarios that I just talked about.

We would have to add essentially one meeting cycle to this process, where we would have to go back to the Policy Board and get more guidance, we would have to go back to the Technical Committee and get the additional analysis. But the hope is that we would be able to do that quickly enough, where we would only delay the appeal one meeting cycle.

Then the species board or the Policy Board could get back together at the next meeting and make final decisions. That is kind of a lengthy description of what's in here. But I think it's important, and then a number of members of the Policy Board haven't heard this description yet, even though the Executive Committee has talked about it a lot.

CHAIR WOODWARD: As Bob said, I mean we've talked about this at length at the Executive Committee over a long period of time, so a lot of this has been thought through. But we certainly want to make sure that the Policy Board members fully understand what these changes mean and the consequences thereof. Dan.

MR. DANIEL McKIERNAN: Bob, since we've become masters of the virtual meeting, might you be able to hold a virtual meeting of the Policy Board, and not have to go through another meeting cycle?

EXECUTIVE DIRECTOR BEAL: Absolutely. I think that is possible. You know I think one scenario would be the species board gets together, they want some more guidance from the Policy Board. We could have the Policy Board meeting virtually in the interim between quarterly meetings, and then have the species board get together at that subsequent meeting, and

follow up on the additional guidance from the Policy Board. I think that is absolutely a viable option.

CHAIR WOODWARD: Good question, Dan, any other questions for Bob on this? Any concerns? Any of this seem unclear? I wanted to reemphasize what he said though about, it means that going forward when we are producing amendments/addenda, that we're going to have to be extremely conscientious to do what he described, which is to fully articulate how various options in a plan can be combined and used to resolve a conflict.

That won't necessarily be easy. I mean we all know. I mean I sat in on striped bass yesterday. There are a lot of moving parts to striped bass. How those all link to each other and relate. It's going to be an additional burden, but I think it's important that we do that to make sure that we fulfill our obligation to the public for transparency, which was sort of the root of this whole thing is that is it fair to the public to render a final decision that they never knew was an option. That's challenging. Tom, I see your hand up.

MR. THOMAS P. FOTE: Yes, I just think as we do the introduction at public hearings, whether it's virtually or live that we basically put that up front, when we do who the Commission is, and then if there is appeals process here is how it works. It could be very simple, or read in the document if you want to find out how the appeal process works., something right up front so people know.

Otherwise, it gets lost in a document. The public never reads the whole document. Sometimes when it's 1,700 pages I don't read the whole document, I'll be honest, and 2,400 pages. It would be nice if we put that right in the front of the presentation to basically do that when we do the introduction. I agree with it. You know it's complicated. I wish this process was in place when New Jersey had all its problems, but anyway, I support this.

CHAIR WOODWARD: Shanna.

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MS. SHANNA MADSEN: I just wanted to say thank you to the Executive Committee. I think that this document is in a really good place, and I think that you've addressed a lot of the concerns that I heard around the table following that appeals process. I appreciate the flexibility and the work that's been put in here. I support what's been done to the document. That being said, I think a couple of meetings ago, when I was sitting on the Policy Board, I brought up a concern that I had regarding the Policy Board being the Board to take the corrective action, to be able to give the guidance to the species management boards regarding the corrective action.

I think that that kind of comes from the fact that the species boards really are the boards that are intimately tied to those documents. You know Tom was just saying these documents are incredibly long. They are complex, and the species board spends a lot of time understanding the ins and outs of those documents.

I've kind of wanted to noodle this through a little bit, and I don't know if I'm quite there yet on, I don't like to present a problem without also trying to help present a solution. But one of the things that I was thinking through as I read this document is, maybe it's as simple as being able to day somewhere in this document something along the lines of Bullet Point 3 on Page 4, which is essentially that the Policy Board would also be able to request more information from either Technical Committees or potentially from the species management board itself., maybe the PDT.

In order for them to have a more informed decision on how to take corrective action. I know that the Policy Board probably already understands that a bit innately. But I would like to see that spelled out in some way, because just following the way that the action was taken with black sea bass, I think we moved pretty quickly.

The Policy Board was essentially asked to be both the judge and the jury pretty quickly, I felt like in that case. In order for the Policy Board to be the judge, I feel like some educational materials, and maybe some more analysis might be required in order for them to be able to determine what sort of corrective action they would like to ask the species management board to take.

CHAIR WOODWARD: All right, thank you, I think Bob wants to respond to that.

EXECUTIVE DIRECTOR BEAL: Yes, just sort of along those lines, Shanna. If you look in the paragraph on the middle of Page 3 there is the idea of a fact-finding committee can be formed. I think that probably gets at a lot of what you're suggesting, as the Chair, Vice-Chair and immediate past Chair. If they feel additional information is needed, they can form this fact-finding committee, and that can be made up of legal, administrative, social, economic, habitat, you know across the range of all the sort of advisors that we have.

There is some of that in here, but the idea here is it is set up by the Commission Chair, Vice-Chair and immediate past Chair, rather than the Policy Board. There is some ability for compilation of additional information, or the ability to conduct additional analysis already rolled in here. But if the Policy Board has questions, I'm sure they could do the same thing.

CHAIR WOODWARD: Shanna.

MS. MADSEN: Just a quick follow up. Maybe do you think that we could add a little bit of language to that, because I noticed that paragraph? But like you said, it seems very specific to that group of people being able to call that fact-finding committee. I would like the Policy Board to also be able to have that latitude, just so I think that there is a deeper understanding that if they require more information to take a corrective action, or to give recommendations on how to take a corrective action that they can.

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You know again, I think last time was our first time running through all of this, and it just wasn't very clear that immediately following serving as the jury, the Policy Board was also going to serve as the judge, and pass corrective action and tell the species management board how to proceed. I would just like a little bit more latitude for the Policy Board to be able to step back and say, hey, we don't necessarily intimately know this document the way that the species management board does, and we would like to take a little bit more time with it.

CHAIR WOODWARD: Do you have some suggested specific language you would like to see inserted?

MS. MADSEN: I just got this document this morning, so I don't right now, so I completely again, apologize that I'm kind of bringing up an issue without providing a specific solution. If you give me a little bit of time, I can probably cook something up, but I'm just wondering if maybe as part of that paragraph that Bob is referencing, could we add that the Policy Board can also convene this sort of fact-finding committee, or ask for more information.

I mean it could also be as simple as adding a little bit of language to the top of Page 4, where we talk about creating that guidance regarding corrective action that just says, the Policy Board could also request more information if they would like to issue corrective guidance. They can also essentially do what that bullet point 3 is, requesting additional analyses from technical committees, or requesting more information from the PDT. Maybe similar to those lines is what I'm thinking.

CHAIR WOODWARD: Bob.

EXECUTIVE DIRECTOR BEAL: Yes, I guess maybe the easiest way to do this, if this is what the Policy Board wants to do, it's up to the group. But looking at the fact-finding paragraph on Page 3. Upon review of the appeal documentation the Commission Chair, Vice-

Chair and immediate past Chair or alternate as described above, or the Policy Board may establish a fact-finding committee. You know, just add or the Policy Board into that paragraph, and away we go. If that's the will of the group. That is up to everyone around the table not me.

CHAIR WOODWARD: Yes, go ahead, Toni.

MS. TONI KERNS: Just for the Policy Board, you know through appeals processes staff always provide all of the information pertaining to the appeal ahead of the meeting, and then we try to convene that meeting and make a decision, and give direction back to a management board. Obviously, a Policy Board can take a pause.

Then come back at the next meeting to give direction to a species board. But there is a timeliness issue when it comes to these appeals oftentimes. That may not be in the best interest of the decision process for all cases. I would just make sure that any species board can ask for additional information when we are giving documents out prior to the meeting of staff, and staff can provide that at the meeting. But just to keep in mind that there is a timeliness issue at times when working through these appeals.

CHAIR WOODWARD: Let me go back to Shanna, and then I'll go to you, Tom.

MS. MADSEN: Thanks, Toni. I completely agree. I don't want to belabor this and extend the process any more than it needs to be extended. I guess again I kind of go back to black sea bass. We were offered an option at the Policy Board level. If there is going to be a range, I guess I would like there to just be some time that potentially the Policy Board could take a step back and say, we would like to think through this a little bit more.

If that's as simple, and I don't think again that will always be necessary, I agree with you. Sometimes there is a timeliness factor that we just can't get around, and a decision does need to be made. But again, I want the Policy Board to understand that they also have the latitude to take that time if they

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need it, because the species board has spent so much time with those documents, and the Policy Board really isn't granted that when they are determining corrective action.

CHAIR WOODWARD: All right, Tom.

MR. FOTE: Thinking over what Shanna is saying. I feel the same way. I mean hours are spent deciding at the board, and maybe even two or three meetings go on, and then the Policy Board gets it dumped in their hands on the appeal process. But there is a lot of discussion gets lost in all that. That's why I think a working group would be the place to look at it, especially when it comes to something like that.

Like going on with black sea bass. When it's out of compliance that's a pretty easy one, and how the Board votes. The southern guys are not used to basically fighting, because they all get along, because of that southern hospitality. But us northern guys seem to get into all the appeal process. I'm agreeing with Shanna, there has got to be a little more oversight of what we do.

CHAIR WOODWARD: All right, John Clark, and then I'll go to you, Jim.

MR. JOHN CLARK: I agree with Shanna. I think it's a good idea. It doesn't seem like it would slow down the process at all. As we know it is a time-sensitive process. But I think just spelling it out, even taking Bob's suggestion and put it in the fact finding. Just something to make it clear that the Policy Board can seek advice, and can get good advice on the options before making a management decision to the species board.

CHAIR WOODWARD: All right, Jim.

MR. JAMES J. GILMORE: I just wanted to echo Toni's concern, because I think she hit the nail on the head, and particularly for black sea bass. We were under the gun to have some relief by the fall, because that's when our big part of the fishery was. I think Bob's solution is that we stick that in, and Policy Board is a quick fix to it.

Again, but we don't want to slow that process down, because usually when a good amount of time when there is an appeal, there is a timeframe to it, and you know we have been accused of kicking the can down the road and sending it all over the place, and I don't think we want to get into that mode. The other thing too if we can add that, I think we really, we talked at the Executive Committee. We've gone through this thing so many times now, it's like we really want to get it done and move on.

CHAIR WOODWARD: Megan.

MS. MEGAN WARE: Just a question as I'm reading that Fact Finding Committee section. Is the Fact-Finding Committee supporting a decision on if the appeal is warranted, or is it supporting finding information for the Policy Board? Because as I'm reading it, I'm reading it to be that it's supporting whether the appeal is warranted, or whatever the word is I'm supposed to use in there. But should be brought to the Policy Board not determining the facts, in terms of a corrective action.

CHAIR WOODWARD: That is correct. It's the first. The purpose of that Fact Finding Committee will be to better inform that group of people as to the legitimacy of that appeal. Its purpose is somewhat different than what's been discussed. But again, I think we go back to the fact that the Policy Board has the discretion to seek out the information it needs when it needs it.

If it's not provided what it thinks is adequate to make a decision, then the process allows for enquiry, for gathering more information. I think to go back to how we move forward with addenda and amendments is that if it's clear in those documents what you can do and what you can't do, it should hopefully reduce the confusion of the Policy Board. You know as far as what's in bounds and what's out of bounds. That will all depend on the specifics of the action. Go ahead, Megan.

MS. WARE: Just to follow up then. I just think if we add that Policy Board piece, I think it needs to be clear that the Fact-Finding Committee for the Policy Board is potentially serving a different purpose than

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the Fact-Finding Committee of this three-person group, because what I don't want is ten years from now a situation where the Policy Board thinks they can establish a fact-finding committee to investigate if the decision of that group of three was the right decision. I just think we need to be really clear there.

CHAIR WOODWARD: Okay, go ahead, Karen.

MS. KAREN ABRAMS: Thanks, Mr. Chair. One question, just a clarifying question. Is the scope of this appeal limited to just decisions on addenda and amendments, or would it include decisions like bag or size limit decisions that are made by the species board that the species board votes on?

CHAIR WOODWARD: Yes, I'll let Bob expound it.

EXECUTIVE DIRECTOR BEAL: Generally, any decision made by a species management board can be appealed, except management measures established via emergency action, out of compliance finding, or changes to the ISFMP Charter. Any other management decisions are available for appeal.

MS. ABRAMS: Okay, thank you.

CHAIR WOODWARD: All right, I'm trying to figure out how we can get ourselves out of this, detach from this tar baby we're stuck to here, because I was really hoping to get this cleared and off the deck. Shanna.

MS. MADSEN: I'm sorry. I'm going to try to dig us out a little bit. I agree with Megan that I don't think that the Fact-Finding Committee is necessarily the spot that we want to slide the words Policy Board into. It's not really quite getting at what, you know what I'm thinking through. I'm just wondering if, so on Page 4, if the management board is unable to make changes necessary to respond to the findings of the Policy Board the following options are available.

Bullet Point 3 here is spelling out very specifically that the management board is allowed to request additional analyses from a technical group. I'm just wondering if we can take that language, like some of that language, and slide it up to the top of Page 4, where we talk about corrective action, and just spell out very clearly that the Policy Board can do the same thing that we're allowing that species management board to do.

I think that gets at what I'm trying to get across here, just the allowance of the Policy Board spelling out that the Policy Board can ask for additional analyses, or further information if they are not able to give corrective guidance, or would like to give corrective guidance, but don't feel like they have all of the information that they need.

CHAIR WOODWARD: All right, I think that might be a little difficult for us to Wordsmith at this level. If there are strong feelings, and I've heard some feelings from Commissioners supporting your concept that this policy needs to be modified to make clear that the Policy Board has the option.

I think perhaps it's best that we take this input and incorporate it, create another draft, and we'll go back to the Executive Committee, and we'll come back here in August, just to make sure. Because I want everybody to be 100 percent comfortable with this. I think we'll just put this in abeyance for the time being, try to perfect it, and we'll deal with it at our next meeting. Well, there goes my productivity for the day. Go ahead, John.

MR. CLARK: Not meaning to delay this anymore, but at this time would you want to settle the Options 1 through 3 questions on the corrective actions? I mean that could be taken so that next go round there is only one change to consider.

CHAIR WOODWARD: Yes, I actually had a draft motion to approve the whole thing inclusive of that change, but I guess the best way to do that is everybody comfortable with that Number 3 option as Bob described? Does everybody feel like that adequately gives us accountability and flexibility at the same time, with the understanding that it now

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is going to put a little bit of a burden back on us, to make sure that those plans adequately articulate things that might be combined together to resolve an appeal. If everybody is good with that. Okay, I see general consent, so I think we'll move forward. That's a good suggestion, John. Thank you. Okay, well before I call on Bob to do the next thing. I just want to remind everybody we've got several policy initiatives sort of in play here.

One of which is appeals, but we've also got de minimis, we've got Allocation Work Group, we've got conservation equivalency, and we have mode splits. We've got a lot of things out there that we need to resolve, and one of them is obviously, like I just said, this mode split. I want to turn it over to Bob, and kind of give us some status and context for that one, and maybe get some feedback from the Policy Board on what do we need to do with that group.

You know is it still as relevant and as important, because the reality is there is only so much bandwidth that we have amongst ourselves to do these different things. We need to prioritize these initiatives, because my campaign platform, if you remember, was getting some of this stuff done. Right now, I'm not doing too well. Anyway, I'll turn it over to Bob.

UPDATE ON MODE SPLIT WORK GROUP

EXECUTIVE DIRECTOR BEAL: Yes, just briefly, the background on this is, there were a number of species management boards that were setting up mode splits where the party and charter industry got different bag limits and different access to fisheries than private anglers. We also have a couple examples of shore-based anglers have different access than boat anglers, essentially.

There were some conversations about, is this appropriate? Is this good or bad or indifferent or should it be handled on a species-by-species basis, or should there be a policy across the

Commission, that will affect all species? The Policy Board talked about it a little bit, and formed a working group about two years ago, right at the beginning of COVID, which was probably one of the major setbacks here.

There were series of discussion questions set up for that working group, but at the same time the joint activity with ASMFC and the Mid-Atlantic Council on recreational reform was ramping up, and one of the issues that is in the Recreational Reform Initiative is mode splits, and the consideration of whether, what I talked about earlier, should there be different access for different recreational groups.

Given the issues with COVID and workload and as Spud said, we only have so much bandwidth. This working group kind of became idle, and we're waiting to see how the conversation with the Rec Reform Initiative went with the Mid-Atlantic Council. This group really hasn't gotten together for, I think about 18 months now.

The question as Spud presented it is, now what? Do we want to revitalize this group? Is this a priority for the Commission, or should we maybe continue to monitor the Rec Reform Initiative that ASMFC and the Council are going to work on and deal with mode splits, once we potentially dispense of the Harvest Control Rule. I'll go through the discussion questions really quickly. There are only five of them. The first one is: Does ASMFC need a policy or guidelines on the use of mode splits? Second question: Should coastwide and mode splits be allowed or prohibited? Third question: Does the available data reliably support the analysis of impacts and mode splits? Fourth question: Should ASMFC work toward managing for three modes, private angler, for-hire and commercial? That would be separating for-hire industries out from private anglers and commercial. The fifth question: Should shore modes be treated differently? Those are kind of the discussion questions that this Work Group had to work with originally.

There are a couple members of that working group that no longer are with ASMFC or with their respective state, so if the Policy Board feels getting

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this group back together and continuing the conversations on mode splits, we probably want to add a couple members to that working group. I can go over that membership if people want, but I think it's conceptually, where do we go from here, and is this a priority for the Policy Board?

CHAIR WOODWARD: Just to put a little context on that. If you will recall at the Menhaden Board meeting there was a desire to create another work group to look at: What do we do with years like 2020? We're talking about adding another group to our bandwidth capacity to deal with that topic. We do need to prioritize things and decide, you know what's most important now? What is going to give us the best return on our investment to help us move forward making the best decisions we can? I saw Joe, I'll call on you.

MR. JOE CIMINO: I think to some extent this may be on a back burner for us. But there are a couple things coming through. There are groups working on kind of tightening up what the for-hire reporting is doing, more mandatory electronic reporting, different ways to validate the reports that are coming in.

I think if that plays out, NOAA Fisheries announced, I think it was yesterday they sent us an e-mail about equity and environmental justice strategy. I think there is an element of that to the mode splits, things like from shore and maybe even headboats. I think if some of that plays out and we have those elements to plug into this discussion. I think that would be very important. Maybe we give that a chance to go, and like you said, Spud, we've got a whole new work group we've got to work on, and a whole bunch of other priorities though.

CHAIR WOODWARD: Dan, and then I'll go to you, Jay.

MR. McKIERNAN: I'm going to admit that I am among the folks who have asked for this to be looked at. I see some of our neighboring states

having a more accommodating view of this issue. I'm a little bit afraid of it. You know the fundamental question is, is the for-hire fleet a de facto marine Uber, or is it a quasi-commercial activity.

I think a lot of the proponents for these mode splits are former commercial fishermen who see the limited entry schemes, the IFQ systems, and I think they see advantage. Many of our for-hire businesses are sort of demanding that their VTR data be used, with the expectation that the restrictions are going to be lessened.

You know, they don't like that 4-black sea bass bag limit. You know maybe if we all use their data, maybe they could get twice that number. I'm really nervous about that. I see the opposite. I see strict accounting and strict reporting resulting in maybe an early season closure of the for-hire fishery, if strict accounting is the order of the day. I also believe that limited entry will follow right behind this when the for-hire fleet gets their separate allocation of the TACs. While it's true that party charter operations do cater to nonresidents, there are many residents in my state who point out to me that they live in the state, they pay taxes, they register a boat, they bought a recreational permit, and the thought of the managers catering to businesses that appeal primarily to nonresidents doesn't sit well with them.

These are the kind of questions I think need to be aired out, because I know I would be at a pretty severe disadvantage if a neighboring state was able to torque that system and get much more liberal rules, at least at first. But I think in the end, it's going to cause more problems than the advocates are asking for.

CHAIR WOODWARD: Jay.

DR. JASON McNAMEE: I think this is a high priority in my mind. I don't know about others. I think it's super important. I don't discount anything that Dan just said, and that's exactly why we need to be careful and thoughtful, and get a group together to think hard on it. I think there is information out

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there. We had a couple of pilots, where you know groups have kind of operated in what is, in essence, a quasi-commercial manner.

The real value here, in my mind is, an opportunity to get a component of what is currently a component of the recreational fishery, into a paradigm of high accountability and real catch accounting that we don't have now but could. This is a group we could do this with. I would like to continue to explore it. I would be okay if we kind of keep the band together, but not playing right now, and kind of see what happens with the Mid-Atlantic process.

I'm not super optimistic about that, so that's why I would like this group to persist, just in case, so that we could sort of swoop in and maybe pick up wherever the ball gets fumbled, if it gets fumbled. I'm okay, I understand the bandwidth thing and appreciate it. We're trying to do everything with very few people. But this is an important one. I'm okay kind of metering it out in some way, but I would like to keep it on the radar.

CHAIR WOODWARD: All right, we've got Mel on virtual, so go ahead, Mel.

MR. MEL BELL: Actually, folks covered a lot of what I would say. I think something Joe said just really hit home for me, which was you know, we've got this new for-hire reporting system on that we just in essence started. I'm looking at this again from a South Atlantic perspective. But I think it would be a good idea to kind of let that run for a while. That would inform us a little bit better, in terms of what really goes on in the for-hire sector and all.

You know we've looked at this from a Council perspective this comes up a lot. I'm not necessarily a big fan of it. Dan touched on a number of my concerns as well. I think this may be one of those things where folks, and I understand why folks are really interested in it, and a lot of the rationale for wanting to do it,

from the fishermen's perspective. But I am honestly afraid this might be one of those things where, be careful what you ask for, because you might get it, and it might come with some surprises that you weren't considering, and some of those have been touched on. I think I like the idea of keep the band together, maybe. But this in my mind is not necessarily a high priority. Keep the ability to come back to it there, but given all the other things that we have to deal with right now, I would be more inclined to not worry about making this a high priority right now. If you want to keep the group together, at least in some capacity, or rebuild the group, great. But I wouldn't invest a whole lot of energy in this right now, considering all the other things we have to deal with.

CHAIR WOODWARD: Thanks, Mel, all right, Doug.

MR. DOUG HAYMANS: I could not agree more with the esteemed gentleman, Dan. Thank you for your comments. I mean I'm on the same wavelength there. I will say that the genie has already been let out of the bottle with bluefish, you know and once the genie is out, he's really tough to put back in. I would like to see the Work Group continue its work.

If we're not, if we're going to put it on a back burner, I would at least like some agreement amongst the Policy Board that other species boards won't consider some sort of sector split until the Work Group can come back together. I think that's a decision like the Bluefish Board made, effects everything else as a precedent. I would really like to hammer that decision out before it gets put into any other plans. But Dan, thank you for your comments.

CHAIR WOODWARD: Tom.

MR. FOTE: I'm happy, Doug, you mentioned the bluefish, and that's what brought it to a head. National Marine Fisheries Service arbitrarily, without any paperwork, without making the necessary calculations of what this would mean figure wise or anything else of where the existing quotas were, stuck us with it.

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That is not the way we want to do sector separation. We've been talking about it in New Jersey for 30 years, and we realized that the way you need to do this is you've got to set up separate quotas if you're going to do it that way. You've got to keep the people within that quota. I always said to the party and charter boats when we started talking about it, I said think about it.

When the fisheries collapse you've got maybe 10 percent, 7 percent of the fishery. As the fishery becomes more productive and you start carrying more customers, you're going to catch a bigger percentage. If you don't have a separate quota that you are taking out of somebody's pocket, but you basically meld in, there are not complications. But as soon as you want to take your 7 percent and go to 10 percent, then you are taking 3 percent from somebody else, even though maybe it's only on paper, and that's when the fighting starts.

That's why Ray Bogan and United Boatmen have always supported non-sector separation. But you also have a new NMFS Director that is kind of pushing it, because of Rhode Island, and so we need to consider what's going on here. I think we need to make a statement one way or the other.

I agree with you, Doug, the Board shouldn't do anything on sector separation until we come to a decision how it's made, and it should be right now. As it is, left up to the individual states, if they want to divide their state quota up between their fisheries that's what they can do, and they've done that. A few states have done that. If we don't want to do that in New Jersey, we shouldn't have to be put on by the National Marine Fisheries Service to arbitrarily come into our state and do that.

CHAIR WOODWARD: Eric.

MR. ERIC REID: I'll be quick, because I can't decide whether I want to use the genie in the bottle or the band or the stove to get my point

across, to be honest with you. To me the first thing is, the for-hire sector has reporting requirements. In one way or another they have it. As far as the mode split, they should be rewarded for that.

That is my justification for giving them a different thing. They're doing the work; they should get a reward. It's conservation equivalency in a different form, I suppose. Joe Cimino uses the stove, you know put it on the back burner. I don't even think we have a stove. What do we have for recreational reform at this point? So far, we've got nothing. Keep the band together, you know, put the genie in the bottle for a little while, whatever you want to do. But I think it's something we have to watch out for, but not today. I guess that's my point.

CHAIR WOODWARD: Anyone else? Shanna.

MS. MADSEN: Like Eric, I don't want to belabor this. I think that a lot of what's been said around the table is valid, and I'll just go back to what Jay said. I think that this is an important Work Group. I think there are a lot of questions that we still need to have answered. I would like to see this Work Group be the one to do that. But I completely agree, let's maybe keep the band together and maybe step back a little bit and take some time. But it's definitely something I would like to see still stick around.

CHAIR WOODWARD: All right, there seems to be I guess unanimity in terms of keeping this Work Group intact, but not particularly the active, and I guess that's what I'm struggling with is that we want this group to produce an output. But they need to have clear guidance on our expectations of what and when, because otherwise they are not accomplishing anything. I think that's a little bit of the challenge here is that, and maybe it's what Doug brought up.

I mean this idea of a moratorium on plan required mode splits; you know is that the first bite of the apple? I mean is that even something that should be contemplated? I mean obviously it's already been said, if a state chooses to do that of their own volition, within the confines of a plan requirement

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that's their choice. But if we have a plan that mandates that they mode split that fundamentally changes the whole nature of the discussion. Is that something that we want this group to wrestle with initially as an output? Jay, you certainly invested in this.

DR. McNAMEE: Maybe I'll start with the lead in to your comments there and say, I think just to give us a benchmark. I don't know if Toni or Bob could help me with the timeline here. But I think there is going to be some action on Rec Reform towards the end of the year. There is like the Harvest Control Rule piece of it, and whatever happens there. Then we'll reengage on the elements that were kind of hanging there, and so that would be see what happens there, if this thing gets kicked out of it then reinstate the group at that point, or if they initiate something there, then keep them kind of in the ether a little bit. You know that's not super direct, but it's something that we can kind of set as a benchmark. Then for the second part. You know at this point I wouldn't be in favor of sort of omnibus moratorium, just because I don't understand what that means.

It's a tool. We've used it in Rhode Island on occasion, and so I wouldn't want to, you know for things like tautog. We don't have that now, but we have in the past. I wouldn't want to take that tool out of the toolbox through an action at the Commission.

CHAIR WOODWARD: Steve, I'll go to you, and then you, Joe.

MR. STEPHEN TRAIN: I was listening to it all and I was biting my tongue, but the further we get into this. I can use all the euphemisms you guys used; it doesn't matter. I'm scared that this is going to go down the wrong road. As we manage species the commercial sector got hit first with quota management on things.

Now we're starting to talk about a recreational/commercial sector, because there is money involved. They are going to want to

be awarded quota and allocated this, and then people are going to argue and fight for what they should get. As we move down this road, and maybe I'm running too far out.

The people that are going to get hurt the most is going to be the people walking down their back yard into the neighbor's dock to catch a fish, and there won't be any quota left in that for them. Those are the last people we want to see getting stuck out of a fishery. As we award quota to more people, someone is going to lose something.

Tom, once again I agreed with Tom. Tom said the other day that this guy catches a fish off the end of the dock, you know he's an older man, he's on social security. He just wants to take it home and eat it. We're going to make him throw it back. We're going to have an awful lot more of those people if we keep allocating quota, inventing new sections that get it. It makes me very nervous.

CHAIR WOODWARD: All right, Joe.

MR. CIMINO: As far as a moratorium goes, I want to remind everyone that with the jointly managed species with the Mid, and we've got bluefish up on the screen. The last time the Bluefish Board met, we kind of talked about, we didn't come up with a motion, we said we didn't need it.

It was clear that our commitment was to revisit the bag limits for the mode split at the request of a New Jersey headboat captain. That discussion is going to go on with the struggles that we're having with requested reductions for black sea bass and scup, I very much expect the discussions to lead towards different bag limits for the different groups there as well. For four of our most important recreational species, it's not a decision we could make in a vacuum.

CHAIR WOODWARD: It certainly sounds like there is agreement on keeping this moving forward in some manner. I mean Jay made a suggestion that is probably viable, to wait to have something to react to, and then go forward. But obviously, as you can tell just from the comments made around here, it's

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a highly divisive topic, and it oftentimes comes down to philosophical points of view about what's fair and equitable.

Lord knows if we could just have a mathematical algorithm that says fair and equitable, it would solve a lot of these problems. But we don't and we never will. It's oftentimes going to be subjective, and it's going to be based on a mix of quantitative and qualitative data, and a lot of other things.

It's a challenge, but I think what Steve said is very important is that the more we try to parse things out, the more we generate unintended consequences sometimes, and we need to be very careful about that. Personally, I've been trying to look in a crystal ball and see the future of my whole career, and I haven't been able to do it yet. We also have a Conservation Equivalency Work Group that is moving forward.

It's not on the agenda, but just for context for this, I want to ask Toni to just kind of give a brief update on that, because maybe, again trying to clear some of these off the deck, so that we can focus our energies on other things. Maybe that one is moving towards a point where it's going to produce an outcome. If some of that bandwidth can be devoted over here to our mode split at the right time. Toni.

MS. KERNS: The MSC tasked a subgroup to answer the eight or nine questions that came out of the Executive Committee and the Policy Board on CE. That subgroup is currently working on answering those questions, and then figuring out how we blend the answers of those questions into recommendations for changes in the policy.

We'll present that back to the full Management and Science Committee sometime this summer, and then bring it back to the Executive Committee in August. Then if it's ready, we'll bring it back to the Policy Board as well, so there is the timeline for that. Then for those

that are not aware, technically this Board and the Mid-Atlantic Council does have this amendment that looks at some of the other issues that are not taken care of in the Harvest Control Rule for Recreational Reform.

One of those issues is sector allocations. The intention at this time is to scope for that come spring of 2023. This Board and the Council would be thinking about what to include in that scoping document this fall, really, and even potentially as early as August. That is kind of how some of these things will line up.

CHAIR WOODWARD: All right, I think we have a path forward. It might be a little cloudy, but we'll keep it moving forward.

REPORT FROM THE DE MINIMIS WORK GROUP

CHAIR WOODWARD: With that I'll turn it back over to Toni to report on the progress of the De Minimis Work Group. I mean none of these are easy, and I guess it's going to take a lot of Mountain Dew to get me through the next two years. Anyway, like they say about elephants, you can eat it one bit at a time. That's what we're doing.

MS. KERNS: I'm going to get you a case, Spud. We had a small work group from this Policy Board working on de minimis. We started about a year, well we met about a year ago. But the work group wanted to wait until we were in person to actually discuss the outcomes of the work group, so that is why we've held off on bringing this back to the Policy Board and the Executive Committee.

The Executive Committee did as Spud said, talked about it earlier in the week. I think by now everybody knows the definition of de minimis. The Work Group agreed wholeheartedly that if a state meets the de minimis standards, then that state should not have to implement all the provisions of the FMP, because that state has a negligible impact on that particular species.

But the Work Group did think that there should be a minimum level of management measures that that

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state should have to implement, in order to have some basic conservation, as well as prevent some form of loopholes potentially opening up in that state for that particular species. The Work Group also discussed whether or not there should be a standard for de minimis to apply to just one fishery, meaning just commercial or just recreational, or they should be applied to both in combination.

Meaning in order to get de minimis, both your commercial and recreational landings have to be X percent of the coastwide or X amount of the coastwide quota. The Work Group discussed that there are merits, I guess to both in some cases. But generally speaking, in order to give a state the most flexibility, that having those de minimis standards be separate by species allows a state to really take advantage of the de minimis, and how each of the fisheries could have a negligible impact on that species, and help reduce the administrative burden for that particular state.

Then we also talked about de minimis thresholds, so what determines whether or not a state actually meets the de minimis standards. It is very different across the board for all species. Some species it's a percentage, some species it's an amount, some species it's 1 percent, some it's 3 percent, some species you average two years of data, some species you don't average at all, some you average three years of data.

The Work Group wasn't really prepared to make a recommendation of what we had to do, but that there could be a standard that gets produced. Then if an FMP deems necessary, it could break from that standard, and that Board would just need to justify why it was breaking from that standard. An example could be where one state still has the majority of the landings, but other states do still have impactful fisheries.

Then lastly, we also discussed the sampling requirements in particular, and that when a

state is de minimis if you don't have to put in the measures of the FMP, does that also include biological sampling requirements? We recognize that there is a burden for the state to collect samples at times, in particular because you don't have much of a fishery, and so finding those samples can be difficult.

But we also note that with shifts changing because of climate change, sometimes having biological samples from those outer edge states can be really important, and so trying to find what the right balance is for that. When discussed with the Executive Committee, the group determined that this subgroup should get back together and put together an options paper. The options paper will provide a default threshold for meeting de minimis standards. We'll look to see if there should be some exception species or not. We will also look at default standards for the sampling program, and then also think about how data poor species may have a different regimen as well, especially for the sampling standards.

Then the white paper will also give default language for individual species, or individual sectors being able to apply, and not having it done by both commercial and recreational. We will bring that white paper back in August, and hopefully get a policy going. Then for the species boards, I think what we talked about, if I'm going to remember correctly from yesterday morning, is that we wouldn't have every species board immediately have to put together what the basic standards are for those de minimis states.

But as addendums and amendments are going through for those species, we would include de minimis sections for those states, and make the changes to the FMPs as they go through, and you would create basic minimum standards for those species. Then the last part that we did talk about, which was a little bit of the can of worms, as I like to say, is the jointly managed species.

Jointly managed species our de minimis is not recognized by NOAA Fisheries in most of the FMPs, and so finding a way to collaborate with NOAA with

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these de minimis states, we'll have to continue to work on that. We don't have a solution for that yet.

CHAIR WOODWARD: Any questions, comments about Toni's report on the De Minimis Work Group? Again, I think we've got a path forward on that one, you know with the potential to produce a document on which we can base decisions in the near future. I appreciate the efforts of that Work Group.

Again, this is a challenging one, and none of this is easy. But every once in a while, you've got to revisit some of these basic foundational principals of our Interstate Management Process. It's easier to just leave things the way they are, but that isn't always the best way to do things. I think we're moving in a good direction. All right, I don't see any questions or comments, oops, Chris McDonough.

MR. CHRIS McDONOUGH: Just a clarification, Toni. You're talking about establishing de minimis standards within addenda or amendments as the process goes through. You're talking about still establishing kind of a baseline de minimis standard across all of them, not the individual ones as they go through.

MS. KERNS: We would have a general policy that would help FMPs establish de minimis standards, recognizing that species management boards can deviate from that policy, when there is justification for those particular species.

CHAIR WOODWARD: All right, last chance, don't see anything.

UPDATE ON EAST COAST CLIMATE CHANGE SCENARIO PLANNING.

CHAIR WOODWARD Okay, we can carry on with your update on East Coast Climate Change Scenario Planning.

MS. KERNS: We have been busy in the core team of the East Coast Scenario Planning Initiative, and most recently I think everybody saw from e-mails from Tina and the Councils that we did a call for nominations for people to participate in our upcoming workshop, where we will be creating the scenarios of what we think the future will look like, in light of climate change.

That workshop will be held in this Crystal City area June 21-23. We have applicants that we will be notifying, probably towards the end of this week early next week on being participants. There are a range of stakeholders, managers, folks from NGOs, wind, hopefully aquaculture, other groups so that we have a very diverse group of individuals to help us create these scenarios.

Following the scenarios, we will go into what we call the application phase. This is where we apply the scenarios to help generate ideas, and offer changes to meet the scenarios that get generated. We'll have some scenario deepening webinars. The deepening webinars are to refine and add detail to the scenarios.

Following that we'll have an implications and options conversation, and that's where we're really going to be utilizing the management bodies, in order to help us create governance solutions to the scenarios that get created. We're hoping to do this in the fall, recognizing that the fall is quite busy for all of the management bodies. We're going to do our best to work it into between meetings of all the different councils and the Commission. That is my quick update there.

CHAIR WOODWARD: Any questions about that? I think most everybody is familiar with it.

COMMITTEE REPORTS

LAW ENFORCEMENT COMMITTEE

CHAIR WOODWARD Well, take a deep breath and go to Law Enforcement Committee Report.

MS. KERNS: Okay, the Law Enforcement Committee met yesterday. I was in and out of that meeting, so

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I'm going to do my best to provide the update. The Committee discussed where we are in the lobster trackers. This includes getting insight from the Committee on the different workgroups that we have ongoing. Right now, we're about to put together the workgroup that will review the applications for the trackers themselves. We'll first put out an RFP, which that group will help us create, and then approve which tracking devices can be used by industry.

There is also a workgroup ongoing for the actual interface that ACCSP is creating, for how the states and the Law Enforcement Committee will see the tracks themselves, and how they can interact with that database. We're getting feedback from the folks that are actually using it, in order to best create it. We also gave an update on tautog tagging program, which we will get later today, so I won't get into that.

Then Julie Kaplan from Mass DMF came to talk to the group. She is a part of a group that has been reviewing issues with derelict gear. Mass has an in-house hearing process so that court systems don't delay on marine fishery issues. In particular they've been looking at derelict gear and the different laws that either allow a state or don't allow a state to dispose of derelict gear, or if you have to go back and find the owners of that gear.

She was looking for insight from the Law Enforcement Committee on what other states are doing to address derelict gear, different successes that states have had, and difficulties, and what type of regulations have been in place. The Committee had provided her with information, and they are going to continue to do some exchanges to help along with that process. The group also discussed the enforceability guidelines. The Law Enforcement Committee has had enforceability guidelines since I think 2008. The last time they were updated was 2015. These are an overview of all the different management tools that generally we use in FMPs, and how enforcement views

those tools, in terms of how enforceable they are. It is my hope that managers are using these guidelines as you think about the different management tools that we put in our FMPs. The group talked about potentially simplifying them, adding an aspect about how enforcement uses different management tools for what I'm going to call intelligence investigations.

We're going to try to figure out how to work that into the guidelines, and either bring that back to the Board at the annual meeting, if we're lucky. If not, it will be a year from now. Then the group had their closed session, which I was not a part of, but went through different state reports, and I think it was good for them to get back together to reconnect. We have a lot of new Law Enforcement Committee members, so it was great to get to know them. That's my report.

CHAIR WOODWARD: Thanks, Toni. Any questions for Toni? Loren.

MR. LOREN W. LUSTIG: Yes, thank you, Mr. Chairman, and thank you for that interesting report. Perhaps it was discussed in your absence, but I've always been interested in whether the Law Enforcement Committee considers the appropriate levels for fines, penalties, confiscation, et cetera needed to actually affect a difference in outcomes, in other words a change in behavior. Was there any sense for that in the discussions that you attended?

MS. KERNS: Loren, I was not a part of any of those discussions. I know the Committee has talked about fines in the past, but not that I'm aware of yesterday.

MR. LUSTIG: As a follow up, many of the states that don't necessarily border the coast have moved toward considering replacement cost, so a poacher takes an elk, for example, what is the replacement cost for that bull elk? That can really jack it up, the total fine. That is the kind of thing that I was alluding to.

CHAIR WOODWARD: Dennis.

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MR. DENNIS ABBOTT: Yesterday I looked in on the LEC meeting, and I was surprised to see Toni in there working. I figured she had enough to do in this room. But my question is to Bob. Are we going to hire a new LEC Coordinator? What's the status there?

EXECUTIVE DIRECTOR BEAL: Toni's got it, she's fine. Actually, Toni and Laura and I are working on a position description over the last couple months. Yes, our intention is to do that. We kind of got slowed down with COVID. But that group functions better, I think, with a dedicated staffer and you know Toni is spread pretty thin. We are working on that, Dennis, yes.

CHAIR WOODWARD: All right, Dan.

MR. MCKIERNAN: I would just respond to Loren's question. I think it's appropriate for all of us jurisdictions to sort of reexamine our fines and penalties, and we did it in Massachusetts about four years ago. But we did it with the officers, and we also consulted many of the other states, much like Julia Kaplan is talking to the other states.

But one of the biggest themes that came out of the conversation was, from the officers, don't expect to go into a court where they're dealing with arsonists and murderers, and someone with a few short-striped bass are going to be told not to do it again. But what we did, we adopted the New Jersey style, you know a base fine plus \$10.00 per nonconforming fish.

We've gotten some nice fines out of that that have stuck. We're pretty pleased with that, but also, we're using our administrative ability to suspend or revoke permits, and then most of the serious cases now, that is for a permit holder. Of course, if someone doesn't have a permit you can't do that. That's just my update on fines and penalties.

CHAIR WOODWARD: Tom.

MR. FOTE: Yes, a lot of time it would be the municipal judges that basically don't hand down the fines that they're supposed to be handing down. What we try to do is get an education process of basically talking natural resources to those municipal judges, especially with one area where we seem to be having a lot of problems.

Now you can't tell a judge what to do, but you can inform them why we're doing this it's a public resource, and that's the real problem here. You know you can come in and there is a fine that the guy is supposed to get \$600.00, but he says well, this poor guy can't do that, so he gives him a \$10.00 fine, you know what it's like.

CHAIR WOODWARD: Yes, that's a perpetual problem. I mean judges do not like to be limited in their flexibility, and that oftentimes backfires in conservation enforcement. Ray.

MR. RAYMOND W. KANE: A number of years ago, as Dan has so stated, we as a Commission on a state level got together with enforcement, and I believe Dan and his staff were going through an adjudicatory process now so we keep it out of the hands of the judges, because when you get a recreational or a commercial fisherman walking into a court of law, with the daughter, the young daughter in tattered dungarees, the judge looks at them, and as Dan said, he's got other things on his mind besides simple fishery infractions. I think that is a credit to Mass DMF. They've taken a lot more cases on their own to bypass the court system.

CHAIR WOODWARD: Any other, Loren.

MR. LUSTIG: Yes, just to follow up. I'm very familiar with law enforcement for aquatic species in Pennsylvania. I do know that for certain violations, at the discretion of the officer who is actually on site, there is a base fine. But then there is a per number for the violation. If you had somebody that was keeping undersized small mouth bass, for example, or even something as simple as personal flotation devices not being present. The base fine can be implemented and then a per item that tends to jack up the overall fine, with the goal of changing

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behavior, of course. Similarly, littering, a base fine and a per item fine. If you observe somebody just making a real mess of a real beautiful area, you could do some counting and it would go up substantially.

CHAIR WOODWARD: John.

MR. CLARK: This discussion just has been very interesting, because we've had the same problems that have been discussed here. I was just curious that the LEC, something that would be very helpful. We have started to put together a committee to look at our fine and violation structure before COVID.

Is there a compilation of how the states and ASMFC do treat these violations? Because I know Dan mentioned how Massachusetts looked at other states and that would be very helpful, so that we don't go through the same process. If the information has been compiled somewhere that could be a big help.

MS. KERNS: John, I don't believe, I'll double check with Jason. I don't think we have a compiled list, but I can task the Committee with that.

MR. CLARK: Thanks, that would be a big help.

CHAIR WOODWARD: Yes, I think that would be useful for everybody to have some perspective on how, of course each state's laws are slightly different, in terms of who is granted authority. You know sometimes it's a magistrate court, sometimes a state court, sometimes a superior court, it depends.

I think the states that have made efforts to create a more effective law enforcement environment can probably give some best practices lessons to the other states that may lead to some changes, like Dan is talking about. I know just back when I was working, you know we talk about how important reporting is and accuracy of reporting. There is many a time that a law enforcement officer will go to great

lengths to make a case from that reporting and goes into a state court or a local court.

A guy comes in with a paper bag full of papers and gives it to the judge, and it's dismissed and life goes on. The feedback loop for that game warden is pretty poor. I think that would be useful. I think that's something we can certainly do. Anything else for Toni on the Law Enforcement Committee?

NOAA REPORT ON SEA TURTLE BYCATCH AND TRAWL FISHERIES

Okay, I don't see anything, so our next item is we've got Carrie Upite, and she's on virtually, and she's going to give us a presentation on the NOAA Report on Sea Turtle Bycatch and Trawl Fisheries.

MS. KERNS: When Carrie's done with her presentation, just to be thinking about whether or not the Commission wants to provide comments back to NOAA Fisheries, so just keep that in the back of your mind as you hear what Carrie has to say.

CHAIR WOODWARD: All right, Carrie, I'll turn it over to you.

MS. CARRIE UPITE: Toni, I have a presentation, I don't see that on the screen.

MS. KERNS: Just give us one second, Carrie. There might be a slight delay, in terms of like when you say next slide. But we'll be right on top of it, I promise.

MS. UPITE: No worries at all, thank you. Some of you may recall I did present on sea turtle bycatch in Mid-Atlantic and Northeast Trawl Fisheries at the January Commission meeting. At that time, I shared background information, and then the research we've been conducting on turtle excluder devices and data loggers, as well as the measures under consideration by NMFS, and then our avenues to get public input.

The presentation today is just a follow up to that meeting, to share what we've received from our

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stakeholder engagement efforts to date, and then as Toni mentioned, potentially to request additional Commission feedback. This may be familiar to some of you, because I did give the same presentation to the New England and Mid-Atlantic Councils last month.

As a refresher, the Endangered Species Act and the Magnuson-Stevens Act both require that bycatch be minimized, and if unavoidable that mortality be minimized. The latest bycatch analysis by the NOAA Northeast Fisheries Science Center estimated about 670 sea turtles captured in trawl fisheries in the Mid-Atlantic and on Georges Bank from 2014 through 2018.

This bycatch estimate takes into consideration the observed turtle takes as well as fishing effort. In our region the highest level of observed trawl bycatch occurs in Atlantic croaker, longfin squid and summer flounder fisheries, as measured by the top landed species by weight on the trip. As such, we've been conducting research on various turtle excluder device designs in the fishery, as well as on data loggers that measure tow time.

We do have final research ongoing or planned, but at this time we have several management measures under consideration that we would like input on. If a proposed rule is developed, there will be a public comment period. However, we really want early feedback at this point, so we can take that into consideration at any future measures, or integrate those ideas into our gear research.

As a reminder, these are the measure we have under consideration. The first one involves requiring TEDs with a larger escape opening in trawls that target croaker, weakfish and longfin squid. The second and third ones noted here relate to revising the current TED requirements in the summer flounder fishery, or more specifically moving the current northern boundary to a point further north. Then also, looking at requiring a larger escape opening in those TEDs in the summer flounder fishery.

The fourth item noted here would add an option requiring limited tow durations if found to be feasible and enforceable in lieu of TEDs, and this again would provide greater flexibility to the fisheries to provide options for them to choose bycatch reduction measures. We presented this information multiple times to reach industry and a variety of different stakeholders. I did want to thank those of you who helped get the word out, and encourage people to attend our webinars. It was greatly appreciated. Specifically, I gave presentations in December at the New England and Mid-Atlantic Councils, and at ASMFC in January. In February I presented and took comments at a joint Mid-Atlantic Council Summer Flounder, Scup, and Black Sea Bass and Squid, Mackerel, Butterfish Advisory Panel Meeting. We also had a series of webinars in February and March that presented the same information as presented to the Councils and Commission.

REVIEW OF STAKEHOLDER OUTREACH ON ACTION TO DEVELOP BYCATCH REDUCTION MEASURE TO REDUCE SEA TURTLE TAKES

MS. UPITE: We dug a little bit deeper into some of the specifics on the fisheries and data. We had two additional call-in days, so that the public could share their comments orally. The green text at the bottom of this screen here, notes the comment venue is still ongoing. That is, we are accepting public comments at the e-mail address noted below until the end of May. How was our attendance?

Well, despite our efforts to engage the public, participation was somewhat limited. The numbers of attendees who were not NOAA staff are noted in parentheses for the individual webinars. Overall, 24 individuals participated in the webinars, with one-third of them attending multiple meetings. At the webinars attendance mostly involved state contacts, industry representatives, and interested public.

Most of the feedback consisted of questions instead of comments. We actually didn't receive any comments during our call-in days, and we have only received 3 written responses thus far. We received

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the most questions and comments from the Council and Commission meeting, as well as the AP meeting, where 18 Advisors attended.

That summary is noted in your briefing materials. Overall, there have been 31 questions and 32 comments on the issue. What did we hear? You may recall we asked for information on specific questions, which were noted in my last presentation, your previous briefing materials and on our website. On this slide, feedbacks on those topics are noted first.

Overall comments are organized by general topic and summarized at a high level. This information represents feedback received at the Council and Commission meeting, the public webinars and written comment combined. The majority of these bullets represent one commenter, but in several cases multiple individuals expressed the same comment, and I'll note that when we get to this point.

Looking at geographic scope of the future regulations, one responder asked us to consider exempting small vessels, identified as 40 feet in length overall from the regulations, and to consider take differences between inshore, nearshore, and offshore waters. We did hear some feedback on how to define fisheries, but additional input here would be really beneficial.

From what we have heard to date, it does appear appropriate to combine weakfish with croaker when looking at gear modification, and that both of those fisheries have limited effort at this time. We also heard that it may be worth looking at combining summer flounder and longfin squid when considering gear modifications, as many of those vessels' fish for both species.

There was also the suggestion to look at gear types such as flynets when pursuing gear regulations rather than specific target species. We also asked for input on implementation and operational issues of limited tow duration. There were several questions and comments on

how tow duration could be defined, and one suggestion was to define tow time when the winch is engaged, so as to better account for the bottom time. With a limited tow duration there were some concerns also with a lower catch per unit effort, which would result in a higher area swept. This in turn could increase the bycatch of multiple species and increase industry cost overall. Lastly there is a question on how tow limits would be enforced.

We only received a few comments on the economic impacts of future regulations. However, we did hear that gear modifications would be a direct economic cost for the squid fishery, as that fishery could not switch to targeting another species on the same trip. It was also requested that a full economic evaluation occur of any potential measures.

I will note here as an aside that if we do proceed with developing regulations, it would be to through the normal rulemaking process, which would include socio and economic and environmental analyses, and soliciting public comment. Those economic impact would be assessed then.

Besides implementation, there was a comment that requested a maximum limit on possession of a species be defined before requiring TEDs, perhaps mirroring the mesh size restrictions for summer flounder and the incidental trip limits for squid. This would help identify which vessels would require a TED.

There is also a comment on using water temperature to help define the area and the timing of the regulation. We did hear that cable TEDs would likely be preferred by the industry, based upon the gear's structure and the research to date, and that providing options of gear measures for the industry to what works best for them would be preferred.

It was also stressed that we need to continue to engage the industry, and involve them in these efforts, especially to obtain input on gear characteristics that may be relevant to the rulemaking. Finally, a commenter provided general

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support for the implementation of bycatch reduction measures.

There were several data needs also identified. I should note that these are all of the issues identified and several of these are already being worked on, or were already incorporated into subsequent webinars. These webinars are available on our trawl website, if you would like to review them as that's what was discussed.

As far as turtle bycatch data are concerned, several commenters requested that we look at takes over time and by geographic area, as well as consider bycatch both observed and estimated in conjunction with observer coverage and overall fishing effort. It was suggested by several commenters that we look at bycatch by trawl net characteristics, instead of just by (faded out).

We heard that it is important to look at bycatch levels in areas where TEDs are currently required to see how TEDs are working, and multiple individuals commented that all threats to sea turtles should be addressed, instead of just commercial trawl fishing, specifically focusing on vessel strikes, marine debris and recreational fishing. Finally, sea turtle population and trend numbers were desired. As far as specific fishing gear data needs. We heard that commercial fishing effort over the last ten years should be evaluated, especially in consideration of bycatch levels. It was suggested that we analyze available tow duration data. We were before requesting industry modified our tow duration, perhaps stratifying by vessel size. Then also it was noted that the durability and potential clogging of TEDs continue to be evaluated in gear research activity.

In the various webinars and meetings there were a lot of questions, and I've noted most of them here. Specifically, there were several questions on the Science Center's bycatch estimate process, the methodology and then results. We were also asked about the numbers

of dead versus alive take, and NMFS boats interactions mortality process.

There were also questions about the level of observer coverage in the various fisheries, research details, turtle behavior in relation to trawl gear among other things. The same as I mentioned with the data needs, some of these questions were answered at the time of the presentation, some were responded to after the presentation, and then some are still being explored.

As mentioned, we had a series of topics on which we desired particular input. These questions were all in our previous outreach, presentations and briefings, and are also on our website. Specifically, they focused on mitigation measures and operation and economic consideration. We still need input on these topics, and in particular how to define the fishery or gear to which these gear measures would apply.

We also need any and all information to include in our future bycatch reduction effort. We do want to stress that there still is a need and time to provide any insights. Our website, as noted at the bottom of the screen, has all of the background and relevant information, as well as recordings and slides from the public webinars.

I do encourage you to look at that website for additional information. What happens next? Well, we are requesting comments, as I mentioned through the end of the month. At that time, we will summarize and review all comments, and it is my intent to put together a written summary of everything received and post it on our website, the trawl website I just mentioned.

Then we have research scheduled over the next year or so. After that we will review the research, as well as the comments and feedback received for this current initiative, and determine a path forward. The decision on rulemaking will likely occur within the year. We will definitely keep you updated on the progress and our plans. This concludes what I have for you on the issue today.

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Again, this is to keep you informed of what was going on with respect to sea turtles and trawls, and to request additional input. I did want to thank you very much for your time, interest and feedback on this issue, and also putting up with my cold that I have, and I apologize for my hoarse voice today, but thank you for your time.

CHAIR WOODWARD: Thank you, Carrie, we appreciate that, very informative. Any questions or comments for Carrie? Dan, go ahead.

MR. MCKIERNAN: Yes, thank you, great presentation. I do have two questions. Who will be working on the analysis of gear and sea sampling data, would that be the gear team down at the Northeast Fisheries Science Center? Then my second question is, how will you measure success?

MS. UPITE: To your first question, who was involved in the gear research and the analysis. Yes, we have, this is actually, I should mention. This is a joint process with the Northeast and the Southeast, so we are coordinating with our Northeast Fisheries Science Center and the gear team there, as well as our gear folks in the Pascagoula Lab at the Southeast Fisheries Science Center, as well as GARFO, my office headquarters, and then also the Southeast Regional Office in St. Petersburg.

We have a number of people involved, but our Science Centers are involved in the actual gear research, which I believe was your first question. The second one, how will you measure success. That is a good one. We will take the results received from the previous research, which I presented earlier, as well as the ongoing research and assess that with this joint regional team that we've mentioned.

We don't have a specific number that we're shooting for, if that's what you're getting at. But it is more of a qualitative assessment, looking at the results and trying to get a level of

catch retention that works for the industry as well as bycatch reduction of turtles.

CHAIR WOODWARD: All right, thanks. We've got Chris Batsavage.

MR. CHRIS BATSAVAGE: Thank you for the presentation, Carrie. I had a question about just the comment received during the public hearings about exempting smaller vessels. Were the turtle takes observed in all sizes of vessels, or were vessels smaller than say 40 feet less likely to have sea turtle interactions, based on the observer data? I can't remember if that was presented during the hearings, and I haven't had a chance to look at the website lately, so my apologies if that information is already there and I just haven't seen it.

MS. UPITE: We did not present information on smaller vessels in our webinars. We did look at small versus large vessels in the squid fishery. We do have takes in smaller vessels, medium, and large size vessels for squid, so that is one of the research needs for that fishery that we want to test TEDs on multiple size vessels in that fishery.

There is no context provided in the comment on the smaller vessel comment that was received. I think the intent was that we should look at whether or not those smaller vessels do catch turtles. That is something I did want to mention here, and that is something that we are going to be looking at when we move forward with the issue.

CHAIR WOODWARD: Eric Reid.

MR. REID: Thank you, Carrie. I have a few questions. I'm looking at the data, and from 2000 to 2019, the average interaction with turtles on observed trips is 2.5 turtles a year. Is that right? That is in the squid fishery, and in the fluke fishery it's 0.9 turtles per year. I want to make sure I've got that in my head.

MS. UPITE: I would have to double check your numbers, Eric. For the observed numbers I can look that up really quickly, but go ahead. I just need to get the map; you have the numbers.

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MR. REID: I'm looking at your one pager here, and its simple arithmetic, which even I can accomplish that. My question is, and I don't expect an answer today is, what are we doing here? You know you're going to burn an entire industry for 3.4 turtles in the combined squid and fluke fishery? I can't even begin to understand what that means. In this doc, the one pager, it says that fisheries bycatch is a primary threat to turtles. At those numbers I can't, it's a stupid question, but what is the definition of primary?

I'm looking at power plant intake interactions, strandings, vessel strikes. Have you ever seen a shot gun start at a fishing tournament? I mean I would be afraid to be a turtle before that mess. I guess that's my question. What are we doing here? We're going to put a tremendous burden on an entire industry to accomplish nothing, really nothing.

Then the question becomes, are you going to do a full economic analysis? Towing a TED is going to cause a reduction in catch. I've seen the numbers, whether it's 5 percent or 55 percent it's going to cause lost catch, which means increased swept area, everything that you've heard already probably from me and from the public. But at \$6.00 or \$7.00 a gallon now for diesel fuel, plus everything else you put on the boat from paper towels to diesel fuel cost more money. What is the impact going to be for another day at sea for a boat, any kind of boat?

I'm curious to see if you're actually going to do that analysis and what your timeline would be for feedback on that. What is your timeline for final action, which we're all scared to death is just an inevitable foregone conclusion? I guess that is my comments or questions or something, but it's mind numbing to me that we're having this conversation at all.

MS. UPITE: We are recording your comment, Eric, thank you for that, and we'll check the numbers. I did want to make one comment to

that is that the numbers you're referring to, and then I did note on one of my slides where the observed take. The estimated takes, which again account for the observed interactions as well as the fishing effort are higher.

As I mentioned in the last take estimate from 2014 to 2018, we had about 670 turtles captured during that timeframe, which results in about 134 estimated takes in trawl gear per year. That is not broken out by squid, croaker, what have you. But those numbers are larger. We do recognize that there are other threats to turtles like vessel strikes. Turtles have gotten caught in power plants, and those are also being addressed through other avenues.

But again, we can talk about this at length another time, I know we're short on agenda time today. But to get to your point on the economic aspects and timing. As I noted on my last slide, we do have some research going on right now on TEDs in certain fisheries, and we are working on that, and that is still ongoing. After that is done, we are going to assess the research, the comments, and then determine the path forward. Once we determine that rulemaking will occur, if it will occur, then yes, we'll go out with a proposed rule and conduct an economic analysis at that time. But nothing is set in stone right now. It is our intent to move forward, but we aren't doing an economic analysis right now, because we're not engaged in formal rulemaking.

CHAIR WOODWARD: Eric, follow.

MR. REID: Yes. I appreciate that, but it's got to be done, because everything has gone up. Costs are going up, and more sea time is going to cost more money. But I guess my last question is, you've got the turtle protection line at about, it's 37 degrees 8 minutes north more or less. How far are you considering pushing that north?

MS. UPITE: Yes, and definitely we will be doing the economic analysis. I just want to make sure that is absolutely clear, and we do recognize that there is an issue with that. One of the slides had the map of the turtle interactions. We haven't identified a

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northern point yet, but it would be our intent to look at where turtle interactions overlap with fisheries. Right now, if you look at the line, most of our interactions are south of Massachusetts.

We will be looking at the distribution when we take that all into account as well as the seasonality of the regulations. For example, in the waters off of New Jersey regulations may only apply in the warmer months of let's say May through November, whereas off of southern North Carolina they might apply all year round. But yes, we don't have a specific line yet. But it would account for where the fisheries overlap with turtle distribution and take.

CHAIR WOODWARD: All right, thanks, Carrie. Any other questions for Carrie? I don't see any. All right, at this point as Toni mentioned, we need to decide whether we want a comment letter from the Commission on behalf of the members. I would appreciate some feedback on that. Toni has a question for you, Carrie.

MS. KERNS: Carrie, do you need a formal letter or will the comments that we provide you here at this meeting be sufficient for you?

MS. UPITE: We are recording all of the comments provided at these meetings as public comment, so we don't need a formal letter, unless there is something additional that you would like to convey or let's say rehash, or strengthen. Make sure your point is clear. It could go either way, it kind of depends on you. We would appreciate any formal written comments, but again, it's not 100 percent necessary.

CHAIR WOODWARD: All right, so what are your thoughts? Eric.

MR. REID: Well, I would prefer to have something formal on the Commission's letterhead, but I'm only one-third of one state. I would much prefer that over this.

CHAIR WOODWARD: All right, anyone else? Yes, sometimes I think it's important to put things in writing, and have some context for them. Jay.

DR. McNAMEE: Yes, you can make that two-thirds of one state. I think it's a good idea as well. I mean I see value in kind of having these things collated, and there are species in here that are Commission species. It seems relevant to comment. I don't know that we would come up with things that are different than what we saw in the presentation on what Eric offered. I think it would be good to kind of get them together, let people get a chance to look at them. I like the idea.

CHAIR WOODWARD: Dan.

MR. McKIERNAN: Yes, I agree with my neighbors to the west, and we would be happy to participate in that.

MS. KERNS: We can, as long as the Board is in agreement, but I would just request that at least the two states that have said they want to provide comments that you provide me with some comments to include in the letter, besides the one that Eric said today. I don't know which of the ones that Carrie presented that you would want to include.

CHAIR WOODWARD: Jay.

DR. McNAMEE: Yes, that sounds fine. I guess what I would just offer is, you know the croaker fishery is not something that we know a lot about. We'll need help there.

CHAIR WOODWARD: All right, Chris Batsavage.

MR. BATSAVAGE: Yes, we can help with the southern end of the range of these fisheries, so glad to do that.

CHAIR WOODWARD: All right, sounds like we'll get something drafted up, circulate around and it will probably prompt some thoughts and comments from other folks. That way we can get a comprehensive comment letter back on behalf of

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the Commission. Any last questions and comments on this?

MS. KERNS: Just a quick question to Carrie. Is there a deadline that you're accepting comments, just so I have a timeframe to work with? Just to make sure I'm remembering.

MS. UPITE: I did just have my hand up, because I wanted to respond to that. As I mentioned in the presentation, we are accepting public comments through the end of May. We did that because I wanted to make sure it would be after this meeting. That said, because we are not engaged in formal rulemaking, we have a little bit more flexibility on the timing. I imagine you may need a little bit more time after the end of May. If you do, please let me know. It is able to be worked out. That is our official end of May deadline, but if you need more time, we certainly can accommodate that.

MS. KERNS: Thanks, Carrie, we can work in that timeframe, no problem.

CHAIR WOODWARD: Thanks, Carrie, and hope you get over your cold quickly. We appreciate the update. Thanks.

MS. UPITE: I appreciate it, thank you.

CHAIR WOODWARD: Okay, let's take a short break and let everybody get up and walk around a little bit if you haven't checked out or whatever. Let's reconvene at 10:40.

(Whereupon a recess was taken.)

**UPDATE ON THE MID ATLANTIC COUNCIL'S
CONSIDERATION OF REINITIATING THE
RESEARCH SET ASIDE PROGRAM**

CHAIR WOODWARD: All right, I'm going to turn it over to Bob. This one is not controversial at all. This is easy. I'm sure everybody will just be happy as they can be with this one. Bob is going to update on the Mid Council

Consideration of Reinitiating the Research Set Aside Program.

EXECUTIVE DIRECTOR BEAL: I've got a half a dozen slides or so I'll go through pretty quickly. As Spud mentioned, the issue is the Mid-Atlantic Council is working through a reconsideration of the Research Set Aside Program. Obviously, a number of the species in that program are also jointly managed by ASMFC.

The question is, how does the Commission want to be involved, and what's the appropriate linkage between both groups. With that, a little bit of background on the Research Set Aside Program, for those of you that are not part of the Mid-Atlantic Council and ASMFC process, the joint process. The previous iteration of the research set aside was developed through Framework 1.

It affected mackerel, squid, butterfish and then joint species, summer flounder, scup, black sea bass and bluefish, as well as tilefish. It was approved in 2001, the initial projects were funded in 2002. The way it worked was up to 3 percent of the species that I just listed were set aside from the total allowable landings, and that set aside fish was auctioned off, and that revenue from the auction was then used to fund cooperative research.

From the initiation of that program in 2002 through 2014, 39 projects funded at 16 million dollars were run through the RSA program. Quite a bit of money was generated, and quite a bit of scientific projects was conducted. However, in 2015 RSA was suspended. The set aside was set at 0, so no quota was available to support research after 2015.

Why did that happen? The Mid-Atlantic Council set it aside, because there were a number of problems that were identified in the previous iteration of the research set aside program. The administrative and enforcement costs were really high, and the value of fishing opportunities were different across different species.

In fact, in some instances the cost outweighed the benefits of the research. Enforcement was a big

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issue. There was essentially a financial incentive not to report your trips. That meant that a significant amount of RSA landings was not being recorded, and this actually impacted the compliance with National Standard 1 to prevent overfishing. If the trips were happening and those fish weren't being recorded or reported, they were obviously being caught beyond the quota and beyond the research set aside amount. Recreational landings, because what happened in the auction was that some for-hire vessels would purchase fish in that auction, and use those fish to run additional for-hire trips and/or change the possession limits and size limits and other things on those trips.

Not all of that catch was being reported, and it's really a capacity issue to monitor all those RSA trips. The research, that didn't go that great either. There were a number of projects that failed peer review, so they were funded but didn't produce valuable science, and again, the applicability and utility of some of those projects really wasn't directly utilized by managers and applicable. Other than that, it went well.

All these things led to a lack of public trust in the program, and that's why the Council discontinued that about seven years ago. The idea is, I shouldn't be as flip about it, but you know there were a lot of problems with it, and now the Mid is kind of working through those problems trying to address them.

The idea is a strong concept of, you know set aside some fish, fund some research that benefits the individuals in those fisheries. Where we are now, or where the Mid-Atlantic is now is last week there was a Research Steering Committee met, I'm on that Committee, and we developed some guidance and final recommendations for the Council.

The Council is going to get together in the middle of June, in Riverhead, New York. This is a hybrid meeting, if anyone wants to listen in on that. The Council at that meeting is going to

decide, you know based on the guidance and recommendations out of the Research Steering Committee, do they want to continue this?

You know, do they want to keep working on potential re-initiation of the Research Set Aside, or do they want to just go ahead and stop it, say this program is not worth it. The administrative burden, enforcement burden and everything else that goes with it just isn't worth it, so we're not going to try to revitalize the RSA Program.

We'll see what happens there, but most likely 2024 would be the earliest that this program could be reinstated by the Mid-Atlantic Council, if everything continues to move forward. The Research Steering Committee has identified four different goals that they're trying to achieve in the re-initiation of this program. First goal, and these are in rank order.

The primary goal is to produce quality appropriately peer reviewed research, and maximize the benefits to the Council, management partners (that's us), and the public, and enhances the Council's understanding of the species, so essentially research. Goal 2 is effective enforcement and administration of the program. Goal 3 is to generate resources to fund research, and the fourth is to foster collaboration and trust between the scientific and fishing communities, as well as the general public.

That's what we're trying to achieve, if this program is brought back to accommodate all four of those goals. There are specific areas that are being considered to achieve those four goals. I'll go through these pretty quickly. There are a lot of areas that needed some adjustment, as I talked about earlier. Under the administration and enforcement of the program, it's call in and reporting requirements and notification, shoreside monitoring, you know should we limit the number of landings locations so enforcement is easier. Should there be limitations on the number of vessels that are participating, so that the administrative burden on states to issue exempted permits and other things is minimized?

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Obviously, one of the things that was talked about a lot last week at the meeting was sort of the administrative and burden cost relative to the benefit. Where is this break point between, you know if the states and the federal government are spending a lot of money on administering the program, as well as enforcing the program, where is the balance?

You know those costs really are greater than the benefits associated with the research that is provided. On the funding side, you know there are conversations about what species are available, and where does the RSA come off the top? Is it the total allowable landings as it was before, or is it the ABC that is being considered now?

What funding mechanisms make sense, and then research set aside quota allocations. If some of the quota is set aside, how is that broken out into commercial and recreational fisheries? Is it consistent with the FMP, or does it have more to do with the type of research project that's being funded? As I mentioned earlier, there was an auction that was run to generate the funds.

There was a bit of a lack of trust with that third party administration of that auction, as well as some of the quota process, and there was a lot of transfers and trading going on after the purchase of those sort of blocks of quota through the auction process, and that raised some concerns.

Then on the research side, you know how do we address the shortcomings of the research that I mentioned earlier. You know the goal here is that this science is completely and directly applicable to management questions. You could see a lot of issues here, conflicts of interest, quality research and peer reviews and funding, and all the other things.

One of the big ones is data availability and open access. If there is funded science, who can see this data, who can use this data, and how is

available to the general public? This is the final slide. One of the areas of ASMFC and state engagement in this process this slide kind of summarizes some of those issues, such as shoreside participation.

There is a lot of administrative burden that is put on the states when this program is up and running to, as I mentioned earlier, develop or issue exempted fishing permits and all the other permits that are necessary to fish outside of the season or fish under different guidelines. As well as the enforcement cost to have conservation officers running around the docks, and making sure these research trips are playing by the rules, hail in/hail out will obviously create some administrative burden.

Potentially under this new program, a lot of those decisions on a number of vessels and ports that are available for landing and other things, would be essentially brought back to the states, and the states would have to decide how they wanted to handle that. Tracking the for-hire harvest is a hard thing to do. Research set aside trips, if an MRIP interviewer is out there and they talk to a vessel that just came back from a fishing trip, and the captain says no, no, this is a research set aside trip. Most likely that interviewer is going to cancel that interview and go on to the next vessel.

There are some reporting requirements that are available, but the verification is the tricky part for the for-hire industry. Then best practices for what's the best way to handle enforcement across the states. What issues can we do across the states that have these species available? How do we make this as consistent as possible for the states?

The final is, the potential engagement process in areas of cooperation with the Research Steering Committee and the Council. How do the states and Council interact on a number of different, you know how do we want to evaluate this program if it is back up and running? We at ASMFC, if the Mid-Atlantic Council does reinstate this program, what framework or what addendum do we as a Commission need to pass, to be consistent with the Mid-Atlantic Council?

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At a minimum the Commission will have to set aside the same quota as the Council. In other words, if the Council sets aside 3 percent to support research for summer flounder, ASMFC will have to do the same thing, set aside that 3 percent, so that we're working on the same base quotas. But I think there also will likely be some other things that may need to be captured in an addendum at the Commission to support this RSA Program.

Where we are now, as I mentioned earlier, the Mid is going to get together the second week of June, and decide whether this goes forward or not. If it does, then that is when the engagement with ASMFC will happen, subsequent to that decision at the Council. Not much of a reason to engage now if it potentially is canceled at the June meeting at the Council.

If the Council wants to move forward, then we have to have some joint conversations, possibly with this Policy Board and the Mid-Atlantic Council on how we want to interact. Given that so much of the administrative burden is placed on the states, how does the Council and Commission want to work together to advance the RSA Program, should that be the direction that is chosen?

Just an update. There are a number of individuals around the table, I think Jason and Dan and Joe Cimino and Pat Geer and others, that participated in some of the workshops and other things, and maybe others have as well, I just didn't know it, that may want to chime in. But no decisions are needed here today, just really an update that we as a Commission will have to pay attention to this as it potentially moves forward, and is considered at the June meeting of the Mid-Atlantic Council. That's a brief summary of where we are and what's happening next.

CHAIR WOODWARD: Thanks, Bob. I've got Tom and then Dan.

MR. FOTE: New Jersey had real problems with this program to begin with. What we finally did was not issue permits, so there couldn't be any research, especially with this party and charter boats in our state to basically participate in this. I mean we have enough problems using the law enforcement agents to cover up what we have now, without adding extra burden with them.

We can't hire more officers unless they want to pay for the research set aside, and pay for more law enforcement officers to basically do this. It also was not too happy with a lot of the recreational sector, because they were pulling equal amounts from both sides without their real participation or public comment, and a lot of the research was not done to their benefit as they saw.

Plus, it wound up being a big slush fund, and I hate to say that but that's what it was. For researchers and things, yes, maybe some research was very good. But it was also no done right. There are other ways of going about to get research money. We in Jersey put P-maps together for the commercial and the recreational, and basically try to solicit money.

There is another fund to do that through universities that have the co-op on there. At this time with the quotas so little, we are fighting for every day of fishing is so important to the recreational sector plus the commercial sector, that I can't support this program. If they are going to do it.

I mean bluefish is actually overfished; do we make it you can't do an overfished species? I mean we have a hard enough time staying into our quotas, so as you can see, I am not a big supporter. I'm a supporter of research, but I didn't think this was the right vehicle to do it, especially the way it was handled.

CHAIR WOODWARD: Thanks, Tom. Dan, and then I'll go to you, Jim.

MR. McKIERNAN: I won't repeat a lot of the stuff that I've sat on in those meetings, because I think

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people are tired of hearing from me. But I'm wondering if we could come up with a solution here, and maybe seek a Congressional Appropriation for cooperative research in the Mid-Atlantic, much like we had years ago with the Northeast Consortium, when Senator Judd Gregg from New Hampshire was involved.

You know because the Mid-Atlantic Set Aside is so problematic, because the states have been given the burden or the opportunity and the authority to actually manage these fisheries. It's just so complicated. But I would love to see cooperative research going forward. I think we should have a Plan B, especially if maybe we could sell some folks on Plan B, so we don't have to go down this road.

CHAIR WOODWARD: All right, Jim.

MR. GILMORE: I agree with Dan. The concept of this is good, but the problems we've had with it, I'm not sure if we're going to make it work. I'm going to steal Steve Train's thunder, and now agree with Tom Fote. We were one of the big players. I have five officers in the Marine Enforcement Unit. We can make this all work again, but we're right back to the same problem.

It's like, you're going to need significant increases in law enforcement to do this. It's just not going to happen in the states. We'll be talking about this yes, quite a bit, at the June meeting. But again, I think Dan is right. We probably could come up with a Plan B, because the research I think is a good concept to try to get better research, but if we can't make this work than another option might be a good idea.

CHAIR WOODWARD: All right, John Clark, and then I'll go to you, Jay.

MR. CLARK: I'm just curious, Bob, considering what a fiasco this is, and the strong opposition to the program. This seems like a zombie that just won't stay dead. Who is behind trying to bring this back? If the Council does decide to

bring this zombie back to life, where would the Commission be then? Would we have to agree to the whole thing, if the Commission decides no RSA and the Council decides, yes? Where does that leave us?

EXECUTIVE DIRECTOR BEAL: I don't want to speak for the Mid, and there are a lot of members here from the Mid-Atlantic Council. But in the conversations at the Research Steering Committee, the idea is that you know the concept is good. You know the execution wasn't good. You know the idea of taking a little bit of the quota, setting it aside, funding some needed research, and having that research contribute back to more effective management.

I think that is what is bringing the zombie back, is sort of the concept of a zombie is good. But it may be so hard to execute that good idea that it's just not worth it. That's kind of where we are right now. To your question about where is the Commission if the Mid decides to move forward. You know one of the considerations is that states would have to opt in to this.

In other words, it's not automatic. States aren't obligated to do it. But if a state opts into this, then they would take on the burden of enforcement and permitting and monitoring, and everything else that goes along with this program. I think that is probably one of the most important interfaces between the Commission and the Council would be, what states are interested or not interested?

That conversation still needs to happen. There is a lot of detail in this. I should have thanked Brandon Muffley up front, he's the one who put together these slides for me, so I don't want to take any credit from him. But Brandon has also put together a really good table that sort of is what is new and different.

The first column has the issue, second column is the way it used to be, and the third column is the way it's being proposed to be new and different, if this iteration comes back. I think I should share that with this group. It's a pretty good summary of

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comparing the old versus the new, so at least that is a starting point. But I think the phrase, “the devil is in the details” was said, I don’t know, 10 or 15 times at the Research Steering Committee last week. That is the reality of the thing.

CHAIR WOODWARD: Everybody is going to put some lipstick and face cream on a zombie. Go ahead, Jay, and I’ll go back to you, Tom.

DR. McNAMEE: Yes, so a little zombie advocacy over here for everyone. I think Bob, you sort of said exactly what I was going to chime in with. I think the concept is a good one. It’s interesting on a number of different fronts, the whole system, the auction. Like all of that stuff is kind of neat and interesting, and could be good. But I think, so I reserve judgment. I want to see what they are able, a bunch of smart people working on it. I would like to see what they can kind of put together to shore up some of the issues from the last go around, before I sort of sign it off. I just want to see what they can come up with.

If we judge it and don’t think they’ve protected us against some of those issues that we had, the kind of looking over your shoulder, and off go the RSA pounds that don’t get recorded, that sort of stuff. But maybe they can come up with some ways to counteract that. Then there is a lot of benefit to the program. I just want to see what comes out of it.

CHAIR WOODWARD: All right, Tom, and then I’ll go back to you, Dan.

MR. FOTE: I just think, what is different from now than it was back then. Let me see, we were transferring what we thought was unused recreational quota over to the bluefish, and basically so you were taking a research set aside on the bluefish now. There is no unused recreational quota. As a matter of fact, we can’t get enough quota to basically let our fishermen do that.

The same thing with black sea bass, scup. Oh, we could basically, we have unused quota, because we’re going to restrict the recreational sector so much that we’re not going to be able to harvest a quota on scup this year, because 20 percent of the quota will not be used, but the recreational sector is doing a huge reduction, and the same thing with black sea bass.

It doesn’t make any sense to talk about it until we have stocks that we’re not taking away days at sea for commercial fishermen and days at sea for recreational and charter and party boats. I just can’t see it. It might be nice for the college professors and the universities, because they get big overhead out of those grants.

They charge you 50 percent, unless you’ve got fine grants that you basically get. I used to get work grants so the college can only charge 10 percent, otherwise I was going to different colleges. But that’s not how it most of the time works. I can understand why college professors like it, it’s a source of money.

CHAIR WOODWARD: All right, Dan.

MR. McKIERNAN: Yes, very briefly. One of the biggest challenges in the last go round was the fact that the RSA, the research set aside, was auctioned off so that the poundage was monetized. I think there is a struggle to try to figure out how to restart that if we do. Some on the call suggested that ASMFC did such a phenomenal job on CARES, maybe they could become the bank. Well, I’m just pointing out, watch out, this is the devil and this is the details.

CHAIR WOODWARD: I don’t know what kind of powers I have. But if I’ve got veto power, I think that one is going to get vetoed. All right, Shanna.

MS. MADSEN: Not to belabor any points, I just want to say, you know I agree with all of the things I’ve heard around the table today. I strongly agree, as I oftentimes do with Dr. McNamee, in that I am willing to wait and see what these guys come out with. I do want to remind everyone that this

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program gave us NEAMAP, and it's a critical part of our stock assessment science today. I think it's highly respected, and a lot of that has to do with the fact that it was a cooperatively created survey. I am not prepared yet to kind of shut down on this just yet. I would like to see what comes out, because we've also seen the good that this program can do along with some of the evil.

CHAIR WOODWARD: All right, thanks. We'll wait and see what the Mid does, and we'll react to it accordingly. Go ahead, Bob.

EXECUTIVE DIRECTOR BEAL: Just one sort of scheduling note. ASMFC and the Mid are going to meet jointly at their June meeting to deal with Harvest Control Rule. It's most likely that this issue of research set aside will be immediately before or immediately after that discussion. It should be convenient for the Policy Board members to listen in on that should they be so inclined, and you can keep up with what the Council is doing.

CHAIR WOODWARD: Jim.

MR. GILMORE: Bob, do you have the date on that yet? I haven't seen the agenda, and I'm trying to get it. I definitely want to be there. You can give it to me later.

EXECUTIVE DIRECTOR BEAL: It's June 7 through 9, which is June 7 is a Tuesday, and I think the joint meeting will be either on the 7th or the 8th, is my understanding.

**REVIEW OF THE INFORMATION RELATED TO
THE TAUTOG COMMERCIAL
TAGGING PROGRAM**

CHAIR WOODWARD: Next we have, James is going to give us a review of the information related to the tautog commercial tagging program.

MR. JAMES BOYLE: Good morning, everybody. I will be very quickly running through the initial

findings from two surveys regarding the tagging program. First a really short background on the issue. In October 2021 the Tautog Management Board tasked the Law Enforcement Committee with assessing the compliance of the tagging program, and its impact on reducing illegal harvest and markets.

Then fast forward to the January 2022 meeting, the Board reviewed the Law Enforcement Committee's report, which document along with some public comments, that a minority of commercial fishers have experienced issues with applying the tags, and have observed injuries to the fish when held in tanks for long periods of time. Considering this, the Board discussed how best to further evaluate the impact of the tagging program, and specifically what tautog dealers had noticed a change in market price for tagged live fish.

Additionally, since then New York conducted a survey of their own commercial harvesters' trippers and dealers, to better understand any impacts of the tagging program in their state as well. After the January meeting, board members identified dealers for Commission staff to reach out to, and some of the specific questions proposed to those dealers.

These are the initial results that I was able to accumulate. I received contact information for 25 dealers with 13 from New Jersey, 3 from Connecticut, 2 from Massachusetts, and 7 from Rhode Island. Of those 11 provided responses, but unfortunately only 3 sell live tautog, and therefore can speak to the issues that we are hoping to investigate. Two of those responses did not have problems with the tags, although one did mention that there was a learning curve in that first year of implementation of 2020.

However, one Massachusetts response outlined many of the same issues that we've been seeing and had been reported previously, such as the tag is not locking properly and falling out, excessive damage to the gills, a shorter shelf life in live storage, and specifically a decrease in market price as well.

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As I mentioned, New York had their own survey from harvesters. The confirmed the Law Enforcement Committee's report that there was a minority of fishers experiencing issues with the tags, primarily tags not locking and falling out, causing excess mortality and excessive damage as we've seen before.

Eighty-one percent of those 56 respondents, and the 56 respondents is 12 percent of license holders, for context, prefer to change the style of tag. However, folks on the dealer's side. For shippers and dealers, they received 10 responses, among which 90 percent reported using live storage, and 57 percent of those hold the fish for longer than two months on average.

The largest reported issues were again, tags not locking and falling out at 27 percent, causing excessive damage at 23 percent, and causing lesions to appear on the fish at 19 percent. Fifty percent prefer changing the style of the tag, and the other 50 percent did not respond to that question. The key takeaway here is that even with the two surveys combined, there are only 13 dealer respondents, and a severe lack of geographic representation between them.

Therefore, we did not feel that this was sufficient to present to the Tautog Management Board, to consider possibly taking some action. In order to improve the results of the survey, and get a more representative sample, we are requesting further direction from Board members on acquiring information from dealers of live tautog specifically. Are there any questions or notes?

CHAIR WOODWARD: Any questions for James? John Clark

MR. CLARK: Yes, I was just curious. I didn't know whether it would come out as to whether those tags falling out, if the problems were across the board, or were there certain fishermen in particular that had the problem, because I know you have to use a certain applicator to make the tag lock. I'm just

wondering if some were trying to get by without using that certain applicator and just using pliers.

MR. BOYLE: I don't have like specific data to answer that question. But I do have the one negative Massachusetts response did speak to that exactly. Their opinion is that a lot of fishers are not using the proper tools, because they either don't know where to get them or don't want to pay out of pocket for them, and other reasons like that. They use makeshift tools that they get from the hardware store as opposed to the proper applicator. Again, I don't know how representative that is. That is just one story that I heard, but that is what I have come across.

CHAIR WOODWARD: Eric.

MR. REID: My question is, does it have anything to do with the size of the fish? I think the live market is for smaller fish than the dead market. Maybe it has something to do with just the size of the fish themselves, I'm not sure.

MR. BOYLE: I also, I'm not sure. But I have heard some public comment, and I think one of them might have been included in the meeting materials for this meeting. I'm not positive. But they did talk about the size of the tag being an issue, so again, I don't know how representative that is of the sample though.

CHAIR WOODWARD: Jim, and then I'll go to you, Dan.

MR. GILMORE: Let me just maybe give a little bit of the New York perspective, and maybe that will help out. Just opinions, because we're getting one side of the group saying it's phenomenal, another side it's the worst thing we've ever done. Obviously, the 50 percent sounds right. I think my opinion, based upon the feedback we've gotten from the surveys is there seems to be a learning curve on it, in terms of how to use the tags.

I don't know if it is so much a size issue as opposed to, you know getting used to the applicator and the things about doing it on the water, yada, yada.

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Rachel Sysak who has done our program did a great job, and did the survey whatever. She has actually put together videos now, and the sense I'm getting, or at least where I think we would want to go is maybe we let this go for another year, and redo the survey after now they've got a couple years under their belt.

Because we were rolling this out during COVID, and that was another challenge. In New York we footed the bill, so we didn't put the cost burden on the fishermen yet, but we may be doing that next year, so at that point I think it would probably be better, instead of starting going into coming up with a new tag, maybe we want to make sure that this one is just not an operator error at this point, and maybe that's the best way to go.

CHAIR WOODWARD: We've got Bill Hyatt virtually, so go ahead, Bill.

MR. WILLIAM HYATT: I did put my hand down. I think my question has been answered. I guess one remaining one was, I thought I heard there was going to be some request back to the Board, and if that could just be repeated that would be great.

CHAIR WOODWARD: Yes, I think the question is whether there is any interest at the Policy Board to direct efforts to further investigate and address this issue. But what you just heard from Jim is that there are some things underway right now that might actually help resolve this perceived or real problem, depending on which way you look at it. I think that is kind of where we're at. I'll lean on Toni if there is something else that we might need to decide.

MS. KERNS: It's the pleasure of the Board, and we didn't bring this to the Tautog Board, because we had to trade out for the Coastal Sharks Board. That's why we're talking about it at the Policy Board. But if the Board is wanting to know what other regions are hearing from their fishermen, or from their dealers. We need

to know who those dealers are, and I think we need some help from you all to get those dealers to talk to us, because James has made some considerable efforts, and we're just not hearing back from folks that sell live taug, so it's the pleasure of the Board.

CHAIR WOODWARD: I guess the question, is this widespread enough and of magnitude enough to be a real problem, or is it a localized few individual learning curve type of issue that doesn't warrant the expenditure of a lot more human effort? That's something you all can give me some feedback on. Dan.

MR. McKIERNAN: Yes, I would like to echo Jim Gilmore's comments, which is since it appears to be a learning curve. I think New York delayed implementation of this one year. We saw more problems after our first year, fewer problems after our second year, because of the learning curve. I'm with Jim, I think we can let this go another year, and see if those problems persist.

CHAIR WOODWARD: Jay.

DR. McNAMEE: I'll echo that. I thought that was a good idea, from Jim, and it sort of was the sense that I had, you know just nobody likes this stuff when it starts, and fishermen are good at what they do, so they get better at it, figure out how to get it done. We could revisit it after letting another year get under our belts.

CHAIR WOODWARD: All right, sounds good. Anybody have a differing opinion? I don't see anybody, okay, we'll dispense with that one. We don't have any noncompliance findings, and other business I mentioned about CITES and sharks and dogfish and eel. We do have, I don't want to constrain discussion, but we are obligated at 11:30 to meet jointly with the Mid to discuss the Harvest Control Rule. We talked about this a lot in the Sharks yesterday. A lot of you were there. A lot of you understand kind of where we're at, but we wanted to revisit again.

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OTHER BUSINESS
CITES PROPOSED LISTINGS/SHARKS

EXECUTIVE DIRECTOR BEAL: Yes, I'll kick it off and then Dustin will fill in the blanks, if that's okay, Mr. Chairman. Just really quickly, a lot of folks were here during the Shark Board yesterday. There is a proposal from the country of Panama to list 54 species in CITES Appendix II.

Four of them for direct trade issues, and then the other 50 for lookalike issues. The question is, should we send a letter to CITES commenting on that? The Shark Board recommended a yes, ASMFC should send a letter voicing the concerns from the Commission about the potential listing of these animals in CITES, and Dustin can give a quick background on that.

MR. DUSTIN COLSON-LEANING: Sorry, Bob, I was lipreading Toni's words and I missed what I will be following up with, apologies. The Coastal Sharks Board recommended to the Policy Board that the Commission send a letter voicing opposition to the listing. The Commission already supports responsible and sustainable coastal sharks' management program with an effective enforcement, so that was the main comment that was received as justification for sending this letter. Then detrimental economic impacts were also discussed. There was a discussion about how other shark species in the past had been added to Appendix II, which subsequently caused a big decline in commercial landings. At the same time a lot of commercial landings of sharks have been well below the quotas, so this is a fishery that necessarily isn't producing that much output to begin with, so additional barriers to being able to market those products would be a hindrance.

On top of that HMS representative talks about the relatively low volume of U.S. exports of shark species, and so this might be another talking point supporting how this might be a little bit more burdensome than actually

effective, at least from the U.S. perspective. We're definitely still open to hearing more comments, more justifications that will help Commission staff write this letter, and then I'll turn it over to Toni, because there are other species that are being considered for Appendix II CITES listing as well.

CHAIR WOODWARD: Just to make sure, if you've got other thoughts about sharks that aren't covered in these bullets, just communicate them back and make sure we get them captured. I mentioned shark depredation in the South Atlantic, and the desire to try to keep shark fishing as viable as possible, and get those removals. That is seen for right or wrong as one possible solution to reducing shark depredation. I certainly want to see that included in there if at all possible. Anything on sharks on the CITES request from Panama? If not, then the next one is dogfish and eel.

MS. KERNS: There are two other Commission species that were raised, and Fish and Wildlife Service Federal Register Notice for CITES, spiny dogfish was on the list for a request to add it to Appendix I, as well as Appendix II. In the FR Notice, Fish and Wildlife Service noted that there was insufficient information to list in either of those appendices.

For American eel, there was a request to list it in Appendix II. U.S. Fish and Wildlife Service noted that this species is important for international trade, in particular for yellow eel and its meat, and elvers in the aquaculture industry. Our Commission's assessment will be very important, and evaluation of the species for CITES Appendix II in the future, but our assessment will not be completed in time for review at this upcoming CITES meeting.

Fish and Wildlife Service notes that it is important to seek additional information on trade in other countries, in particular from Canada, as well as the wider Caribbean region. Lastly, separate from Fish and Wildlife Service, but still a part of Fish and Wildlife Service, their law enforcement group did support the inclusion of Appendix II.

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I think the Coastal Sharks Board heard yesterday from Deb Hahn that when Fish and Wildlife Service says that there is insufficient information, it's less likely that those proposals will move forward. But it's still prudent and important if the states do have additional comments that you should send those in. If the Board does want to provide comments on spiny dogfish or American eel on listing in Appendix I and II for dogfish or II for eel, then we can do so. But we just need to hear some justifications why the Board would want to put that information in a letter.

CHAIR WOODWARD: Okay, any questions for Toni? John Clark.

MR. CLARK: Yes, Toni, on the eel. Do you know why the Office of Law Enforcement supports including eel in Appendix II?

MS. KERNS: There was not a specific rationale provided in the FR Notice that I saw off the top. I assume because it aids having that tracing and tracking aids in their cases, and it makes it, I think easier for those. But that is my assumption. There is tracing of the elver fishery already. I don't know how much tracing there is. I think it depends on the state for yellow eel and silver eel products.

CHAIR WOODWARD: Megan.

MS. WARE: It seems like it would probably be prudent to at least comment on the eels. I think there could be some implications there, and I'm happy to have staff work with Commission staff to get some justification there, particularly on our elver fishery and how that operates with enforcement, so we can provide that.

CHAIR WOODWARD: We've got Mr. Whiteside on virtually. I'll let you speak.

MR. JOHN WHITESIDE: Good morning, and thank you for letting me speak. I would ask that the Commission write a letter to Fish and

Wildlife opposing the listing, not only of spiny dogfish, but also winter skate. Dogfish, even though they say it's kind of leaving the door open, it's unlikely. I think that we need to take a strong position and oppose that, because of the enormous implications that have been brought up earlier about a listing on CITES I or II.

Especially for dogfish and skate, which in this instance have MSC certification, and in Europe that is a mandatory listing of certification, we would lose that and then the buying of dogfish and skate would collapse, as would I think the entire commercial fishery, and then that would have dramatic ecological impacts where you have small sharks and rays that already dominate the ecosystem, going unchecked by commercial fishing. I ask again, please have the Commission write a letter in opposition, both for spiny dogfish and winter skate. Thank you.

CHAIR WOODWARD: Dan and then I'll go to Mel, and then back to you, Joe.

MR. McKIERNAN: Yes, I've received two letters from industry in Massachusetts. I've been copying on letters to the U.S. Fish and Wildlife Service, and I would be happy to share those with staff. I would like to see the winter skate and the spiny dogfish also commented on in the ASMFC letter.

CHAIR WOODWARD: Yes, I am going to let Bob respond to you regard skate.

EXECUTIVE DIRECTOR BEAL: I think dogfish we can put together a strong letter. Winter skate, you know given that ASMFC doesn't manage any of the skate species at all, I think in the past anyway, we've stayed away from species that we don't necessarily manage, so that would be a different approach. I'm not saying we can't do it, but I would advise we probably stay out of that skate business.

CHAIR WOODWARD: All right, Mel.

MR. BELL: Just a process question. Toni, how fast do you need to hear from us if we want to

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comment, let's say on eel. Our staff/your staff, what are you looking at timewise?

MS. KERNS: Thank you for that question, Mel. If we can get comments from you as soon as possible, so if we do comment on dogfish and eel, if that is the pleasure of the Board. Those comments are due to the FR Notice on May 26. We have heard from AFWA that they would like to hear from us by hopefully the end of next week, and the 54 shark species.

I'm still trying to figure out if we can have one letter or if we need to separate the letters into two, and timing may have something to do with that as well. The sooner you can get me comments the better. I can send out a deadline to the Board after working with Spud here, to figure out our review process.

CHAIR WOODWARD: Joe, and then I'll go to you, Roy.

MR. CIMINO: I fully support, I was about to say both letters, but as Toni said, this might be one letter, but a letter for both species. I think Mr. Whiteside's comments were spot on for dogfish. He may have even pretty much wrote the letter for us.

CHAIR WOODWARD: All right, Roy, go ahead.

MR. ROY W. MILLER: I apologize for letting this go, but I've been thinking about that Panama presentation regarding members of the family Carcharhinidae and the proposed listing in Appendix II. I may be the only one on the Board that feels this way, but I would like more information about what an Appendix II listing would mean to the legal shark industry.

How much of an additional burden it would represent, because frankly I found some of the evidence sighted by the country of Panama rather compelling, particularly with the difficulty in separating fins from requiem sharks or members of the family Carcharhinidae from other sharks. Maybe I'm the only one that was

bothered by that, but I think I would really appreciate some additional information about the potential impact of an Appendix II listing.

CHAIR WOODWARD: We've got Deb Hahn on virtually, and Deb, do you think maybe you could help Roy with his question, in terms of what does that listing really mean at an operational level for our domestic shark industry?

MS. DEBORAH HAHN: I don't want to take much of your time, but yes on a couple questions on the listing side. An Appendix II listing would not put any additional burden on folks in the U.S. that are recreational or commercial harvesters or users that are only doing that at the domestic level.

It's only those that are exporting and/or importing, but more so on this side exporting, to the international stage and through international trade. The burden on that would require permitting, and the cost of permitting. You know Fish and Wildlife Service is attempting to develop an electronic permitting system that hopefully will ease the burden of permitting, because it is fairly substantial, especially for smaller producers and users. That is really the burden that is on your local commercial and recreational users. I can answer other questions on that. As to the letters, they are two separate letters. At this point Panama is going to submit that proposal to the Conference of the Parties. We will see that proposal come forward on June 27 through the CITES Secretariat.

What Fish and Wildlife Service is looking for on there is do you have comments on the proposal itself? Do you have biological or other information that would be useful for them to know? Do you think those listings, would you support those listings? Would you not and why? Fish and Wildlife Service is also considering being a cosponsor of that proposal, and they have not decided yet whether they will do that. Any information you can provide that would be useful to Fish and Wildlife to make some of those decisions.

What we'll need to do after June 27 is get back together and see what kind of intervention you all

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would like at the Conference of the Parties when this comes up for a deciding vote, but that's in the future. The second letter is on the spiny dogfish and American eel, it's a Federal Register Notice. They are looking for biological management and trade information. We do not support that based on this information. I can answer any other questions beyond that.

CHAIR WOODWARD: Thanks, Deb, that's helpful. Any clarifying questions for Deb? We need to wrap this up so we're ready to get on to our next topic, but that's helpful. Thank you, Deb.

MS. HAHN: Certainly.

CHAIR WOODWARD: I think there is agreement we need to submit letters. What I need everybody to do is just to feed your input back to Toni, so we can get those letters drafted up, and I guess they can then be circulated in a draft form, just to make sure everybody is comfortable with the content, and then finalized.

MS. KERNS: Really quick, Mr. Chair. Because we have to get the Panama letter out by the end of next week, we will probably work with the Chair of the Coastal Sharks Board and you and Joe on the comments that we've heard today. For spiny dogfish and eel, if folks could get me any comments by the middle of next week, and I can send a reminder for that as well. That would be great, and then we can send out a draft.

CHAIR WOODWARD: Very good. Now we've got a joint discussion with the Mid over the Harvest Control Rule Concept, and Mike Luisi is on virtually. He will be sort of co-chairing this with me. But I think I'm going to turn it over to Dustin and Julia Beatty from the Mid to sort of walk us through this, and give us some context for where we are and where we're heading towards in June for hopefully a final decision on this.

INITIAL DISCUSSION ON COMMISSION HARVEST CONTROL RULE DRAFT ADDENDA AND MAFMC FRAMEWORK

MR. COLSON-LEANING: Thank you, Mr. Chair, we also have Tracey Bauer here with us today. We're going to all take a part of this presentation, but we're going to cover the topics fairly quickly, to leave room for discussion by the Board and Council. I will be covering the Harvest Control Rule and Draft Addenda and Framework main options, the main five Harvest Control Rule options, so let's get into it. The presentation will cover background information on the action's purpose, and introduction to the five Harvest Control Rule options and a brief overview of some of the management options, such as a selection of a target metric for setting measures, options on the Commission's conservation equivalency policy, and accountability measures as well, which we'll very briefly cover.

We will also provide a preliminary summary of public comments received at hearings and then discuss next steps. Just a little bit of background and timeline here, to remember where we are and where we're going. The Policy Board approved, Harvest Control Rule Draft Addenda for public comment in February of this year.

Then you'll remember that the Council also simultaneously approved a range of options for their own framework process. They are pretty much being used interchangeably at this point, in their like actions. They also tasked the SSC or the Scientific and Statistical Committee with providing a qualitative evaluation of the five primary alternatives within the document.

Then we held public hearings in March, starting at the 16th and ending on April 13th. Then received written comments as of the April 22 deadline. Today we're just going to be providing a little bit of a sneak peek overview of some of the verbal comments received at public hearings, as the written comment deadline had the bulk of the comments, and that was not that long ago. You'll be receiving that presentation in June.

This action is being taken because the Commission and the Council's current recreational measure setting process faces several challenges. The problem is recreational fishery data can be very variable from year to year, and there is a lot of uncertainty around the estimates that are provided through MRIP.

Because of how the current management system is set up, changes to recreational measures are needed almost annually, because of the highly variable nature of that data that is being used to inform the management program. There is also the current perception from the public that measures are not reflective of stock status.

We've talked about it at great length, and many of you are aware that measures for black sea bass are being restricted this year at about 21 percent in expected harvest, to achieve a 21 percent reduction in expected harvest, despite the fact that biomass is roughly two times the target as of the latest stock assessment information. Then lastly, changes to management measures such as the bag limit, minimum size and season, have not always had their intended effect on overall harvest. Management has struggled to cope with how to deal with that.

The goal of the Harvest Control Rule is to establish a process for setting recreational measures that prevent overfishing, are reflective of stock status, appropriately account for the uncertainty in the recreational data, take into consideration angler preferences, and then provide an appropriate level of stability and predictability, especially for the for-hire sector from year to year. This Framework Addenda provides five possible approaches for setting bag, size and season limits, and the various Harvest Control Rule approaches can be differentiated by the information used when setting those measures. The Harvest Control Rule approaches also differ by the circumstances under which measures would change. It's important to note here that each of

the five Harvest Control Rule options define a process for establishing measures, but none of the options implement specific measures under the Addenda document as currently listed.

The recreational measures would be established through the specifications process, which is already part of the Commission's and the Mid-Atlantic Fishery Management Council's FMP for all four jointly managed species. Here we have all five of the Harvest Control Rule options. They currently would fit into that specifications process that I just mentioned.

I plan to cover each option one by one, introduce the metrics that are used to inform each option, and let's start with Option A. This represents the current recreational measure setting process, and the decision to keep measures the same or change them depends on estimates of recreational harvest, compared to the recreational harvest limit in each year.

The recreational measures, as I said, are reviewed annually. It's been slightly different in the most recent couple of years, given the new MRIP information. But for the most part, prior to that updated MRIP information, measures were considered and often changed annually. Next, we have Option B, the percent change approach.

This approach is informed by recent MRIP harvest estimates compared to recreational harvest limits like the current process, but it is also informed by stock size relative to the stock size target, or the biomass target. Unlike Option A, Option B would set measures for two years, to align with the release of new stock assessment information.

That is an important caveat. That's actually true for all of the other Harvest Control Rule alternatives. The percent change approach is based off of a table that serves as a decision tree, to determine what measures should be in the coming year. Let's walk through a hypothetical example that might demonstrate how this works.

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Based off of recent stock assessment information and harvest estimates, we expect that harvest in 2022 will be close to the recreational harvest limit. That brings us there in Row B. Next, we consider stock size, and we ask ourselves, is stock size high, meaning at least 150 percent of the target stock level, or is the stock considered just high, which would be between the target and 150 percent of the target stock size or is the stock size low, meaning below the target stock size?

The 2021 stock assessment information for summer flounder indicated that the stock was below the target, so as you can see the little icon of the summer flounder is moving around the screen, to see what will happen next in terms of the management response. Based on these two metrics the percent change approach indicates that the measures should be restricted, to achieve a small 10 percent reduction in expected harvest to help bring the stock back towards the target.

I'll walk through a different example, because black sea bass is a different story. Based on recent years, harvest is expected to be much higher than the 2022 harvest limit, which puts us in Row C. But the latest stock assessment tells us that black sea bass biomass is very, very high, roughly two times the target, so that is a good stock condition. Depending on the sub-option chosen by the Board and Council, the appropriate response could either be restricting measures to achieve a small 10 percent reduction in harvest, as reflective of harvest being above the RHL or if it's the will of the Board and the Council, they could choose the sub-option that would have no restriction in measures at all, reflecting that the stock is well above the target.

I would show you the full table here, not that you may be able to read it all or really look at all the different scenarios or combinations of outcomes, but just to point out that we've listed estimated harvest compared to the RHL, the three different outcomes, above that

confidence interval, below that confidence interval, within the confidence interval, as well as the different stock size scenarios, and shown that there are different management outcomes for each of those different input metrics.

I would encourage you to look at the Draft Addenda document for a full comprehensive review of how this approach works. Next, I will cover Option C. The fishery score approach relies on four different metrics or sources of information, including comparing MRIP harvest to the future recreational harvest limits, stock size, fishing mortality, as well as recent recruitment.

Each of these metrics is weighted, depending on the importance to the stock health, and it is combined into one fishery score. The approach would also set measures for every two years, holding those measures constant for two years, and these measures would be predetermined, a component of Option C, D, and E that I'll get into a little bit later.

This table displays how the scores translate to stock status and fishery performance outlook, and the assignments of those predetermined sets of measures. High scores, as shown in green, are reflective of good stock status, with a maximum score of 5, and conversely low scores are indicative of poor stock status with a minimum score of 1.

Using an example weighting scheme, the PDT/FMAT developed a weighting scheme of 40 percent to stock size, 20 percent each to fishing mortality, recruitment and fishery performance. The PDT was able to demonstrate how this might shake out for some of the species. Black sea bass is a stock that has a very good fishery score, as a result of its high biomass, it's low fishing mortality and good recruitment in recent years, and would be assigned the most liberal set of measures.

Summer flounder and scup received moderate scores, and would be assigned slightly more restrictive measures compared to the most liberal set, but still measures that look to provide access to anglers to the resource. The moderate score for summer flounder reflects its relatively low biomass,

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remember it's below the target, and a moderate score for scup was influenced by poor recruitment and harvest exceeding the RHL.

Then it comes as no surprise that bluefish, largely because of its overfished position, is in that lowest bin with the most restrictive set of measures, which would be implemented until a rebuilding plan was put into effect. That was Option C, now I'll cover Option D, the biological reference point approach. That primarily relies upon biomass and fishing mortality information to assign fish stocks to bins. Additional data, including expected harvest compared to the RHL, recent recruitment and the biomass trend, are also used to fine tune measures in specific scenarios. Here we have a table that displays how this approach works. There is a lot on the screen, so I'll try to walk through this piecemeal. Remember there are two primary metrics that are used to inform this approach, which are stock biomass compared to the target level, and whether overfishing is occurring or not. When a stock enters a bin for the first time, it would be assigned a set of default measures for two years.

Then two years later we look to those two primary metrics again, to see if the measures should be changed or not, meaning moving from one bin to another. If the stock remains in the same bin for a second year in a row, we look to the secondary metrics. Those secondary metrics biomass trend in recruitment help us to determine if the default measures should be liberalized or restricted further.

The tables within each of these bins help demonstrate how this secondary metric evaluation works. If a stock is also experiencing overfishing, we also look at recent recreational harvest compared to recent harvest limits, for additional insight on how measures maybe should be changed or not.

Let's talk through a hypothetical example again, to see how this approach works. We've got an imaginary stock here, perhaps a clown fish. But

this could apply to any four of the different species. Let's say that in 2013 a stock assessment is released that shows that the stock biomass level is very high, or at least 150 percent of the target stock size, and overfishing is not occurring, so far so good.

The stock would fall into Bin 1, and that would have the predetermined measures that would be the most liberal set of possible measures associated with that bin. Then two years go by, and we have new stock assessment information that shows that the stock is still well above the target, overfishing is still not occurring.

Since this stock is falling into Bin 1 for the second cycle in a row, we look to the biomass and recruitment trend, those secondary metrics, to determine if additional changes or additional liberalizations should be made. Since biomass trend is increasing, we can assume that the stock is doing well, and that further liberalizations are warranted.

Two more years go by, the 2017 stock assessment information is made available, and although biomass is still very high, we see that the stock is unfortunately experiencing overfishing. Perhaps the measures were liberalized too much, or something else has changed. The stock would be then assigned to Bin 4, with a new set of more restrictive measures to help get overfishing under control. Then two years go by again, 2019, new stock assessment is released, and we see that biomass is still very high, which is good news.

But overfishing is unfortunately still occurring. Since this is the second time that this stock has been assigned to Bin 4, we look at recreational harvest compared to the recreational harvest limit, to determine if additional action should be taken. In this example, let's say that recent harvest limits had been exceeded, and as a consequence the stock is assigned a slightly more restrictive set of measures, and measures assigned to all bins are reevaluated. In this way this approach demonstrates its ability to be reflective of different metrics, and responsive to overfishing when it does occur, and as well accountable when those binned measures, those predetermined measures aren't

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achieving the intended effect. Next, I'll cover Option E, the biomass-based matrix approach, and this is the last one that I'll cover, so thanks for bearing with me. This one is informed by stock size and the recent trend in stock size.

Like all the others, this approach would set measures for two years, and this approach also has predetermined measures with predefined bins. Here we have the biomass-based matrix. When we get new stock assessment information, we look first to stock size, in the left column, which can be categorized as very high, high, low or overfished.

The definitions of what that means relative to the biological reference points can be found on the screen. Then we look to biomass trend, which can be classified as increasing, stable, or decreasing. Based on the combination of these two metrics, we then can see which bin our fish stock belongs to, and thus which set of predetermined measures would be assigned to this stock.

Bin 1 represents the best stock conditions, and thus the most liberal set of measures, and then Bin 6 represents the overfished condition, and so those measures would be very restrictive, and be put into place until the new rebuilding plan with new measures would be implemented. Again, I'll walk through a few examples for our four fish stocks, to just see how this approach might shape out with recent stock assessment information and recent MRIP information.

Both black sea bass and scup are at least 150 percent of the target stock size, with a decreasing biomass trend. These two stocks fall into Bin 1, and they would be assigned the most liberal set of measures. Summer flounder on the other hand, would be below the target stock size as of the 2021 stock assessment report, but more than 50 percent of the target, and it also has an increasing trend.

Things are trending upwards, but biomass is not quite where we want it to be. It would be assigned to Bin 3, with a more moderate set of measures until the stock demonstrated its ability to rebuild back to the target. Then lastly, bluefish is in that overfished condition with the biomass trend decreasing, so again a very restrictive set of measures would be implemented. Those are the five main Harvest Control Rule approaches. Tracey is now going to take over, and briefly introduce some of the other options within the Draft Addenda.

MS. TRACEY BAUER: Thanks, Dustin. Now that he's covered the five Harvest Control Rule options, I will briefly introduce, like he said, a few additional management options within the Draft Addenda. First technical staff will need to have a target metric when developing measures for each bin within whatever harvest control rule approach is selected. The fishery score approach, biological reference point approach, and biomass-based matrix approach, Options C through E, all use bins with predefined measures.

If one of these approaches is selected, the Board and Council will need to specify whether the measures within each bin will aim to achieve a target level of recreational harvest, which is Option 3.2A, recreational dead catch or harvest plus discarded fish that are presumed to die, or Option 3.2B or fishing mortality, a measure of rate of removal from the stock, or Option 3.2C. Next, we will review the options for conservation equivalency. Section 3.3 in the Draft Addenda includes options to define the degree of flexibility states have in proposing alternative measures through the Commission's conservation equivalency process. Option 3.3A allows individual states to propose alternative measures, if they can demonstrate that they are expected to have the same impact on stock as the measures which would otherwise be implemented.

Option 3.3B allows states to work together as a region, to propose alternative measures, which are expected to have the same impact on the stock as the measures which would otherwise be

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implemented. Option 3.3C does not allow states or regions to propose alternative measures. It is important to note here that states and regions are able to provide input during the specifications process under all Harvest Control Rule approaches.

The conservation equivalency process is specifically designed for states or regions who later decide that they would like to adjust their measures from what are proposed through specifications. This graph displays the tradeoff between flexibility and uncertainty within these conservation equivalency options.

Option 3.3A provides the greatest flexibility for states to adjust their management measures after the specifications process is complete. But it increases uncertainty, and lowers the level of confidence in being able to predict and model whether the new recreational measures will achieve the target level of harvest, catch or fishing mortality.

Option 3.3.C does not allow states or regions to use the conservation equivalency process, which means less flexibility, but technical staff are likely to have the greatest degree of confidence in the modeling the level of harvest achieved by the recreational measures, and the impact to the stock.

Option 3.3B is that middle ground that allows regions to utilize the conservation equivalency process, and represents again that middle ground in uncertainty and flexibility between the two other options. Lastly, I'll briefly touch on the accountability measure options within the Draft Addenda.

As a reminder, accountability measures aim to prevent catch limit overages and correct or mitigate for overages when they do occur. Accountability measures are a required component of the federal management program. When catch limits have been exceeded, all options in the Addenda require re-

evaluation of measures to prevent future overages.

Some sub-options consider if the response to an overage should be driven by whether or not the overage resulted in overfishing. The details on all the accountability measures are laid out in the Draft Addenda, so we recommend that you view that document for a comprehensive description.

PUBLIC COMMENT FROM WEBINAR HEARINGS

I will next give that preliminary summary that we mentioned of public comment, again focusing just on the webinar hearings.

Eight webinar hearings were held between March 16 and April 13 of this year. Webinar attendance ranged from 9 to 63 attendees, excluding Commission and Council staff per hearing. Written comments are still being tallied, and a final public comment summary will be available within the briefing materials for the June Council/Policy Board meeting. As such, we do not have a quantitative summary of public comment available at this time, and the following summary of comments is purely qualitative, and based only on the verbal public comments given at the webinar hearings. Most people who spoke in favor of a specific option at the webinar hearings favored Option B, the percent change approach.

Many felt uncomfortable with the fishery score biological reference point and biomass-based matrix approaches, Option C, D, and E, due to the current uncertainty of what management measures would be assigned to each bin. Lastly, there were no verbal comments provided during the hearings that supported Option A, status quo.

Several comments were received during the webinar hearings on the lack of confidence in the MRIP data, and how we need to stop using MRIP data, or consider other information such as biomass when making management decisions. For those who commented on conservation equivalency, the no action option, where states retain the ability to propose conservation equivalent measures was the

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preferred option. I will next hand the presentation over to Julia.

MS. JULIA BEATTY: Thanks, Tracey. I just have one slide to cover next steps, and then kind of set the stage for any discussions that the group might want to have today. The most immediate next step is that next week the Council's Scientific and Statistical Committee will meet, and on May 10th they will discuss their review of the Harvest Control Rule, so they will consider a draft report, and discuss any changes to that.

Then after that meeting, they'll work to finalize their report. Then on May 25th we'll have an Advisory Panel meeting, so that the Advisors can meet to review all the Harvest Control Rule options. They'll review the public comments, they'll receive an update on the SSCs review, and then they will have the opportunity to provide their own recommendations to the Council and Policy Board regarding final action.

Then the FMAT and PDT will meet one last time. We did just schedule this just very recently for May 26, so right after the Advisory Panel meeting. The FMAT and the PDT will be able to consider everything up until that point, so the public comment summary, Advisory Panel input, preliminary results from the SSC review, and then the FMAT and PDT will be able to provide their own recommendations leading into the final action.

Then on May 27, the first round of the briefing materials for the June Council and Policy Board meeting will be posted. This will include the full public comment summary, so as Tracey mentioned, what was presented today was just a preliminary summary of just from the webinar hearings, but the full summary of everything should be available by May 27.

Then we're also anticipating that we'll get the final SSC report in time to post it on May 27. At that time, we plan to send an e-mail announcement to the Council and Commission

general public e-mail list, with a reminder that anticipated final action is coming up, and an announcement about the availability of the briefing materials.

At that point in time, anyone who wishes to review the final SSC report and provide additional comments, can do so after May 27, using the typical public comment process for Council meetings. Then on June 7, the Council and Policy Board will meet, and again consider all the things I talked about, the final summary of the public comments, the SSCs final report, AP input, FMAT/PDT input, and then the Council and Policy Board will consider taking final action on the Harvest Control Rule, and selecting their preferred option.

If that takes place in June, then we will work to finalize all the documents that go into this, and then also go through the federal rulemaking process. As most of you are aware, that side of things can take several months, especially on the Council end of things, start that process in June and then it will continue through the end of the year. Then later in the year in the fall, we hope to have availability of these two statistical models that we didn't cover in detail today.

But you've heard about it in the past, called the Recreational Economic Demand Model and the Recreational Fleet Dynamics Model. We should have those available for use for at least one of the four species that are covered under the Harvest Control Rule. Then by the time we get to later in this year, when we typically go about setting recreational management measures for the upcoming year, we'll have those models available, at least for one, hopefully more than one species.

We'll know what option the Council and Policy Board would have picked in June, but it might not be all the way through the rulemaking process. But we are intending that if this timeline goes according to the way that it's laid out on the screen here, that we could use whatever the preferred alternative was that was selected in June, to set the recreational measures for 2023 later this year.

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That's when we'll get to the point of picking the specific management measures that they are going to be implemented through whatever option is selected, and do that through the specifications process. That's all we had for our presentation. We're happy to take any questions on any of this. Just as a reminder, we don't need any action today, and this agenda item was just intended as a progress update. Thanks.

CHAIR WOODWARD: All right, thanks, Dustin, Tracey, and Julia. At this point I'll open it up for questions from Policy Board members and Council members. If you'll raise your hand virtually and raise your hand physically, we'll start the questions and comments. All right, I've got Ray Kane.

MR. KANE: Thank you for your presentation, staff. Dustin, can you put up Option B? I need an example. This is the fifth time I've watched this presentation. Okay, right there. We're talking about doing track assessments every two years, right? Like in '17 you come up with a track assessment. That data is from what, '15 and '16 for the Track assessment in '17?

MR. COLSON-LEANING: Yes, so typically, like for example our next management track assessment is scheduled for scup in June of 2023, and that would be on data current through 2022. You would have, in your example, yes, 2017 report would have '16 and '15, as well as earlier time series data.

MR. KANE: This is a joint venture between the Mid-Atlantic Council and ASMFC.

MR. COLSON-LEANING: Yes.

MR. KANE: After we get the track assessment, how long will it take a management regime to be put in place, like for say Year '18, between the Council and the Commission? How long will that paperwork take and decisions to be made? How are we going to fish in '18? Because it seems like we've been chasing our tail. I know

in our state we have on black sea bass, like we're given two months to come up with new regulations every year. I'm just curious.

MR. COLSON-LEANING: No, it's a great question. The Assessment report would have data through 2015, 2016. It would be released in June, and we would follow our standard specification cycle, where we would look at the August meeting, looking at both the commercial quota, as well as the recreational harvest limit, and it would begin that discussion of which bin are we, based on recent MRIP harvest and stock assessment information from the recent years.

That would allow us to implement measures by hopefully January 1, 2018. There has been some talk about our current process. Sometimes we're three or four months into the current year, before we've actually implemented new measures, so there have been some discussions about speeding that up, relative to our current process.

But the exact timing of when the final measures are to be set is still to be determined, but hopefully it would be a faster version of our current process. Remember that these measures would also ideally be set for two years, meaning stakeholders would know in advance what those measures are, at least for two-year segments.

MR. KANE: Thank you.

CHAIR WOODWARD: All right, Shanna and then John Clark.

MS. MADSEN: First of all, I just want to say thanks to all of the staff that have been working on this. It's a really heavy lift, and I just want to give a special shout out to Dustin. He did a great job at our public hearings in our state. It's a tough topic to deal with, because it's very conceptual, and his presentation was really good, very clear, and I think it helped me out a lot too, actually listening in to that public hearing. If the Chair doesn't mind indulging me, I have three questions.

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I'll just give them to them one at a time, so I'm not overwhelming. They are a little bit detailed oriented, so I'm going to start off with my first one. The first question I have is regarding the percent change option, specifically Sub-Option B1-B, and talking about liberalization, so we have the liberalization of 20 or 40 percent kind of worked in there. My question is, what happens if that percent liberalization is expected to lead to an overage of the RHL, or potentially the ACL? What do we do in that scenario?

MR. COLSON-LEANING: It's a good question. I believe this came up at another hearing. As currently configured, this approach would still implement a 40 percent liberalization. That's been raised as a concern, so it would be probably a point of discussion by the Board and Council as to whether something should be modified, if it's within the realm of expected impacts of what's already been brought out to the public, or maybe it is some consideration for B1-A.

MS. MADSEN: Great, thanks, Dustin, that helps provide clarification on that. My second question is pertaining to Option 3.2C, where we assign target metrics for setting the measures. I was just wondering. The document says if there is no way to generate that recreational fishing mortality option for black sea bass.

Right now, the current stock assessment model isn't doing that. Then it says if the option is selected, we might want to pick a secondary option. My question is, is that just for black sea bass then that we would be picking a secondary option, or if it can't be generated for black sea bass, we might just want to turn to another option for all of the species?

MR. COLSON-LEANING: That's a great question. I think it's within the realm of possibilities and expected impacts that, and I might turn to Toni on this one for specifics. But I think the recommendation could vary by species, and I'm getting a nod. But I will also say that there has

been a subgroup of stock assessment scientists and the modelers, who have been developing the two models for developing measures that have discussed how the fishing mortality target metric may be problematic for several reasons.

Ideally this discussion would have been held well in advance of it being taken out to public comment. However, given the fast timeline and a lack of a recommendation from the PDT and FMAT, and lack of time to thoroughly dive into the issue, it was put into the document and considered for public comment. But I just want to make everyone aware, there has been some serious concerns about using the fishing mortality metric at this point. Just keep that in mind.

MS. MADSEN: That's really helpful, Dustin, and then just a quick follow up question to that. Will we hear some of those concerns then at the June meeting, because I feel like, you know there are a lot of details from like a lot of the various different sources. Will we get to hear some of that at the June meeting?

MR. COLSON-LEANING: Yes, absolutely, and you bringing it up helps remind me to make sure I've done my homework and have that ready for you. It will probably be something that we can include in the PDT/FMAT report as perhaps an appendix, or some portion of that briefing material, so you will have it in advance of the meeting.

MS. MADSEN: Perfect, thank you, Dustin, and I swear last final question. Thank you everyone for indulging me. My last question is with 3.3A, and that is the no action option for conservation equivalency. Some of our species already require a regional approach, you know for instance summer flounder.

All of the Mid-Atlantic states submitted a proposal together as a requirement of that FMP. If we select that no action option, the way that the language I guess is written in this document says that it kind of defaults to the states, but does it actually just default to what the FMP has in it, as in would we

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still have regional conservation equivalency for those species whose FMPs already require it?

MR. COLSON-LEANING: That's a great question, and gets into one of the issues that has kind of plagued staff for years. There are two versions of what we call conservation equivalency within the summer flounder FMP. There is the conservation equivalency process whereby regions come up with measures to make sure that collectively they can constrain harvest to the set of coastwide measures, and thus we waive federal measures, and really it just matters where you land your fish as to what measures you have to abide by.

Separately, there is the Commission's conservation equivalency process that applies for all of the Commission species, and that process is unfortunately named the same thing, or they both go by the same names. At this point within the FMP, there is no restriction for a state to submit an alternative set of measures that can demonstrate that they have the same biological impact as the coastwide measures, or whatever they may be.

In my understanding, and I might look to Toni to confirm this. Selecting status quo, meaning no change to the Commission's conservation equivalency process, states would still be able to submit individual proposed alternative measures. It's an interesting hybrid there, so I'll look to Toni to confirm.

MS. KERNS: I think, Dustin, what Shanna is asking is, under CE through the Council and Commission process right now, in summer flounder, states are required to use regions. That is under like the Council/Commission CE portion of the plan. She is asking if we choose Option A do we stay default at that region base as how we set measures, or can you go back to coastwide? Shanna, I need to read the text of how the draft went out before I answer that question, and we'll send an e-mail back to the Board and Council on it. I'm uncertain.

MS. MADSEN: That's great, thank you guys very much, I appreciate it.

CHAIR WOODWARD: All right, John Clark, and then I've got Richard Cody virtually, and after him Rick Bellavance.

MR. CLARK: I just wanted to echo what Shanna said, great job with presenting these to all the hearings, Dustin. But I noticed you said for the webinar most people were in favor of Option B. Like Ray, I've seen the presentation several times, and Option C, D, and E still are a bit confusing.

If I recall, is it still the goal that if for example B is the chosen option, that examples will be developed for the other options for the future, so that the Board and Council could eventually come back and decide to go with one of the different options of the Harvest Control Rule, or if B is chosen, for example, then that's it for the Harvest Control Rule, and we're going to be working with that until we decide we have to do another amendment, and change to a different option?

MS. KERNS: I'm going to fill in for Dustin on this one. John, if the Board and Council choose Option B, straight up, nothing else. Then yes, that is it. We will not continue to work on the other options until the Board or Council initiate another management document, if you want to move on. There is the possibility in my mind that you can have a preferred method, and a secondary method, because the document does not prevent you from choosing more than one option, so that is a possibility.

MR. CLARK: Thanks, Toni, yes, because I find just me seeing these myself. I mean some of these are a bit confusing when you have nested boxes as to what exactly would happen, and it would really help if we had some concrete examples. I think the public would have been more receptive to some of these, and I certainly understand why we couldn't do that. But I'm just saying that it seems like some of them may actually be a better long term management strategy than Option B, but you know just to keep them alive.

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CHAIR WOODWARD: Richard Cody.

MS. TINA L. BERGER: It's unmuted, perhaps he isn't here anymore.

CHAIR WOODWARD: Okay, we'll go to Rick.

MR. RICK BELLAVANCE: Would it be possible to bring up the timeline towards the end of the presentation? I just had a clarifying question. I'm trying to get my head around the importance of the two statistical models, to help me understand a preference of like the Alternatives C, D, and E for the most part, because I don't think the models are necessary for Alternative B.

I'm just wondering how certain folks are that those will be ready for the fall, and if it's a good idea to have those models' kind of up and running, and being used as like a worked example before you make a final decision on the other C, D, and E alternatives. If there is someone that could just kind of help me understand if it's super important to have that information, or if the models were more meant to serve later on in the process like they are in this timeline.

MR. COLSON-LEANING: Yes, thanks for that question. This has been discussed, I think throughout the process, and the pros and cons of whether the measures should be provided up front, and thus the models ready to produce those measures. On the one side there are benefits to analyze, you know how the models perform, and how those measures would be assigned to different stock conditions.

On the other side it was determined, I believe by the Board and Council, that because the models weren't completely ready, and because of the concern about stakeholders just kind of clinging on to the approach that might show the best example measures that might not actually be implemented. We didn't include example measures within the document when it was taken out to public comment.

I will say as to the relative need to analyze the models, or the measures within the different bins. I don't know if that is a staff question and more of a Board and Council discussion point. There are definitely pros and cons to being able to analyze everything together. I think the SSC has commented somewhat on the limited ability to analyze the different approaches relative to each other, without those models and measures being implemented. On the same turn, these different harvest control rule options are able to be used. All of them are able to be used with the current tools that we have at our disposal, meaning none of the models being ready for implementation. In addition, we do have, we have made some significant strides in model development. The summer flounder MSC model is in the later stages of development, and it's received a lot of public input and a lot of different rounds of improvement.

Then we've been working with Jason McNamee and Corinne Truesdale from Rhode Island on developing the recreational fleet dynamics model, which has shown some promising progress. Maybe that just provides a snapshot, and I feel like this is also a big point of discussion for the Board and Council, so I look to all of you to discuss the relative merits of moving forward or waiting.

MS. KERNS: Rick, I was just going to say, I think staff has said to me, and correct me if I'm wrong. But we have high confidence one of the models if not more than one of the models will be ready in the fall, just to answer that part of your question.

MR. COLSON-LEANING: Yes, thanks, Toni.

MR. BELLAVANCE: Yes, great, that is what I was looking for. I appreciate that. It helped me out quite a bit.

CHAIR WOODWARD: Adam.

MR. ADAM NOWALSKY: Thank you very much for the opportunity to be here, and thanks very much to leadership to provide this update today from staff. I think this is important to get us all back to the forefront of our minds, as well as to make sure

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that we have a groundwork for making sure any questions that we have are answered in advance of June that the Service has indicated is really the time that we have to make this decision.

A shout out to the public from the preliminary public comment that was offered in unanimous opposition to A. Clearly, we don't want to go through what we've gone through with scup and black sea bass for another year. We simply can't continue to make those decisions. Getting this done in June is important. A couple of questions, and then I have a thought in advance of June decision making.

The first question I had was with regards to Options B2A and B2B. There appears to be a disconnect. This is related to the percent change alternative. There appears to be a disconnect between what is shown in the chart for Alternative B, and the language that discusses B2A and B2B. Specifically, where I see a discrepancy right now, is in Column A in Row A and in Row C you have Sub-Option B2A and B2B listed in both Row A and in Row C.

For both the case where the upcoming RHL is below the lower bound of the MRIP estimates, as well as above the upper bound of the estimates. However, the text for B2A and B2B seem to refer only to the case where the upcoming average RHL is below the lower bound, which would imply to me that only Row C is where B2A and B2B apply. I don't know if staff is prepared to answer that today, because they've thought about this and looked at it, or whether they would have to go back and review the language. But what do we do if in fact there is that disconnect between what we see in this chart and the language that we see?

MR. COLSON-LEANING: Thanks for that question, Adam. Yes, this was brought to our attention relatively recently that the language did not reflect the full symmetry and the intent of the approach as it has been discussed at

every board meeting presented within the chart.

It is my understanding that the way that we conveyed it to the public, mainly demonstrating this chart, and the way that we've discussed it at each Board and Council meeting that there would be symmetry in that sub-option. Thankfully we have relied on the chart more than the text, so I think that's an easy fix. We also apologize for that oversight.

CHAIR WOODWARD: Go ahead, Adam.

MR. NOWALSKY: Great, so the second question is with regards to the request to the SSC to provide a qualitative evaluation of the five alternatives in this document. The SSC went down that path by creating a subgroup to go ahead and look at that. They have met multiple times. They have exchanged some e-mails.

In that last meeting there was some very strong language that I heard that came out of the SSC, and I would like to hear staff's interpretation of what they've heard so far, understanding that the SSC is going to provide a final report to us. But essentially, what I heard from that Workgroup is that they did not have enough information to provide the qualitative evaluation that was requested. In fact, specific language, I heard, was to use the phrase, a fatal error in not providing enough detail for the options in this document, specifically C, D, and E.

I would like to hear some thoughts from staff if what I heard is in line with what they heard, specifically that the SSC seems to be having some trouble with the amount of information included in this document, to provide that qualitative evaluation. I think it's important to set everyone's expectations at the Council and the Commission, who may be depending on that evaluation for decision making, that it may not be as substantial as we hoped it would be.

MS. KERNS: Our staff isn't going to speak for the SSC, Adam. I wasn't even on that last SSC call. We got a late notification of that call, and so Julia has her hand up. I'll see if she wants to speak to it.

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The Board will review the minutes during its next meeting.

Draft Proceedings of the ISFMP Policy Board Meeting
May 2022

MS. BEATTY: I am also not going to speak for the SSC, because they had some discussions, or as a subgroup they had some discussions over webinars, and they were working on a draft report that they're still working on. Then they're going to take that to the full SSC, and then the full SSC is going to talk about it, and then they are going to finalize their report. I think it's too early to say what their conclusions are.

They definitely had some concerns and some questions, but it's too soon to say what their final conclusions are. But for those of you who do want to follow the next steps of that more closely, they are planning to post any preliminary draft of that report with the briefing materials for the upcoming SSC meeting, and it's anticipated that that will be posted by the end of this week. Then the full SSC is going to talk about it next Tuesday, May 10, and that meeting will be a hybrid, in person and webinar meeting, so anyone who wants to could listen into that discussion. Then again, we're hoping to get the final report out of that on May 27, to post online, and we'll provide a report on their final recommendations at the June 7th Council and Policy Board meeting.

Again, you know I'm not going to speak on behalf of the SSC, and I think it's a little too early to talk about what they're going to say anyway, but if anyone wants to, those would be like the next steps to follow along with that prior to June 7th.

MR. NOWALSKY: Great, thanks very much for that. It sounds like then anybody again who was putting a lot of eggs in that basket, take a look at that report coming out this Friday as the preliminary part that will go to the full SSC. Question, Mr. Chairman. Just a couple of thoughts I had in advance of the June meeting. Did you want to continue to get through some questions, or you want me to just put that out on the table now?

CHAIR WOODWARD: Why don't you just go ahead while you've got the microphone, Adam.

MR. NOWALSKY: Again, I appreciate the latitude here today. What I would just offer is that my request of staff here in advance of the June decision making would be, given what we've heard so far about some of the preliminary public interest, the concerns around the potential for additional development of C, D, and E, is I would just ask that staff be prepared to bring to us in June a viable path.

If the two bodies want to implement B for 2023, and what we might be able to do with C, D, and E, without shelving them permanently. I think I heard one option here from Toni is that we would have some if/then that we could pick a preferred long-term alternative, which might come out of C, D, and E, but put a short-term B in place.

Another option that I have advocated for in the past would be using the additional Rec Reform Amendment that we have, that currently just has sector separation in it as a potential future place for further consideration of C, D, and E. Given the dramatic shift in how we would manage those fisheries, much of the public has called for this process to be an amendment, not an addendum or a framework. Given the drastic change that those propose, that might be a way forward as well. I would look to staff to be prepared to discuss that.

The final request I had is that I had passed along some preliminary analysis of Alternative B that was quantitative in nature, that had been done last fall on an earlier version of Alternative B. I know that Council staff have that, I know Commission staff have that. They had presented it at the SSC meeting. I would like to just again put my request out for having that analysis done on the current version of Option B, and presented in June.

CHAIR WOODWARD: All right, thank you, Adam. Dustin, do you want to respond to that?

MR. COLSON-LEANING: We certainly can do that. If we had more time I would have presented on the

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preliminary analysis, because we do have that today, a subset of the PDT/FMAT reviewed it in short order, per your request. I do have that prepared, I can share it with you, but in the interest of time I think we're about to be kicked out of the building. I'm going to hold until June, if that's okay with you.

CHAIR WOODWARD: Okay. All right, any questions, comments, requests from the Policy Board or Council members? I see Paul Risi, you've got your hand up, so go ahead.

MR. PAUL RISI: Sorry, that was an accident, I switched over to my phone, I did not put my hand up, I apologize.

CHAIR WOODWARD: No problem. All right, I think we have one member of the public listening in virtually that has raised his hand, so Michael Plaia. I'll give you a minute or two.

MR. MICHAEL PLAIA: All right, I have a question. Could we go back to the example of the clown fish? In 2017 the clown fish becomes subject to overfishing, correct?

MR. COLSON-LEANING: Correct, and this is hypothetical.

MR. PLAIA: But in 2018 we maintain the same catch limits. Is that also, correct? I thought you said that the catch limits apply for two years.

MR. COLSON-LEANING: The measures, meaning the bag size and season limits would be applied for two years, so in 2017 we had new stock assessment information, again in this hypothetical example, and new sets of measures would be implemented for 2018 and '19. Those new measures would be responsive to that finding of overfishing.

Given that it takes some time to collect data on how those new measures interact, and what the outcome on harvest would be, at least in this approach, it would be beneficial to have two years of data to assess, you know have we

appropriately reduced harvest, or are additional restrictions needed?

MR. PLAIA: All right, that squares with the Council's requirement to end overfishing immediately?

MR. COLSON-LEANING: I believe so. There is a change in measures, there is a response to overfishing, so I'll look to Julia if I am speaking out of turn here. But I believe that is responsive to the Council's mandate under the Magnuson-Stevens Act.

MS. BEATTY: Yes, this is Julia, I don't have anything else to add there.

MR. PLAIA: Okay, thank you very much.

CHAIR WOODWARD: You're welcome. Okay, any other questions, comments on this? I don't see any hands virtually. I don't see any hand around the table, so I think we've covered it. Now we will be asking the Policy Board members that aren't on the Mid-Atlantic Council to participate virtually in this meeting in June, so that will be June 7th, I believe it is, Toni.

MS. KERNS: It is June 7th, and you can either participate virtually or in person. It is your preference. It will be in Riverhead, New York.

CHAIR WOODWARD: Yes, if you would like to go to Riverhead, New York, wherever that is, I guess you can. All I know is it is way north of Georgia. All right, with there being no other questions or comments, Jim just briefly, do you want to cover your letter?

MR. GILMORE: Yes, just very briefly. This was black sea bass and scup, and because of the large reductions we were looking at, and the fact that we have the Harvest Control Rule onboard, but the Regional Administrator sent out a letter a week or so ago saying, we're still going to do the drastic cuts.

But he did indicate in that letter absent secretarial action. We put together a letter from our bosses,

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all our Agency Commissioners to the Secretary of Commerce to say, well maybe we could get some secretarial action to maybe delay some of these cuts. There is a letter that was circulated, we're going to try to get that out tomorrow.

There is also a second letter that Toni and some of the state staff put together that's got to come from us, that same idea. But it's really just focusing in on scup, and a little bit more detail on the impact. I've talked to most of the folks about it. We've got, I think the letter is just ready to go tomorrow, so we're planning on getting that out.

I would like to thank everybody for their assistance and the short turnaround, and keep our fingers crossed. We'll try to be optimistic, but at least we're going to give it a shot and see if we can maybe reduce some of these cuts, if not hold off until next year when we can start doing with. Dustin, you need to make an App on this so we can like make it work. You know on a phone or whatever I think would be really cool. Anyway, that's the update on that and we'll see what happens, thank you.

OTHER BUSINESS
LETTER TO SECRETARY OF COMMERCE

CHAIR WOODWARD: I certainly hope that just because you used clown fish as an example, people aren't going to think we're managing Nemo now, and get crossways with those folks. Anyway, is there any other business to come before the Policy Board? All right, I think we've got Mike Pentony raised his hand, so go ahead, Mike.

MR. MICHAEL PENTONY: Yes, I appreciate Mr. Gilmore noting the letter. I just wanted to clarify. It sounds like there may have been a misunderstanding of what we meant by secretarial action in my letter, and I hope to clarify that in case it has an impact on what would be requested of the Secretary.

What I intended to indicate in my recent letter was that by secretarial action I meant secretarial action to develop and implement a harvest control rule type alternative regulation, to replace the existing regulations. It does not sound like that is what is being requested, although maybe it is. But I just wanted to clarify that what we meant, by calling out secretarial action it was under the Magnuson Act to essentially deviate from the Council process and develop a secretarial amendment to the FMP.

ADJOURNMENT

CHAIR WOODWARD: All right, thank you for that. Okay, now seeing no other hands virtually or really, any other business to come before the Policy Board? Seeing none, well thanks everybody for being here, both virtually and physically. I hope this is the beginning of a return back to some semblance of normality. It was great to see everybody, and unless there is an objection, we will stand adjourned.

(Whereupon the meeting adjourned at 12:40 p.m.
on Thursday, May 5, 2022)

Atlantic States Marine Fisheries Commission

APPEALS PROCESS

**Draft revisions approved by the Executive Committee on May 26, 2022
for ISFMP Policy Board consideration on August 4, 2022**

Changes highlighted in yellow

Background

The Atlantic States Marine Fisheries Commission’s interstate fisheries management process is based on the voluntary commitment and cooperation of the states. The involved states have frequently demonstrated their willingness to compromise and the overall process has proven to be very successful. However, there have been instances where a state/jurisdiction has expressed concern that the Board decisions have not been consistent with language of an FMP, resulted in unforeseen circumstances or impacts, did not follow established processes, or were based on flawed technical information. In order to address these concerns, the ISFMP Policy Board charged the Administrative Oversight Committee with “exploring and further developing an appeals process”.

Under the current management process the primary policy development responsibility lies with species management boards. And, in the case of development of new fishery management plans or amendments the full Commission has final approval authority prior to implementation. The purpose of the appeals process is to provide a mechanism for a state/jurisdiction to petition for a management decision to be reconsidered, repealed or altered. The appeals process is intended to only be used in extraordinary circumstances where all other options have been exhausted. The management boards have the ability to go back and correct errors or address additional technical information through the recently clarified process on “amending or rescinding previous board actions”.

During the December 2003 ISFMP Policy Board meeting, the decision was made to continue to have the Policy Board serve as the deliberative body that will consider valid appeals. This decision is consistent with the language that is included in the ISFMP Charter. However, the Charter does not provide detailed guidance on how an appeal is to be addressed.

This paper details for the Commission appeals process.

Appeal Criteria – The intent of the appeals process is to provide a state with the opportunity to have a decision made by a species management board or section reconsidered by the Policy Board. The following criteria will be used to guide what type of decisions can be appealed. In general, management measures established through the FMP/amendment/addendum process can be appealed. However, the appellant must use one of the following criteria to justify an appeal:

1. Decision not consistent with, or is contrary to, the stated goal and objectives of the current FMP (Goal and Objective Section of FMPs/Amendments or Statement of the Problem Section of Addenda).
2. Failure to follow process as identified in the ISFMP Charter, Rules and Regulations or other ASMFC guiding documents (e.g. conservation equivalency guidance).
3. Insufficient/inaccurate/incorrect application of technical information. Examples can include but are not limited to:
 - a. If for any calculations used in the decision, an error which changes the results was identified after the decision was rendered;
 - b. If any data used as the basis for a decision, undergoes a modification which impacts results after the decision was rendered (i.e. a landings dataset is adjusted significantly due to a recalibration or application of a control rule adjustment);
 - c. If data is incorrectly identified and therefore incorrectly applied, such as a misidentification of landings information as catch information, or incorrectly assigned landings/catch to a jurisdiction;
 - d. If information used as the basis for the decision lacked scientific or statistical rigor, thereby calling in to question the sound basis for the decision;
 - e. If the historical landings, catch, or abundance time series used as a basis for a decision is found to be incorrect.

Any appeal based on criterion 3 may be verified independently by a technical body appointed by the Chair, as needed.

4. Management actions resulting in unforeseen circumstances/impacts that were not considered by the Board as the management document was developed.

The following issues could not be appealed:

1. Management measures established via emergency action
2. Out-of-compliance findings (this can be appealed but, through a separate, established process)
3. Changes to the ISFMP Charter

Appeal Initiation – The ISFMP Charter provides that a state aggrieved by a management board action can appeal to the ISFMP Policy Board. Any state can request to initiate an appeal; also a group of states can submit a unified request for an appeal. The states are represented on the Commission by three representatives that have the responsibility of acting on behalf of the states' Executive and Legislative branches of government. Therefore, in order to initiate an appeal all seated Commissioners (not proxies) of a state's caucus must agree that an appeal is warranted and must sign the letter submitted to the Commission. If a multi-state appeal is requested all the Commissioners from the requesting states must sign the letter submitted to the Commission. During meetings where an appeal is discussed proxies will be able to

participate in the deliberations. Meeting specific proxies will not be permitted to vote on the final appeal determination, consistent with Commission policy.

A state (or group of states) can request and appeal on behalf of the Potomac River Fisheries Commission, District of Columbia, National Marine Fisheries Service, or the United States Fish and Wildlife Service.

The letter requesting an appeal will be submitted to the Chair of the Commission and include the measure(s) or issue(s) being appealed, the justification for the appeal, and the commitment to comply with the finding of the Policy Board. This letter must also include a demonstration that all other options to gain relief at the management board level have been exhausted. This letter must be submitted via certified mail or email at least **45 days** prior to a scheduled ASMFC Meeting Week. The Commission Chair, Vice-Chair and immediate past Chair will determine if the appeal meets the qualifying guidelines and notify the Policy Board of their decision. If the immediate past chair is no longer a commissioner the Chair will select an alternate from a state that is not affected by the appeal. Also, if the Chair, Vice-Chair or immediate past Chair is a signatory to the appeal, the Chair will select an alternate from a state that is not affected (or minimally affected) by the appeal.

Convene a “Fact Finding” Committee (optional) – Upon review of the appeal documentation, the Commission Chair, Vice-Chair and immediate past Chair (or alternate if necessary, as described above) may establish a “Fact Finding” Committee to conduct analyses and/or compile additional information if necessary. This group will be made up of individuals with the technical expertise (including legal, administrative, social, economic, or habitat expertise if necessary) and familiarity with the fishery to conduct the necessary analysis. If such a committee is convened the schedule included in the last section of this document may need to be adjusted to provide time for the Committee to conduct analyses. The Commission Chair, Vice-Chair and immediate past Chair (or alternate if necessary, as described above) may set a deadline for the Committee to complete its work to ensure the appeal is addressed in a timely manner.

ISFMP Policy Board Meeting – Following the determination that an appeal has met the qualifying guidelines, a meeting of the Policy Board will be convened at a scheduled ASMFC meeting week. The agenda of this meeting will be set to allow sufficient time for all necessary presentations and discussions. The Chair of the Commission will serve as the facilitator of the meeting. If the Chair is unable to attend the meeting or would like to more fully participate in the deliberations, the Vice-Chair of the Commission will facilitate the meeting. The ISFMP Director will provide the background on the development of the management program as well as a summary of the justification provided in the record for the management board’s action. The ISFMP Director will also present the potential impacts of the appeal on other affected states. The appellant Commissioners will present their rationale for appealing the decision and provide a suggested solution. The Policy Board will then discuss the presentations and ask any necessary questions. **If the Policy Board needs additional technical information to support a decision on an appeal, the Policy Board can request additional analysis from one of the**

Commission's technical support groups. This request will be addressed prior to the Commission's next quarterly meeting and then the Policy Board will be reconvened to take action on the appeal. The Policy Board can meet between quarterly meetings if the timing allows. The Policy Board will vote to determine if the management board's action was justified. A simple majority of the Policy Board is required to forward a recommendation to a management board for corrective action. If the Policy Board determines that the existing management program should be modified, it will issue a finding to that effect as well as any guidance regarding corrective action to the appropriate species management board. The referral may be worded to allow the management board flexibility in determining the details of the corrective action. 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 the Draft Amendment or Addendum.

Upon receipt of the Policy Board's recommendation the management board will discuss the findings and make the necessary changes to address the appeal. The management board is obligated to make changes that respond to the findings of the Policy Board. A simple majority of the management board will be necessary to approve the changes.

If the management board is unable to make the changes necessary to respond to the findings of the Policy Board, the following options are available:

1. The management board can request clarification from the Policy Board on the specifics of the findings. A meeting of the Policy Board will be scheduled to ensure the requested clarification is provided to the management board to take action at the Commission's next quarterly meeting.
2. The management board can inform the Policy Board that it is unable to address the findings and the Policy Board will take action to approve changes to address the appeal.
3. The management board can request additional analyses from the technical committee or other technical support group (e.g. Management and Science Committee, Assessment Science Committee). A meeting of the appropriate technical group will be scheduled to ensure the requested information is provided to the management board to take action at the Commission's next quarterly meeting.

Appeal Products and Policy Board Authority – Following the Policy Board meeting a summary of the meeting will be developed. This summary will include a detailed description of the findings and will be forwarded to the appropriate management board and Policy Board upon completion. If the Policy Board determines that changes to the management program are necessary, the summary may include guidance to the management board for corrective action. The report of the Policy Board will be presented to the management board for action at the next scheduled meeting.

Considerations to Prevent Abuse of the Appeals Process – The appeals process is intended to be used only in extraordinary situations and is in no way intended to provide a potential avenue

to preempt the established board process. The initiation of an appeal will not delay the Commission process for finding a state out of compliance nor delay or impede the imposition of penalties for delayed compliance.

Limiting Impacts of Appeal Findings – If a state is successful in an appeal and the management program is altered, another state may be negatively impacted by the appeals decision. In order to prevent an appeals “chain reaction,” the Policy Board’s recommendation and the resulting management board’s decision will be binding on all states. All states with an interest in the fishery will be obligated to implement the changes as approved by the management board. Upon completion of the appeals process, a state is not precluded from taking further action beyond the Commission process to seek relief.

If the Policy Board supports the appeal and determines that corrective action is warranted, the potential for management changes to negatively impact other states will be evaluated by the Policy Board and the species management board.

Appeals Process Timeline

1. Within **15 working days** of receipt of a complete appeal request the Commission Chair, Vice-Chair, and immediate past chair (or alternate) will determine if the state has an appeal which meets the qualifying guidelines.
2. Upon a finding that the appeal meets the qualifying guidelines, the appeal will be included on the agenda of the ISFMP Policy Board meeting scheduled during the next ASMFC Meeting Week (provided an adequate time period is available for preparation of the necessary documentation).
3. Following the finding that an appeal meets the qualifying guidelines, Commission staff and the appellant commissioners will have a minimum of **15 working days** to prepare the necessary background documents.
4. The background documents will be distributed at least **15 days** prior to the Policy Board meeting.
5. If the management board requests additional information from the Policy Board or a technical support group, a meeting of the Policy Board or technical support group will be scheduled as quickly as practical to allow the management board to take action at the Commission’s next quarterly meeting.

A summary of the Policy Board meeting will be developed and distributed to all Commissioners within **15 working days** of the conclusion of the meeting.

Update to the 2018 Atlantic States Marine Fisheries Commission State Climate Change Initiative Gaps and Recommendations Report

Approved by the ASMFC Policy Board **Date**

Prepared by Lisa N. Havel and the ASMFC Habitat Committee

Background

The Atlantic States Marine Fisheries Commission's (Commission) Habitat Committee (Committee), a branch of the Interstate Fisheries Management Program, was developed to identify, enhance, and cooperatively manage vital fish habitat for conservation, restoration, and protection, as well as support the cooperative management of the Commission and jointly managed species.

In 2016 the Committee identified each state's ongoing practices that address climate change impacts, with a focus on state coastal regulatory planning. In 2018 the Committee built upon the information gathered in 2016, adding new information since the report was produced, as well as identifying gaps in climate change initiatives among states and providing recommendations for the future. That report is available here: [ClimateChangeGaps RecommendationsReport Feb2018.pdf \(asmfc.org\)](#).

This document is an update to the 2018 report, containing information on current climate change initiatives and identifying high-level progress along the coast since the 2018 publication. It is meant to be informational in purpose, providing a snapshot of initiatives underway in each Atlantic coast state at the time of writing. The initiatives do not necessarily reflect the views of the Commission.

Summary of State Initiatives that Address Climate Change

The state initiative groupings remained unchanged from the 2018 publication to allow for direct comparisons. They are:

1. Established a working group or legislation to reduce carbon output
2. Established a working group or legislation to respond to climate change threats
3. Produced reports on climate change
4. Assesses and monitors the effects of climate change
5. Has mechanisms in place for collaboration among agencies and other organizations
6. Addresses climate change in planning documents
7. Has responded to climate change on the ground
8. Includes climate change in outreach efforts.

As of 2022, each state has implemented 5 - 8 of the initiative categories listed above. Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, and North Carolina currently have practices in place that meet all eight categories. In 2018, this was true for only New Hampshire, New York, New Jersey, and Virginia. A link to a table of each state's practices can be found in Appendix I. Currently, each initiative is being carried out by at least 13 of the 15 states (Figure 1). In 2018, only Initiatives 3, 4, and 6 were being carried out by at least all but two states (of the 14 states that provided data). Since then, all states have also established a working group or legislation to respond to climate change threats (Initiative 2, up from 8 in 2018), produced reports on

climate change (Initiative 6, consistent with 2018, but now includes information from Delaware), and included climate change in outreach efforts (Initiative 8, up from 9 in 2018). All states but one now assess and monitor the effects of climate change (Initiative 4, up from 12 in 2018) and have mechanisms in place for collaboration among agencies and other organizations (Initiative 5, up from 10 in 2018). Establishing a working group or legislation to reduce carbon output (Initiative 1) and responding to climate change on the ground (Initiative 7) still needs addressing by two states, but these numbers are much improved from 2018 (only 9 states had initiatives at the time). Overall, there has been a lot of progress on climate action along the Atlantic coast over the last four years.

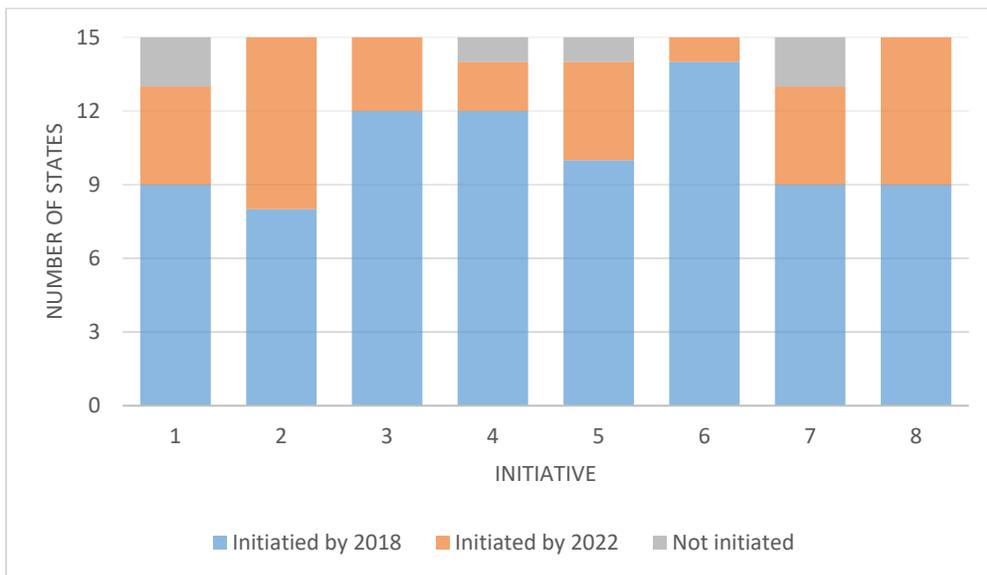


Figure 1. Number of Atlantic coast states carrying out each initiative category in 2022 compared with 2018. Note data were unavailable for Delaware in 2018 but the state is included in the 2022 data. List of categories can be found on page [x](#).

State Climate Change Initiatives

Maine

The following is a 2021 update on the on the State of Maine’s climate change initiatives, as well as links to documents and websites.

Legislation and Climate Planning

At the initiative and with the leadership of Governor Janet T. Mills, Maine enacted laws in 2019 to reduce emissions by 45% by 2030 and at least 80% by 2050, to increase Maine’s renewable energy

portfolio standard, to create the Maine Climate Council (MCC), and to develop a climate action plan to be updated every four years.

The MCC was formed in September 2019, structured around multiple, topic-specific working groups (including a coastal and marine group). The Council was informed by a number of commissioned background studies and publications¹. A two-year participatory process followed, led by Governor Mills' Office of Policy Innovation and the Future resulting in [Maine Won't Wait: A Four-Year Plan for Climate Action](#). The Plan presents [strategies](#) to mitigate Maine's climate footprint and adapt to anticipated effects of climate change including:

- Accelerating the conversion to electric vehicles (EVs) and reducing vehicle miles driven;
- Improving home and building energy efficiency and modernization;
- Increasing clean energy sources and growing the clean economy sector;
- Supporting resiliency and adaptation by conserving and restoring natural habitats;
- Increasing technical support for community adaptation;
- Investing public dollars; in climate-resilient infrastructure; and
- Increasing communication and awareness about climate change.

Numerous strategies presented in the plan relate directly to coastal communities, working waterfront climate resilience, conserving and restoring coastal and marine habitats, and mapping and modeling climate impacts on habitats and species. Additionally, the Governor's Office of Policy Innovation and the Future is focusing on creating a comprehensive information exchange for coastal and marine climate change monitoring and is developing technical assistance programs for coastal communities and the seafood business sector in partnership with the University of Maine.

Multiple Maine state agencies, together with universities, NGOs, and other partners, are charged with implementing the plan.

In addition to this overarching initiative, multiple state efforts have continued or have been recently developed to support climate resilience in coastal and marine areas. Some of these efforts are detailed below.

New Efforts and Resources

- **Improved Monitoring.** The Department of Marine Resources continues to implement a wide range of fisheries research monitoring activities that both track and document shifting species ranges and are used for stock assessments. The ME/NH nearshore trawl survey provides a time series beginning in 2020. The Department of Marine Resources has also maintained an Environmental Monitoring Program in Boothbay Harbor for over a century. The observations began in March of 1905 and

¹ These include: [Scientific Assessment of Climate Change and its Effects in Maine](#) (Maine Climate Council's Science and Technical Subcommittee); [Strengthening Maine's Clean Energy Economy](#) (Governor's Energy Office and Office of Policy Innovation and the Future); [Assessing The Impacts Climate Change May Have On The State's Economy, Revenues, And Investment Decisions](#) (Eastern Research Group and Synapse Energy Economics); and [Equity Assessment of Work Group Recommendations](#) (University of Maine Senator George J. Mitchell Center for Sustainability Solutions).

constitutes one of the longest running, continuous series of sea temperature observations for any point on the North American Atlantic Coast. In 2020, the Department added continuous monitoring of pH dissolved oxygen, and carbon dioxide to monitor ocean acidification over time. Observations of air temperature, barometric pressure, sea surface temperature, relative humidity, wind speed, and wind direction are recorded at daily intervals. Finally, species-specific monitoring and commercial fisheries data provide long-term datasets that are used in climate forcing models.

- [Climate Change and Biodiversity in Maine: Vulnerability of Habitats and Priority Species](#) (2014) classified the vulnerability of the species and habitats to climate change.
- Maine State Wildlife Action Plan (WAP) (2015) addresses the full array of Maine's wildlife across all taxa groups and habitats and identifies 378 Species of Greatest Conservation Need. The Plan provides species-specific and habitat-based actions to help prevent further species declines over the next ten years.
- The Maine Stream Connectivity Work Group, led by the Department of Marine Resources, is working to minimize the impacts of road crossings on Maine's aquatic systems, through the development of best management practices, sharing of technical resources, project identification and implementation, development of outreach and training materials and workshops, and direct project technical assistance.
- The [Stream Smart Program](#) works with contractors, landowners, and other professionals responsible for freshwater road-stream crossings to construct culverts that maintain fish and wildlife habitat while protecting roads and public safety. The [Maine Stream Habitat Viewer](#) provides a starting point for towns, private landowners and others to learn more about stream habitats across the state.
- The CoastWise Approach for Tidal Crossing Design. CoastWise provides a voluntary set of best practices, decision-making tools, and path for designing safe, cost-effective, ecologically supportive, and climate-resilient tidal crossings. The new [Tidal Restriction Atlas](#) is a tool that shows which crossings are tidal now or likely to be in the coming decades. Pilot projects are underway that 1) demonstrate appropriate methods for assessing tidal crossings in light of sea level rise (SLR) including tidal hydrodynamic modeling, 2) assist communities with weighing best solutions and reaching community consensus, sound design and funding for restoration.
- Sentinel Marsh Monitoring Sites. During 2017-2018, the Maine Coastal Program/Department of Marine Resources and its partners established sentinel monitoring sites at 11 marshes spanning the coastline to document changes in salt marshes over time through monitoring elevation using deep Rod Surface Elevation Tables (RSETs), tidal inundation and duration, and vegetation change at 11 marshes spanning the coastline. The Maine Geological Survey and Maine Natural Area Program have developed new coastal inundation models due to SLR and storm surges, and have created simulations of potential marsh migration under several different SLR scenarios.
- Maine Blue Carbon Mapping. *Maine Won't Wait* calls for a comprehensive inventory of potential Blue Carbon resources in Maine. The Maine Department of Environmental Protection will be conducting regular (every five years) state-wide mapping of salt marsh and eelgrass habitats. The mapping program will update knowledge of eelgrass distribution along the approximately 75% of Maine's coastline that has not been surveyed for as many as 18 years. The Maine Coastal Carbon Group also formed in 2020 to support and expand research, conservation, and management actions for blue carbon ecosystems.
- Living Shorelines Regional Pilot Project. In collaboration with the National Oceanic and Atmospheric Administration (NOAA) and The Nature Conservancy (TNC), the states of Maine, New Hampshire, Connecticut, Massachusetts, and Rhode Island are participating in projects to build and monitor living shorelines. Maine's pilot includes three sites in Casco Bay. Monitoring at each site is providing

data about efficacy of the treatments and habitat impacts and will assist Maine in providing a regulatory path for increased use of living shorelines where conditions allow.

- Offshore Wind Initiative. Launched in June 2019 by Governor Janet Mills, Maine is exploring opportunities for thoughtful development of offshore wind energy in the Gulf of Maine and determine how to best position Maine to benefit from an industry expected to generate \$1 trillion in global investment by 2040. The Initiative aims to balance development of the industry with the impacts on Maine's commercial fishing heritage and other existing marine uses. Other aspects of Maine's work on offshore wind (OSW) are:
 - Formation of Maine Offshore Wind Roadmap – a participatory process to engage multiple stakeholders to identify how to foster an offshore wind industry that works for Maine's people, Maine's economy, and Maine's heritage. Maine Department of Marine Resources co-chairs the Roadmap's Fisheries Working Group.
 - State of Maine application to Bureau of Ocean Energy Management (BOEM) for the country's first offshore floating wind research array in the Gulf of Maine (anticipated in winter/spring 2022).
 - Participation in the regional BOEM Task Force to identify potential opportunities for renewable energy leasing and development on the Outer Continental Shelf in the Gulf of Maine.

New Hampshire

The New Hampshire Fish and Game Department (NHFG) is addressing climate change through four different avenues: planning, science, outreach, and communication.

The NHFG's 2015 [WAP Update](#) specifically recognized climate change as a risk factor for both habitats and species. Because of this, species and habitat profiles include their sensitivity to climate change-related parameters, and the weighted risk of those species and habitats in regards to impacts such as SLR, changes in precipitation, increased storm activity, changes to air and sea temperature, etc.

The Great Bay National Estuarine Research Reserve (NERR, part of NHFG) continuously monitors salt marsh distribution and condition along with information about the salinity of pore water and marsh elevation. Periodically, tidal water levels are also measured. High resolution tidal wetland maps have been completed for New Hampshire and will be evaluated for shifts over time. Over time, this information will help inform if and how SLR is impacting salt marsh health at three sites around Great Bay. NHFG also has detailed habitat maps for Great Bay and the whole coastal region. These are considered baseline maps from which to compare future changes. The Sea Level Affecting Marsh Migration Model (SLAMM) was run for all of coastal New Hampshire as a part of the WAP, predicting how salt marsh distribution is likely to change under different SLR scenarios and where there is potential for migration. This information was combined with current condition information to determine where the highest quality marsh is likely to migrate, and where restoration opportunities are likely to be valuable in light of potential SLR. Great Bay NERR conducts eco-tone monitoring to see how the upland edge of tidal wetland are changing, and has deployed picture posts, soundscape monitoring, eDNA and wildlife cameras to observe shifts in biological communities and phenology changes over time.

The Great Bay NERR participates in a Coastal Adaptation Workgroup – a group of outreach professionals that coordinate to bring the best climate-related science to local communities. Much of this revolves around wise planning to protect both natural and built assets. The Great Bay NERR hosts a Climate Summit each spring (topics this year include: living shorelines, presentations about the WAP, fisheries

impacts in the Gulf of Maine, impacts on groundwater along the coast, culvert assessment work, dune restoration, city planning case studies, etc.). NHFG is also incorporating climate-related messages into their K-12 and teacher education programs. Teacher training workshops are focused on how protected places can be observed to determine climate-related impacts over time; and volunteers conduct a phenology program to track changes at the Great Bay Discovery Center.

NHFG participates in cross-state agency climate and sustainability coordination and is a key partner in efforts to promote updated climate science in local decision making. Specifically, Great Bay NERR represents NHFG on state efforts to update coastal climate science and policy recommendations as continual follow up to a 2014 Coastal Hazards and Risks Commission.

Additional Links:

The NH Fish and Game Department's Wildlife Action Plan:

<http://www.wildlife.state.nh.us/wildlife/wap.html>

The State of New Hampshire website: <http://www.nh.gov/climate/>

The NH Department of Environmental

Services: <http://des.nh.gov/organization/divisions/air/tsb/tps/climate/>

Massachusetts

In 2008 Massachusetts passed a Global Warming Solutions Act to reduce emissions, increase green infrastructure, and to analyze strategies for adapting to predicted changes in climate. The Massachusetts Climate Change Adaptation Report was released in September 2011 by the Executive Office of Energy and Environmental Affairs (EEA) and includes an overview of anticipated impacts and key adaptation strategies to increase resilience and preparedness. The report provides practical adaptation strategies for predicted changes in climate in Massachusetts, including support for improving existing public health, health care, local health infrastructure, and community resilience programs. In 2017 the MA Municipal Vulnerability Preparedness (MVP) Grant Program was created to provide support for cities and towns to identify climate hazards, assess vulnerabilities, and develop action plans to improve resilience to climate change. Communities that complete the MVP Planning Grant process become designated as an MVP Community and are eligible for MVP Action Grant funding to implement the priority actions identified through the planning process. MVP Action Grants administered by EEA provide support for communities to plan and design adaptations to climate change hazards, which also protect public health. MVP Action Grants can address heating and flooding, extreme weather, SLR, and other climate-related issues. In 2018, Massachusetts passed an act promoting climate change, environmental and natural resource protection, and investment in recreational assets and opportunity. The Act established a special legislative commission to investigate and study ocean acidification. The Ocean Acidification (OA) Commission released their Report on the Ocean Acidification Crisis in Massachusetts in 2021 urging fast action to address increasing OA and to protect region's economically important shellfish industry. Also in 2018, the first State Hazard Mitigation and Climate Adaption Plan, was released, combining the five-year update of the Federal Emergency Management Agency (FEMA) State Hazard Mitigation Plan with climate change projections and adaptation information.

Massachusetts sits on the boundary of two biogeographic provinces, the Gulf of Maine and the Mid-Atlantic Bight and has documented shifts in species range distributions of several species, including black sea bass, American lobster, and northern shrimp. Additional shifts in the distribution and abundance of important commercial and recreation fish species are expected as a result of climate change. To monitor changing environmental conditions in state waters, the MA Division of Marine Fisheries (DMF) has been compiling bottom temperature data, at 60-70 sites across the state since 1987 into a database, collecting over two million temperature readings to date. Additionally, DMF also has trawl survey data back to the 1970's.

DMF's Fisheries Habitat Program continues to develop and execute research and restoration projects that demonstrate both marine aquatic habitat benefits, address cumulative impacts, and focus on climate change. Projects undertaken since 2015 include Examine the Use of Dredged Rock Material for Shoreline Protection and Fisheries Habitat Enhancement, Shading Impacts of Docks and Piers on Salt Marsh, and addressing impacts of conventional vs. conservation moorings on eelgrass habitats.

DMF continues its participation in multiple wind-energy activities, including conducting technical review of projects in the Massachusetts Wind Energy Area (WEA), attending offshore wind research and monitoring priorities workshops and meetings, and fulfilling advisory roles for research and stakeholder engagement efforts. DMF also reviews marine resource and habitat monitoring plans, impact assessments, and permits for offshore export cables in Commonwealth waters. Topics of concern include species vulnerabilities in Nantucket Sound and compensatory mitigation for affected fisheries.

Rhode Island

In July 2014, the Rhode Island General Assembly approved the Resilient RI Act (RIGL §42-6.2), which formally established the Executive Climate Change Coordinating Council, as well as set specific greenhouse gas (GHG) reduction targets, and incorporated consideration of climate change impacts into the powers and duties of all state agencies. The Coordinating Council is comprised of Directors and Commissioners from nine state agencies/offices and is supported by an Advisory Board and Science and Technical Advisory Board. It is charged with leading and coordinating state agencies in responding to the challenges posed by climate change in a timely and effective manner, focusing in particular on:

- assessing, integrating, and coordinating efforts throughout state agencies to reduce GHG emissions, strengthen the resilience of communities, and prepare for the impacts of climate change;
- improving our understanding of the effects climate change will have in RI;
- working in partnerships to identify, develop, and implement strategies to be better prepared, and reduce risk and losses.

There are several projects underway that will provide information to support future Coordinating Council recommendations. A few coastal-related projects include the following. As first step in helping to reduce Rhode Island's GHG emissions is the completion of the 30-Megawatt Block Island Offshore Wind Project. This was the first offshore wind project in the country. Located approximately three miles southeast of Block Island, the project, which started construction in 2015, is now complete. The spatial planning and fisheries-related research and monitoring used to guide this work may provide a blueprint for other states and coastal communities.

To assess the effects climate change in Rhode Island the Executive Council's Science and Technical Advisory Board prepared a brief synopsis of the state of knowledge of the following manifestations of climate change: SLR, warming air temperatures, warming water (marine and fresh) temperatures, storm frequency and intensity, biodiversity (changes in species and habitats), and precipitation and inland flooding. The information summarized in this report will assist state agencies, decision-makers, and the public understand the real impacts RI is already experiencing due to a changing climate.

The Coastal Resources Management Council continues work on the Shoreline Change Special Area Management Plan, developing scientifically based data and tools to aid in coastal hazard adaptation planning. The Management Council has completed revised Shoreline Change Maps for the shore communities showing how Rhode Island's shoreline has changed over time due to erosion, and how we might expect it to change in the future. Additional tools and other key resources are available from the website to aid the state and municipalities in supporting sound policy decisions which address coastal erosion, SLR, and storm surge inundation problems.

The Department of Environmental Management has also addressed considerations related to climate change throughout the recently updated State WAP. In short, WAP reviewed vulnerability assessments for several species of great concern, identified threats to species and their habitats, and proposed actions to reduce these threats. In addition, the Division of Fish and Wildlife's Marine Fisheries Section continues to conduct long-term monitoring programs and collaborate on several local and regional research projects investigating the effects of climate change on managed species and the state's marine resources. State WAPs also have to specifically take into account climate change adaptation. Climate change is primarily in Chapters 1 (species), 2 (habitats), 3 (threats), and 4 (actions to abate threats to species and habitats).

In October 2015, the State Planning Council voted to adopt Rhode Island's new State Energy Plan "Energy 2035" as an element of the State Guide Plan, codifying the Plan as the state's formal long-term, comprehensive energy strategy. The Plan, produced by the Office of Energy Resources in collaboration with the Division of Planning, represents Rhode Island's first data-driven energy planning and policy document. Its vision is to provide energy services across all sectors—electricity, thermal, and transportation—using a secure, cost-effective, and sustainable energy system.

In January 2016, the Management Council adopted amendments to Section 145 - Climate Change and Sea Level Rise of the Coastal Resources Management Program to update SLR projections for short-, mid- and long-term timelines of 2035, 2050, and 2100 respectively, as calculated using the current NOAA methodology, and based on the Newport, RI NOAA tide gauge.

In early 2016, Rhode Island Office of Energy Resources launched the state's first ever EV rebate program to support adoption of EVs by Ocean State drivers: Driving RI to Vehicle Electrification (DRIVE). The program made \$200,000 available for qualified RI residents interested in purchasing or leasing an EV to apply for a financial rebate of up to \$2,500, based upon vehicle battery capacity. Modeled closely on existing rebate programs offered in other states, DRIVE offers the potential to increase the total number of EVs on RI roadways by 20-35%.

Connecticut

Recently the Connecticut's Governor issued an Executive Order on climate. [Executive Order No. 21-3](#) calls for 23 actions that were proposed by the Governor's Council on Climate Change (GC3) in its [January 2021 report](#). These actions cut across state agencies and sectors in the following areas:

- Buildings and infrastructure;
- Clean transportation;
- Community climate resilience;
- Health, equity, and environmental justice;
- Jobs and the economy; and
- Natural and working lands.

In the General Assembly, the Public Act 490 Program Extended was extended to Aquaculture. The new law extended Connecticut's PA 490 program to certain aquaculture operations, including underwater farmlands and waterfront property used for commercial shellfishing. The PA 490 program allows farm, forest, open space, and maritime heritage land to be assessed for property tax purposes based on current use value rather than fair market value. In exchange for the reduced assessment, the property owner cannot change the land's use for a period of time. By law, if the use changes within 10 years of ownership or classification, a conveyance tax penalty is charged to the owner ([PA 21-24](#), effective October 1, 2021, and applicable to tax assessments on and after that date).

Sections 1 and 2 of this Public Act allow the [Commissioner of Agriculture](#) to contract for the use of a shell recovery vessel to collect and deposit shell on shellfish beds. By updating these statutes, the Department of Agriculture is authorized to pursue alternative funding for this program--including any private, state, or federal grants.

Other major acts of the 2021 legislative session can be found [here](#).

New York

Legislative Updates

On July 18, 2019, the Climate Leadership and Community Protection Act (CLCPA) was signed into law. [New York State's Climate Act](#) is among the most ambitious climate laws in the nation and requires New York to reduce economy-wide GHG emissions 40% by 2030 and no less than 85% by 2050 from 1990 levels. The law creates a Climate Action Council charged with developing a draft scoping plan that serves as an initial framework for how the State will reduce GHG emissions and achieve net-zero emissions, increase renewable energy usage, and ensure climate justice. The CLCPA amended the Climate Risk and Resiliency Act of 2014 to expand the list of State permit programs covered by the law, as well as the scope of climate hazards that must be considered in these permit programs.

The Community Risk and Resiliency Act (CRR), as enacted in 2014, included five major provisions. The 2019 Climate Leadership and Community Protection Act amended the CRR as noted below:

- **Official SLR Projections** - CRR required the Department of Environmental Conservation (DEC) to adopt science-based SLR projections by regulation.

⇒ Projections of SLR for three geographic regions of the state relative to a year 2000-to-year-2004 baseline are [available here](#).

- **Consideration of future physical climate risk** - As originally enacted, the CRRRA required applicants for permits or funding in several specified programs to demonstrate that future physical climate risk due to SLR, storm surge, and flooding had been considered in project design, and that DEC consider incorporating these factors into certain facility-siting regulations. The CLCPA amended the CRRRA to include all permits subject to the [Uniform Procedures Act](#). The CLCPA also expanded the scope of the CRRRA to require consideration of all climate hazards, not only SLR, storm surge, and flooding, in these permit programs.
- **Smart Growth Public Infrastructure Policy Act Criteria** - CRRRA added mitigation of risk due to SLR, storm surge, and flooding to the list of smart-growth criteria to be considered by state public infrastructure agencies.
 - ⇒ DEC has released [Guidance for Smart Growth Public Infrastructure Assessment](#). This document is intended to guide state agencies as they assess mitigation of SLR, storm surge, and flooding in siting and design of public infrastructure projects.
- **Guidance on Natural Resilience Measures** - The CRRRA required DEC, in consultation with the Department of State (DOS), to develop guidance on the use of natural resources and natural processes to enhance community resilience.
 - ⇒ Natural resilience measures are actions that conserve, restore, or mimic natural landforms and processes to reduce climatic risks. DEC and DOS have released [Using Natural Measures to Reduce the Risk of Flooding](#) to serve as a guide to selection and planning of natural resilience measures.
 - ⇒ DEC and DOS have released the [State Flood Risk Management Guidance \(SFRMG\)](#). The SFRMG recommends flood risk management guideline elevations that incorporate possible future conditions, including the greater risks of coastal flooding presented by SLR and enhanced storm surge, and of inland flooding expected to result from increasingly frequent extreme precipitation events.
- **Model Local Laws Concerning Climate Risk** - CRRRA required DOS, in cooperation with DEC, to develop model local laws to increase community resilience.
 - ⇒ Released in November 2020, [these model laws](#) provide guidance on specific measures that localities can take to reduce flood risk by managing development in high-risk areas and preserving natural features like wetlands and dunes that provide protection against flooding.

[Observed and Projected Climate Change in New York State: An Overview](#)

[Disadvantaged Communities Barriers and Opportunities Report](#) assesses why some communities are disproportionately impacted by climate change and air pollution and have unequal access to clean energy. This report identifies barriers faced by disadvantaged communities and recommends actions for New York State agencies to design climate mitigation and adaptation programs through a lens of justice.

NY State Climate Impacts Assessment

In partnership with leading academic institutions, science organizations, community leaders, and others, New York State is undertaking a comprehensive research effort to better understand and document how climate change is affecting our state, what future impacts may be, and how we can prepare for them. The [New York State Climate Impacts Assessment](#) development effort was launched in June 2021 and is scheduled to be completed by early 2023. The goal of this assessment is to provide the science and information that will allow decision makers at all levels to make informed choices about their future: whether that's a local municipality, state agency, or individual business or landowner.

Offshore Wind

Under New York's Clean Energy Standard and the Climate Leadership and Community Protection Act, New York State is committed to providing 70% of New York State's electricity from renewable sources such as wind, solar, and hydroelectric power by 2030 and be 100% carbon free by 2040. To help reach this goal, New York State has committed to developing 9,000 megawatts of offshore wind by 2035, which is enough to power up to 6 million homes.

The New York State Energy Research and Development Authority (NYSERDA) has held two competitive solicitations for offshore wind energy, bringing totals to over 4,300 megawatts under active development statewide.

During the 2018 solicitation, NYSERDA selected and contracted with two offshore wind projects totaling nearly 1,700 megawatts:

- **Empire Wind 1:** (816 megawatts, Equinor Wind LLC) Located 11.5 nautical miles (nm) from Jones Beach, NY, encompassing the western portion of the lease area.
- **Sunrise Wind:** (880 megawatts, Ørsted A/S and Eversource Energy) The project area is approximately 30 miles east of Montauk Point.

During the 2020 solicitation, Equinor was provisionally awarded two other offshore wind projects totaling 2,490 megawatts:

- **Empire Wind 2** (1,260 megawatts) Located 11.5 nm from Jones Beach, NY, encompassing the eastern portion of the lease area.
- **Beacon Wind** (1,230 megawatts) Located 60 miles east of Montauk Point.

Climate Smart Communities Program

[Climate Smart Communities](#) (CSC) is a New York State program that helps local governments take action to reduce GHG emissions and adapt to a changing climate. Communities can become registered by committing to act and passing the CSC pledge, or can become certified by going beyond the CSC pledge, completing and documenting a suite of actions that mitigate and adapt to climate change at the local level. There are currently 350 registered CSCs in New York; 80 of these are certified.

The [Climate Smart Communities Grant Program](#), established in 2016, is a 50/50 matching grant program that supports municipalities seeking to become certified Climate Smart Communities and/or implement projects that advance New York's goals to reduce GHG emissions and adapt to the ongoing impacts of climate change by reducing flood risk, increasing natural resiliency, and relocating or retrofitting critical infrastructure. In the first five years of this grant program, DEC has awarded more than \$50 million to municipalities in support of local climate mitigation and adaptation projects.

Estuary Program Support and Ongoing Research

New York continues to support and work closely with several National Estuary Programs and NERR sites within the state. Research and monitoring performed or supported by these groups is integrated into climate change management plans and state WAPs, ultimately affecting how we manage resources. In 2019, coastal vulnerability assessments were released for [Long Island Sound](#) and the [Peconic Estuary](#). These reports assess at-risk natural resources and infrastructure, develop adaptation strategies, support low impact development and green infrastructure, and include wetland migration pathway modeling to advise management decisions.

New York participates in a variety of monitoring networks and ongoing research studies. These include climate sentinel monitoring projects, sediment elevation tables, water quality and tide gauge monitors, tidal wetland rapid health assessments, and marsh loss trend analyses. The State funds and provides support for many conservation and wetland restoration efforts and for the acquisition of open space to support habitat connectivity and promote the resiliency of these critical habitats in the face of a changing climate.

New Jersey

In a continuous effort towards a stronger New Jersey, Governor Phil Murphy signed [Executive Order No. 89](#) on October 29, 2019 appointing a Chief Resilience Officer establishing and a [Climate and Flood Resilience Program](#) within the New Jersey Department of Environmental Protection (DEP) and directing development of [New Jersey's first Scientific Report on Climate Change](#). Further, it establishes an [Interagency Council](#) on Climate Resilience to develop a Statewide [Climate Change Resilience Strategy](#) to promote the long-term mitigation, adaptation and resilience of New Jersey's economy, communities, infrastructure, and natural resources.

The 2020 New Jersey Scientific Report on Climate Change summarizes the current and predicted future impacts of climate change that are specific to our natural and built environments and is intended to inform state and local decision makers as they seek to understand and respond to the impending impacts. This report identifies and presents the best available science and existing data regarding the current and anticipated environmental effects of climate change globally, nationally, and regionally. The report received the 2021 Notable Document award from the Legislative Research Librarians section of the National Conference of State Legislatures: <http://tinyurl.com/NCSLnotabledocs>.

The Interagency Council on Climate Resilience (Interagency Council), comprised of 17 state agencies, was established to develop short- and long-term action plans that will promote the long-term mitigation, adaptation, and resilience of New Jersey's economy, communities, infrastructure, and natural resources. In addition to these coordinated efforts, the Interagency Council will support the development and implementation of the draft [Climate Change Resilience Strategy](#) that will guide and inform State actions to address the impacts of climate change.

New Jersey's first Statewide Climate Change Resilience Strategy provides a suite of forward-looking policy options to promote the long-term resilience of New Jersey to climate change. As a framework for policy, regulatory, and operational changes, the Resilience Strategy presents actions that New Jersey's

Executive Branch can take to support the resilience of the state's communities, economy, and infrastructure. The Draft Resilience Strategy includes 127 recommended actions across six priority areas.

The Global Warming Response Act (GWRA) [GWRA 80x50 Report](#) was written in response to the mandate in the GWRA, to reduce New Jersey's GHG emissions by 80% from their 2006 levels by 2050. This report builds on the State's previous efforts to address and reduce GHG emissions and serves as the third element of a comprehensive plan that evaluates New Jersey's GHG emissions from both energy and non-energy systems, providing guidance, policies, and regulatory and legislative recommendations to meet the State's GHG emission reduction goals.

Other NJ climate change initiatives are:

- Regional Greenhouse Gas Initiative (RGGI): <https://www.state.nj.us/dep/ages/rggi.html#/>
- Resilient NJ- Climate Change Toolkit: <https://experience.arcgis.com/experience/9daab51c2f5542969d50437522e012c4>
- Coastal Ecological Restoration and Adaptation Plan (CERAP): <https://www.nj.gov/dep/climatechange/docs/cerap-factsheet.pdf>
- NJ DEP SLR Guidance: <https://www.nj.gov/dep/slr/>
- Stormwater Infrastructure Toolkit: <https://www.nj.gov/dep/floodresilience/toolkit.html>
- NJ is a member of the OA Alliance: <https://www.oaalliance.org/>
- NJ Protecting Against Climate Threats (PACT): <https://www.nj.gov/dep/njpact/>.
- Shore Protection Fund - https://www.nj.gov/dep/grantandloanprograms/nhr_spgl.htm

Pennsylvania

The Pennsylvania Fish and Boat Commission (PFBC) recognizes the current and anticipated impacts of climate change on fish and fish habitat in its [Strategic Plan](#) and has adopted *Resilience* as a guiding principle to help achieve its "mission to protect, conserve, and enhance aquatic resources and provide fishing and boating opportunities," even amidst changing environmental conditions.

The Pennsylvania Climate Change Act of 2008 requires the Pennsylvania Department of Environmental Protection (DEP), to produce: 1) a report detailing the [impacts](#) of climate change and 2) a report outlining the state's [Climate Action Plan](#), both to be updated every three years. In the most recent [Climate Impacts Assessment](#) (2021), the effects of increased water temperature and the concomitant decrease in dissolved oxygen in the freshwater tidal portion of the Delaware Estuary were recognized (p. 47). Similarly, the assessment outlined the impacts of SLR and increased salinity on Pennsylvania's portion of the Delaware Estuary, highlighting potential changes in community composition and alterations to tidal wetlands (p. 96). To address these impacts, the commonwealth's [Climate Action Plan](#) identifies several strategies designed to help mitigate the impacts of climate change. Strategies relevant to Pennsylvania's portion of the Delaware Estuary include: 1) conserving and enhancing fish habitat and habitat connectivity (pp.46, 95), 2) implementing living shoreline programs (pp.46, 95), 3) reviewing regulatory structures that govern fisheries habitats and identifying ways to improve their ability to address the impacts of climate change (pp.46, 99), and 4) improving fish passage across the state (pp.47, 112).

In addition to the commonwealth's Climate Change Impact Assessment and Climate Change Action Plan, the [2015-2025 Pennsylvania WAP](#) outlines the potential threats that climate change poses to Species of

Greatest Conservation Need including American eel (*Anguilla rostrata*), river herring (Blueback Herring; *Alosa aestivalis* and alewife; *Alosa pseudoharengus*), American shad (*Alosa sapidissima*), and Atlantic sturgeon (*Acipenser oxyrinchus*). Although not a regulatory document, the plan recommends the expansion and development of “sentinel sites” to help monitor the impact of climate change on Species of Greatest Conservation Need and their habitats (Appendix 4.3, 4-140).

Delaware

Governor John Carney released Delaware’s Climate Action Plan in November 2021. The main goals of the Climate Action Plan are to reduce GHG emissions and to better prepare for the impacts of climate change by prioritizing clean energy and improved energy efficiency, providing support to state agencies in resilience efforts, and increasing research and monitoring.

Through Governor Carney’s commitment to the U.S. Climate Alliance, Delaware has adopted a goal of reducing the state’s GHG emissions by 26 to 28% by 2025 from 2005 levels. A Delaware Climate Action Plan was developed to meet that goal, plan for further emissions reductions in the years beyond, and determine priority areas to continue building the state’s resilience to climate change impacts.

Delaware’s past and present actions to minimize emissions have focused on the areas of clean and renewable energy, energy efficiency, transportation and reducing “high global warming potential” GHGs. Examples include:

- **Delaware’s Renewable Energy Portfolio Standards Act:** A 2005 law requiring the state’s utilities to get an increasing percentage of electricity from renewable sources
- **Code for Energy Conservation:** Delaware updated building energy codes in 2020, which aim to improve energy efficiency and cost savings
- **Renewable Energy and Energy Efficiency Incentive Programs:** This includes DNREC programs like the Green Energy Program and Energy Efficiency Investment Fund
- **Delaware Department of Natural Resources and Environmental Control (DNREC)’s Clean Transportation Incentive Program:** Individual and business rebates to offset the cost of purchasing zero-emission vehicles and related charging infrastructure
- **DNREC’s “Cool Switch” Low Impact Refrigerant Program:** Incentives to switch from hydrofluorocarbon refrigerants to those with more limited climate change impacts

Delaware’s past and present actions to maximize resilience have focused on the areas of policy, planning and regulations; capacity-building for state and local governments; and developing research, data and tools. Examples include:

- **SLR Planning:** A five-year effort, starting in 2009, provided a vulnerability assessment, recommendations for adaptation, and planning scenarios for the state
- **Climate Framework for Delaware:** This 2014 report outlined state agency actions to adapt to climate change; a related output was a flood avoidance guide for state assets
- **Technical Assistance and Funding:** Initiatives like the Resilient Community Partnership, Coastal Training Program, Strategic Opportunity Fund for Adaptation, and Sustainable Communities Planning Grant Program support local or state government climate action

- **Delaware Climate Change Impact Assessment:** This report, compiled in 2014, provide climate change projections for heat and precipitation to the year 2100
- **Coastal Inundation Maps:** The Delaware Geological Survey developed maps in 2017 to inform infrastructure, facility, land use, and capital spending planning for SLR

Identified through analysis and stakeholder input throughout the development of the climate action plan, DNREC identified four strategies to prioritize to minimize emissions and seven strategies to maximize resilience:

Strategies to Minimize GHG Emissions

1. **Clean and renewable energy** expansion, which has the greatest potential to reduce emissions in the long term;
2. **Energy efficiency** measures, which can be put in place relatively quickly and implemented through existing programs;
3. **Transportation** sector transitions to zero-emission vehicles and more efficient transportation systems; and
4. **High global warming potential GHG** reduction and management of GHGs other than carbon dioxide.

Strategies to Maximize Resilience

1. **Update or create state regulations** that address protection and conservation of vulnerable and impacted resources.
2. **Support for communities and stakeholders** in the form of trainings, resources and technical assistance.
3. **Management plans** for natural resources, emergency response, state facilities, and agency equipment.
4. **Facility design and operation** that accounts for future climate conditions.
5. **Research and monitoring** that studies the impacts of climate change and methods of adapting.
6. **Outreach and education** on climate change impacts and adaptation.
7. **Agency support** that provides the resources to implement the resilience actions.

For complete information on the items referenced above and strategy for the path forward to meet these climate initiatives please visit [Delaware's Climate Action Plan](#) website.

Maryland

Maryland has made a strong commitment to reducing GHG emissions in the state and has taken a number of actions to plan for and adapt to a changing climate. The 2030 Greenhouse Gas Reduction Plan was finalized in 2020, which charts a path towards a 40% reduction of 2006 level GHG emissions by 2030 and carbon neutrality by 2045. The goal has since been expanded by Governor Hogan to a 50% reduction by 2030. This plan meets the requirement of the 2009 Greenhouse Gas Emissions Reduction Act, which required a reduction of GHG emissions by 25% by 2020 and the 2016 legislative update requiring the 40% reduction by 2030. The plan considers how all sectors' (energy, transportation,

agriculture, etc.) can contribute to reducing emissions and has more than 150 programs and initiatives to address carbon emissions related to energy, construction, fisheries, forestry, etc. The final 2020 GHG inventory for the state will not be released until the end of 2021 but preliminary results indicate Maryland will have achieved the 25% emissions reduction goal.

Maryland, via the Adaptation and Resiliency Working Group (ARWG) of the Maryland Commission on Climate Change is evaluating and updating the state's adaptation strategy by developing the Maryland Climate Adaptation and Resilience Framework: 2021- 2030 Framework. The intent of the Framework is to guide and prioritize action over the next 10 years, specifically in vulnerable and under-served communities. In 2020, ARWG identified five key sectors: natural resources, working lands and resources-based economies, human health, water resources - quality and quantity, and protecting critical infrastructure, and three focus areas that will be integrated into all of the sectors: diversity and environmental justice, climate jobs and training, and local government action and state service delivery. Bringing together over 80 experts from state and local government, and partner organizations, the Framework effort has begun the initial steps towards development of a guiding framework for climate adaptation in the state.

A Maryland Coastal Climate Adaptation Report Card which includes a suite of 15 indicators that measure adaptation progress in Maryland has been developed by University of Maryland Center for Environmental Sciences - Integration and Application Network. The report card provides high-level synthesis of findings, including individual indicator scores, and an overall grade for the coastal zone in Maryland and will be used to inform management decisions moving forward. The Report Card will be released by the end of 2021.

Maryland solicits and funds community-based resilience projects through the Community Resilience Grant Program. The program leverages federal dollars with state "Resiliency through Restoration" capital funding to promote and support comprehensive, holistic planning and implementation projects that address both water quality and quantity issues. Through these projects, the Maryland Department of Natural Resources (MDNR) is helping Maryland communities become more resilient to flood risks, and enhance the protection and management of the state's resources including the bay and the ocean. This work continues a decade-long effort to provide support to local communities to assess risk, plan risk-reduction efforts and implement projects.

After the publication of the Nuisance Flood Plan Development Guidance in October of 2019, MDNR and Maryland Department of Planning received nuisance flood plan from nine coastal counties and Baltimore City and have three pending submissions.

Maryland has finalized a policy and supporting processes to proactively identify environmentally and economically sound beneficial use of dredged material practices to improve coastal resiliency. Through the development of a mapping tool - Beneficial Use: Identifying Locations for Dredge (BUILD) - project managers will be able to quickly identify beneficial use opportunities. BUILD has been merged into the Maryland Coastal Atlas where the data is now available.

The Coast Smart Construction Program siting and design guidelines were updated in 2020 and include the expanded scope and applicability per Chapters 628 and 629 of the 2018 Laws of Maryland and Chapter 442 of the 2019 Laws of Maryland. Additionally, the vulnerable areas within which the Program applies was updated to include areas outside of the Special Flood Hazard Area. This new boundary, the

Coast Smart Climate Ready Action Boundary, conveys resiliency by adding a vertical extent above the Base Flood Elevation and is currently the most technologically feasible and accurate approach to achieve resiliency within the scope of the Coast Smart Program. The Coast Smart Project Screening Form provides projects with a form to use when applying the Program requirements. The siting and design guidelines, screening form and additional information can be found at the Coast Smart Councils website https://dnr.maryland.gov/climateresilience/Pages/cs_Council.aspx.

Virginia

Virginia – Early Steps

Virginia's initial focus on climate change included the Governor's Commission on Climate Change, which published [A Climate Change Action Plan](#) in 2008. This included the effects of climate change (on the built environment, insurance, natural systems, etc.), recommendations, and commission deliberations. In December of 2014, the state published [Virginia Accomplishments Since the 2008 Climate Action Plan Release](#). One year later, in December 2015, the Governor Terence R. McAuliffe's Climate Change and Resiliency Update Commission published the [Report and Final Recommendations to the Governor](#), which includes the top five recommendations to address climate change in the state: i) establishing a climate change and resilience resource center, ii) creating a new Virginia bank for energy and resiliency, iii) establishing a renewable energy procurement target for Commonwealth agencies, iv) adopting a zero emission vehicle program, and v) leveraging federal funding to make coastal communities more resilient. During the 2016 legislative session Virginia created the [Commonwealth Center for Recurrent Flooding Resiliency](#), a joint venture of Old Dominion University, the College of William & Mary and the Virginia Institute of Marine Science. With an initial budget allocation of \$2 million in state support these institutions have worked together to provide critical research, policy, and outreach to protect natural resources and create resilient communities across the Commonwealth.

Virginia Update

In 2018 Governor Ralph Northam issued [Executive Order 24](#) "Increasing Virginia's Resilience to Sea Level Rise and Natural Hazards," which set the Commonwealth on a course toward addressing its risk and resilience to natural hazards, including flooding. Executive Order 24 designated the Commonwealth's first Chief Resilience Officer (Secretary of Natural Resources, Matthew Strickler). The Order also directed the integration of unified SLR projections, development of minimum freeboard standards, and a review of the vulnerability of State-owned buildings. Importantly, the Order directed the Chief Resilience Officer and the Special Assistant to the Governor for Coastal Adaptation (Rear Admiral Ann Phillips, United States Navy) to develop the [Virginia Coastal Resilience Master Planning Framework](#), published in October 2020. This Framework lays out the Commonwealth's approach to coastal protection and adaptation and is being utilized to create the [Coastal Resilience Master Plan](#). The primary objective of the Master Plan will be to improve the Commonwealth's resilience and ability to adapt to rising seas, increased nuisance flooding, and more frequent and intense storms that result from climate change and threaten our coastal communities and marine resources. Virginia has also joined the [RGGI](#), a regional cap-and-trade program designed to reduce climate pollution. Proceeds generated from the program will fund resiliency projects recommended through the Coastal Resilience Master Plan. Lastly, the Virginia 2020 General Assembly considered [Senate Bill 776](#) and [House Bill 504](#) resulting in legislation that required the Virginia Marine Resources Commission and the Department of Environmental Quality to update tidal wetland and riparian buffer regulations to ensure the protection and conservation of sensitive coastal

habitat from SLR and coastal hazards. In the summer of 2021, Virginia agencies updated their [Tidal Wetlands Guidelines](#) and Chesapeake Bay Preservation Area regulations and enforceable policies with additional standards that now require localities to allow, to the maximum extent possible, for the landward migration of existing vegetation for all permissible uses of tidal wetlands and riparian buffers.

North Carolina

Throughout North Carolina, impacts from climate change, including SLR, will affect all coastal habitats and species. In 2018, after the devastation brought about by Hurricane Florence, NC's Governor Roy Cooper signed [Executive Order 80](#) "NC's Commitment to Address Climate Change and Transition to a Clean Energy Economy" (EO80) directing all cabinet agencies to integrate climate adaptation and resiliency planning into their policies, programs, and operations. As part of EO80, the Climate Change Interagency Council was created which included members from all of the cabinet agencies. The Department of Environmental Quality (DEQ) was tasked to serve as the lead agency with the Secretary of DEQ serving as Council chair. Staff from all DEQ divisions were active on the Council and associated working groups.

These working groups, along with federal and university partners, developed a state-specific [NC Climate Science Report](#), assessed hazards and risks associated with climate change, and compiled a [Natural Working Lands Report](#). These efforts were incorporated into the [2020 NC Risk Assessment and Resilience Plan](#) with strategies and recommendations to increase carbon sequestration and resiliency of coastal habitats and communities. Implementation began in 2021. Governor Cooper's EO80 is the driving force behind much of NC's approach to coastal resiliency and climate change planning.

Also in 2018, the North Carolina Office of Recovery and Resilience (NCORR) was established within the NC Department of Public Safety to administer funds received by the state through the U.S. Department of Housing and Urban Development's Community Development Block Grants for Disaster Recovery Program. In 2019, Governor Cooper appointed a state Chief Resilience Officer to lead NCORR's resilience staff and direct the state's initiative to help storm-impacted communities rebuild smarter and stronger in the face of future natural disasters and long-term climate change.

NCORR has been tasked with leading the state's future resilience efforts. NCORR supports coordination among state agencies and maintains productive relationships and partnerships between state, local, and regional governments, business and non-profit partners, and community stakeholders. Collaboration and interaction among partners inside and outside of state government helps all entities leverage expertise throughout the state to build a more resilient North Carolina.

NC's Clean Energy Plan (CEP) was written by the DEQ as directed by Governor Cooper's EO80. DEQ was tasked with the creation of a CEP to encourage the use of clean energy resources and technologies to foster the development of a modern and resilient electricity system. The purpose of the CEP is to outline policy and action recommendations that will accomplish these goals. The CEP uses best available data, analysis, and stakeholder input to examine what our electricity system should look like in 2030. It identifies achievable goals, proposes modern policies and strategies to achieve the goals, and identifies activities needed to adjust the regulatory framework to accommodate 21st century customer expectations, public policy goals, energy needs, economic development opportunities, and societal

outcomes related to climate change. The CEP can be viewed here:

https://files.nc.gov/governor/documents/files/NC_Clean_Energy_Plan_OCT_2019_.pdf

Late in 2021, an amendment was approved to North Carolina's Coastal Habitat Protection Plan (CHPP) by the three regulatory commissions with jurisdiction over the plan. As part of the five-year review, the state's Coastal Resources Commission, Environmental Management Commission and Marine Fisheries Commission adopted the 2021 CHPP Amendment with unanimous votes. The amendment focuses on five priority issues, several of which have implications regarding climate change and SLR. The five priority issues are: 1) Submerged Aquatic Vegetation protection and restoration through water quality improvements, 2) Wetland protection and restoration through nature-based solutions, 3) Environmental rule compliance to protect coastal habitats, 4) Wastewater infrastructure solutions for water quality improvement, and 5) Coastal habitat mapping and monitoring to assess status and trends. To view the 2021 CHPP Amendment and the source document from 2016, go to:

<https://deq.nc.gov/about/divisions/marine-fisheries/habitat-information/coastal-habitat-protection-plan>

In 2021, NC's Division of Water Resources (DWR) began sampling for an Environmental Protection Agency (EPA) grant called "The Assessment of Change in North Carolina Coastal Plain Wetlands." This assessment will be looking at wetland sites previously not surveyed with wetland sites surveyed five, 10, and 30 years ago. In addition, North Carolina State University continued the long-term monitoring of a few sites previously monitored by DWR from 2014 through 2018/2019. DWR has been awarded funds from the EPA to initiate a statewide wetland mapping project and a more accurate, publicly available wetland mapping tool for North Carolina. These maps and the corresponding tool will be critical for planning as the climate changes and the seas rise.

The Albemarle-Pamlico National Estuary Partnership (APNEP) is co-lead with the NC Coastal Federation of the NC Living Shoreline Steering Committee. This committee was established in 2018 and acts as APNEP's Living Shoreline Action Team. The committee brings together federal and state agencies, non-governmental organizations, and universities to communicate and collaborate on education and outreach, research, and implementation of living shorelines. In 2021, this committee promoted and published its partner's accomplishments achievements from 2018 through 2020 and can be found at:

https://www.nccoast.org/wp-content/uploads/2021/09/LS-report-2018-2020.pdf?fbclid=IwAR1LDKPbCLdeAiRCq7T4jV5lDd_NTM7h6xVjUhWomQRyLKTfstl-yBzRXmo

APNEP is collaborating as a project partner on a [NOAA Coastal Resilience Grant](#) awarded to the [Virginia Institute of Marine Science](#). The project is focused on increasing the use of natural and nature-based features to increase resilience of coastal communities to flooding caused by storms and extreme weather events associated with climate change. The project is designed to include interaction with local government officials as the target audience for project generated data and guidance. APNEP staff are working with Wetlands Watch to solicit feedback from North Carolina agency personnel, local governments, and other partners to develop an evaluation of opportunities and limitations to extension of the project outputs beyond Virginia in 2021. You may view the project website at:

https://www.vims.edu/ccrm/research/climate_change/adaptation/nbnbs/index.php

South Carolina

There have been two recent pieces of state legislation that relate to climate change. The [2020 Disaster Relief and Resilience Act](#) established the South Carolina Office of Resilience which is tasked with developing and implementing a Strategic Statewide Resilience and Risk Reduction Plan to coordinate efforts across agencies to increase resilience and recover from natural disasters. Addressing flooding is a major focus area within this effort, which is still in its early stages. The [2019 Energy Freedom Act](#) helped remove barriers to increasing solar energy capacity in the state.

In the [2018 South Carolina Hazard Mitigation Plan](#), the South Carolina Emergency Management Division (SCEMD) reported county-level inundation areas based on three different modeled SLR scenarios. SCEMD is working to develop a more hazard-specific discussion of climate change for the 2023 Hazard Mitigation Plan.

The South Carolina Department of Natural Resources (SCDNR) compiled a report in 2013 entitled [Climate Change Impacts to Natural Resources in South Carolina](#). The following two sentences from the report highlight the goal the agency had in writing it: “The Department of Natural Resources is taking a lead role among South Carolina state agencies to advance the scientific understanding of the vulnerability of South Carolina’s vital natural resources during an era of changing climate. This will enable the agency, its partners, constituents, and all Palmetto State citizens to avoid or minimize the anticipated impacts while protecting South Carolina’s natural resources.” The report identifies a number of concerns for the state’s natural resources including SLR, OA, and temperature rise effects. The state has a high proportion of the coastline that is comprised of marshes, barrier islands, and hammock islands. Many of these lands are owned by state and federal entities. The document has various strategies for research and for developing and protecting land to provide for migration.

In the [2015 State WAP](#), Climate Change was added as a Conservation Action Area. Strategies within this action area include: 1) Prioritize areas for conservation actions using updated mapping capabilities (for example, conduct SLAMM modeling of the state’s coastline as needed to identify potential conservation focus areas for marsh migration inland); 2) Identify monetary and staff resources for addressing management needs as they relate to climate variability; 3) Create a centralized information area with data and tools to support decision making; 4) Conduct climate-related monitoring of species and habitats as needed (run species- or habitat-based vulnerability index assessments as needed for priority species); 5) Collaborate with neighboring states to address species/habitat range shifts due to climate change; and 6) Foster partnerships within the state and nationwide to address climate change in South Carolina.

New and Ongoing Resources and Efforts

- In 2021, as a result of an ongoing collaboration between SCDNR and the state coastal regulatory agency, [living shorelines were added to coastal zone regulations](#).
- SCDNR is implementing living shorelines to mitigate SLR.
- SCDNR is conducting research on the effects of fluctuating climatic variables on key fishery species and estuarine habitat quality.
- The SC Sea Grant Consortium, a state agency made up of eight member institutions, plays a convening and facilitation role, funds research, and provides technical assistance on climate issues.

- The Carolinas Integrated Sciences and Assessments (CISA) team is based at the University of South Carolina. CISA organizes a biennial Carolinas Climate Resilience Conference which supports on-the-ground climate resilience efforts by providing managers and regional experts an opportunity to share lessons learned and discuss resources and tools for incorporating climate information into their work.
- The SC State Climatology Office is monitoring climatological trends and variability across the State (1900 – present) and hosted two climate related workshop series (in 2012 and 2017) in collaboration with CISA and the SC Water Resources Center.
- SCDNR Coastal Reserves and Outreach discusses SLR and coastal flooding in most of their outreach programs. For example, the SCDNR/ACE Basin NERR offers multi-day Teachers on the Estuary and Climate Explorers programs that directly address climate change research and monitoring.
- In 2021, the SC Department of Education added climate change to the [state science standards](#).

Georgia

In 2016, The Georgia Coastal Management Program/Georgia Department of Natural Resources held the first ever Georgia climate conference, *Climate Conference - Prepare, Respond, and Adapt: Is Georgia Climate-Ready?* The conference focused many aspects important to coastal Georgia including habitat and impacted species and many other relevant issues. In 2021 a second climate conference was held, *Georgia Climate Conference 2021 – Minimizing Georgia’s Risk, Maximizing Georgia’s Future*. The 2021 conference had many updated discussions on the topics of the 2016 conference and included specific sessions on Marine Fisheries and Habitat and Impacted Species. The conference agenda can be seen at GeorgiaClimateConference.org.

Also in 2016, the [Post-Disaster Recovery and Redevelopment Planning](#) document was created. This document has led to all the coastal counties in Georgia developing post-disaster plans. The county specific plans can be seen on the [Disaster Recovery and Redevelopment Plans](#) page of the Coastal Resources Division/Georgia Department of Natural Resources website.

Georgia's Coastal Management Program Coastal Incentive Grant has funded 37 climate-related projects that have produced reports, tools, and plans. Also, funding has been provided from NOAA, EPA, Georgia Emergency Management and Homeland Security Agency, and several other partners.

These include:

- Application of SLAMM to the Georgia Coastline
- [Georgia Coastal and Marine Planner \(G-CAMP\)](#)
- [Georgia Wetlands Restoration Access Portal \(G-WRAP\)](#)
- [Georgia Coastal Hazards Portal \(GCHP\)](#)
- [Private-Sector Recovery and Redevelopment Guidance](#)
- [Coastal Resilience with Green Infrastructure](#)
- Coastal Bird SWG 2020 Interim Report

The Georgia Department of Natural Resources developed the [Georgia’s State WAP](#) . The WAP uses the best available data to provide a comprehensive, adaptable assessment of conservation needs and the

best ways to address them. Congress requires an approved WAP for state agencies to receive State Wildlife Grants, the main federal funding source for states to conserve non-game animals not legally fished for or hunted. The plan contains a section on climate change adaptation.

There are eight SLR and habitat monitoring sites along Georgia's coast. Climate Change Capacity Assessments have been completed for all 11 coastal counties. Completed vulnerability assessments for the six ocean-facing counties have begun in 2021.

Along with the Georgia Coastal hazards Community of Practice the state hosts a Living Shoreline Working Group and partners on the Georgia Climate Project team, the Southeast and Caribbean Disaster Resiliency Partnership.

Florida

The Florida Fish and Wildlife Commission (FWC) lead a stakeholder summit on Climate Change in 2008. A report was generated in 2009 from this summit entitled, "Florida's Wildlife: On the front line of climate change." As a result of this summit and due to the resulting recommendations, the FWC established Climate Change Oversight Team and developed adaptive strategies to address identified climate change threats to fish and wildlife and their habitats. Climate change considerations have been integrated into Florida's Strategic WAP, and funding has been provided to aquatic habitat projects supporting climate change adaptive strategies, such as living shoreline projects and regional climate change effects mitigation planning efforts. Funding opportunities for aquatic habitat restoration and enhancement projects supported by FWC ensure evaluation of climate change adaptation in all project proposals submitted.

Florida has also worked with partner organizations, such as TNC, to implement projects addressing resiliency and plan for coastal climate change. This has been a key focus of South Florida, which is generally recognized as being one of the most vulnerable regions in the Commission management area to SLR. Partners have developed shoreline resiliency and coral reef teams including the Shoreline Resiliency Working Group and Southeast Florida Coral Reef Initiative, which are focused on assessing and addressing the effects of climate change on coastal habitats. The Governor's South Atlantic Alliance sponsored a southeast U.S. Living Shorelines Summit in Jacksonville, Florida in 2016, which specifically addressed coastal habitat resiliency in the face of accelerated SLR. This effort has resulted in the development of a number of different regional resources, including a living shoreline training academy, which provides managers and the public with a certification in living shoreline design and implementation. As part of the strategy to enhance coastal resiliency to SLR, FWC led the development of a partner-based living shoreline website <https://floridalivingshorelines.com/> for private property owners as a one-stop-shop for all things related to regional living shoreline construction. This partnership effort recently extended to the development and implementation of a living shoreline contractor's training and certification course, which is conducted 2-3 times a year in various regions around the state. This training comes complete with continuing education credits for participants and is designed to expand the use of natural materials in living shoreline applications.

Most recently, the Florida Department of Environmental Protection established the Florida Resilient Coastlines Program through the Office of Resilience and Coastal Protection, established by the 2021

Florida legislature and Governor. This program provides \$10s of millions with appropriations up to \$100 million starting in fiscal year 2022-2023 funding for planning and vulnerability assessments and natural infrastructure development to address SLR to Florida Counties and Municipalities.

<https://floridadep.gov/rcp/florida-resilient-coastlines-program>

Appendix I

Will be a link to spreadsheet currently in Excel format titled 'Climate Change Actions by State'

	Established working group or legislation to reduce carbon output	Established working group or legislation to respond to climate change threats	Produced reports on climate change	Assesses and monitors effects of climate change	Has mechanisms in place for collaboration among agencies and other organizations	Addresses climate change in planning documents	Has responded to climate change on the ground	Includes climate change in outreach efforts
Maine	Maine is a participating state in the Regional Greenhouse Gas Initiative (RGGI). In 2019 LD 1679 was signed into law, committing Maine to reduce emissions by 45% by 2030 and at least 80% by 2050, and to develop a four-year action plan (to be updated in the future) to recommend actions to achieve this goal. The Maine Climate Council delivered a strategic plan to the Governor's Office of Policy Innovation and the Future in 2020 recommending actions to achieve emission reduction goals and climate change adaptation and community resilience.	Legislation that creates the Maine Climate Council: LD 1679; Primary entities: Governor's Office of Policy Innovation and the Future, Dept of Environmental Protection, Maine Climate Council. Additional, numerous legislation for enacting the Climate Council Strategies: LD1572 related to adopting planning for sea level rise and LD 593 passed, which reestablishes coast-wide eelgrass mapping program, also to include delineation of salt marsh vegetation. More legislation supporting climate change threats is listed at https://www.maine.gov/future/initiatives/climate	"Maine Won't Wait: A Four-Year Plan for Climate Action", December 2020 developed by the Maine Climate Council, to be updated on a regular basis. Supporting reports: "Scientific Assessment of Climate Change and its Effects in Maine report", developed by the Maine Climate Council's Science and Technical Subcommittee; Strengthening Maine's Clean Energy Economy developed by the Governor's Energy Office and Office of Policy Innovation and the Future; Assessing The Impacts Climate Change May Have On The State's Economy, Revenues, And Investment Decisions developed by Eastern Research Group and Synapse Energy Economics; and Equity Assessment of Work Group Recommendations produced by the University of Maine's Senator George J. Mitchell Center for Sustainability Solutions.	Climate Change and Biodiversity in Maine: Vulnerability of Habitats and Priority Species (Manomet Foundation 2014); tidal and sea level monitoring; fisheries research monitoring and climate modeling (multiple organizations); DMR Environmental Monitoring Program (added pH, DO, and CO2 in 2021); salt marsh distribution and condition monitoring (Maine Coastal Program, Maine Natural Areas Program, Dept. of Env. Protection); 2018 updated sea level rise and storm surge models and maps; coastal erosion monitoring	Maine Climate Council	"Maine Won't Wait: A Four-Year Plan for Climate Action", December 2020 developed by the Maine Climate Council, 2015 State Wildlife Action Plan	Offshore floating wind technology development and demonstration project in development; Offshore wind research array application in development; permitting and grant funding that encourages BMPs for freshwater (StreamSmart Program) and tidal (the CoastWise Approach) for road crossing replacements; implementation of living shorelines demonstration projects; outreach and grant support for community climate change planning	Coastal Community Grants encourage and provide technical assistance for climate resilience planning and projects; The CoastWise Approach training and outreach for climate-resilient road crossing replacement; StreamSmart training and outreach for freshwater road crossing replacements; Gulf of Maine Research Institute K-12 programs; Island Institute outreach, materials, and technical assistance; Maine Flood Resilience Checklist; A self-assessment tool for Maine's coastal communities to evaluate vulnerability to flood hazards and increase resilience
New Hampshire	NH currently doesn't have a standing group that is focused on climate mitigation. HB 172 http://www.gencourt.state.nh.us/bill_status/results.aspx?adv=2&txtbillno=hb172 did not pass. However NH is a RGGI participant. NH's efforts to reduce carbon output are described at https://www.des.nh.gov/climate-and-sustainability/energy/emission-reduction-strategies	Coastal Adaptation Workgroup; Coastal Risk and Hazards Commission. The state legislature requires the Dept of Environmental Services to update coastal climate science/coastal flood risk every five years and produce recommendations to state and local government based upon that science. Legislation required all state agencies to assess impacts to infrastructure and policy resulting from coastal flooding and utilize updated science and projections for any state funded projects. State wetland regulations must consider sea level rise projections. Upper Valley Adaptation Workgroup (Upper Connecticut River Valley)	The UNH Sustainability Institute produces reports on NH climate change https://www.unh.edu/sustainability/si-research The following link also includes up to date resources to inform local and state policy. https://www.nhcaw.org/explore/resource-library/	Salt marsh distribution and condition monitoring; baseline habitat maps; ecotone monitoring, soundscape and wildlife camera, tidal gauge, water level, SLAMM models.	Coastal Adaptation Workgroup, Wildlife Action Plan Implementation Team, State Environmental Resilience Group, Hampton Seabrook Estuaries Alliance, Piscataqua Regional Estuaries Partnership Technical Advisory Team	2015 State Wildlife Action Plan, NH Flood Risk Summary Part II: Planning Guidance, NH Flood Hazards Handbook	Assessing impacts of road crossing, vulnerability and adaptation of tidal marshes, living shorelines; habitat mapping, etc.	Coastal Climate Summit each spring; climate messaging in K-12 and teacher education programs; teacher training workshop, due to DES staff turnover and vacant positions, outreach efforts may currently be on hold
Massachusetts	Global Warming Solutions Act; Boston Executive Order Relative to Climate Action; mandate state utility purchase of offshore wind power by 2027; various wind energy projects	August 2018 - AN ACT PROMOTING CLIMATE CHANGE ADAPTATION, ENVIRONMENTAL AND NATURAL RESOURCE PROTECTION, AND INVESTMENT IN RECREATIONAL ASSETS AND OPPORTUNITY. SECTION 97. (a) There shall be a special legislative commission, ... to make an investigation and study relative to ocean acidification.	1. Massachusetts Climate Change Adaptation Report 2. Massachusetts Ocean Acidification Report	fisheries and environmental data. Seagrass	MA Ocean Acidification Commission. MA Shellfish Advisory Commission (SAC).	2015 State Wildlife Action Plan. MA 2050 Decarbonization Roadmap	Several offshore wind projects under development south of Martha's Vineyard and in the GOM region. OA Commission Report and recommendations. Regional Greenhouse Gas Initiative. Transportation and Climate Initiative	BRACE Program (Building Resiliency Against Climate Effects) Dept. of Public Health - 5-step process for assessing health impacts of climate-change, identifying strategies, and evaluating activities that reduce climate-related health risks. The MDPH Climate Enhanced Community Profile provides information and resources on climate change hazards, vulnerable populations, and environmental health for each of the 351 cities and towns in Massachusetts.
Rhode Island	Resilient RI Act establishing Executive Climate Change Coordinating Council (RIEC4); 2021 Act on Climate; Member state of the Transportation and Climate Initiative Program (TCI-P) and Regional Greenhouse Gas Initiative (RGGI)	Resilient RI Act establishing Executive Climate Change Coordinating Council (RIEC4), which included an Advisory Board and Science and Technical Advisory Board; Executive Order 17-16 appointing a Chief Resilience Officer to drive climate resilience efforts across the state, both within government and in collaboration with business, academic, and nonprofit partners; 2021 Act on Climate	Resilient Rhody: An Actionable Vision for Addressing the Impacts of Climate Change in Rhode Island. Additional tools, reports, and resources are available on the RI Climate Change website (http://climatechange.ri.gov/resources).	Monitoring of marine resources and habitats, and collection of environmental data by RI DEM and partners; Stormtools and other online mapping and assessment tools (available on the RI Climate Change website)	Creation of the Executive Climate Change Coordinating Council (RIEC4) and its supporting boards, as well as a Chief Resilience Officer	State-wide comprehensive climate preparedness strategy, Resilient Rhody (2018); Shoreline Change Special Area Management Plan, 2015 State Wildlife Action Plan; Energy 2035 in State Guide Plan; RI DEM Strategic Plan (2018).	30 Megawatt Block Island Offshore Wind Project; electric vehicle rebate program; Incorporation of climate change priorities into state agency strategic plans; Lead by Example (http://www.energy.ri.gov/policies-programs/lead-by-example/)	Public engagement and feedback sought via Act on Climate Sharing Sessions and Resiliency Roundtables (http://climatechange.ri.gov/aoc/); PREP-RI (Providing Resilience Education for Planning in RI) facilitated by Univ. of Rhode Island and Coastal Resource Center (https://prep-ri.org/)
Connecticut	Leading Group in Connecticut is the Governor's Council on Climate Change. https://portal.ct.gov/DEEP/Climate-Change/GC3/Governors-Council-on-Climate-Change	Leading Group in Connecticut is the Governor's Council on Climate Change. https://portal.ct.gov/DEEP/Climate-Change/GC3/Governors-Council-on-Climate-Change and Executive Order 21-3: https://portal.ct.gov/-/media/Office-of-the-Governor/Executive-Orders/Lamont-Executive-Orders/Executive-Order-No-21-3.pdf	Leading Group in Connecticut is the Governor's Council on Climate Change. Reports can be found at: https://portal.ct.gov/DEEP/Climate-Change/GC3/Governors-Council-on-Climate-Change	Leading Group in Connecticut is the Governor's Council on Climate Change. https://portal.ct.gov/DEEP/Climate-Change/GC3/Governors-Council-on-Climate-Change	Agencies work through the State Office of Policy and Management	Executive Order No. 21-3 calls for 23 actions that were proposed by the Governor's Council on Climate Change (GC3) in its January 2021 report.	DEEP Energy Procurements and Offshore Wind Procurement	Governor's Council on Climate Change
New York	Climate Leadership and Community Protection Act (2019); New York Climate Action Council	Climate Risk and Resiliency Act (2014); Climate Leadership and Community Protection Act (2019); New York Climate Action Council	1. Responding to Climate Change in New York State: The ClimAID Integrated Assessment for Effective Climate Change Adaptation in New York State (2011, updated 2014) 2. Sea Level Rise Task Force Report (2009) 3. Observed and Projected Climate Change in New York State: An Overview (2020) 4. New York State Climate Impacts Assessment (in development)	Tidal Wetlands Trends Analysis (2015); UVVR Model: Sediment supply and wetland vulnerability assessment for the salt marshes of New York (2019); Sea Level Affecting Marshes Modeling (SLAMM) mapper for NY coastlines (2014); coastal vulnerability assessments of Long Island Sound and Peconic Estuary (2019); Surface Elevation Table monitoring ; rapid assessments of tidal wetland health; Ocean Indicators Project to monitor Ocean acidification, temps, species shifts, etc.; Eelgrass monitoring flights and mapping	New York State Climate Action Council	Guidance for Smart Growth Public Infrastructure Assessment (2020); State Flood Risk Management Guidance (2020); Climate Action Council Scoping Plan (Draft released 12/2021)	<ul style="list-style-type: none"> over 4,300 megawatts of wind energy under active development statewide tax incentives for GHG reductions and energy efficiency improved resiliency of public utilities at risk of flooding <ul style="list-style-type: none"> Governor's Office of Storm Recovery coordinates statewide recovery efforts for Superstorm Sandy, Hurricane Irene and Tropical Storm Lee. Through its NY Rising Housing Recovery, Small Business, Community Reconstruction, Infrastructure and Rebuild ByDesign programs — GOSR invests \$4.5 billion in federal Community Development Block Grant - Disaster Recovery funding to better prepare New York for extreme weather events. 	<ul style="list-style-type: none"> Climate Smart Communities program—certification and grant funding for municipalities to improve resiliency and reduce GHG outputs Public meetings held + comments sought for Climate Council's Draft Scoping Plan Climate Justice Fellowships for New Yorkers in underserved communities Guidance documents for living shorelines and using nature-based features for erosion control Resilience, Implementation, and Strategic Enhancements (RISE) - assessment tool to help communities identify gaps & opportunities in plans & policies.
New Jersey	Executive Order No. 100, directing the Department of Environmental Protection (DEP) to make sweeping regulatory reforms, branded as Protecting Against Climate Threats (PACT), to reduce emissions and adapt to climate change. With this executive action, New Jersey is the first state in the nation to pursue such a comprehensive and aggressive suite of climate change regulations.	Executive Order 89, Interagency Council on Climate Resilience	2020 NJ Scientific Report on Climate Change, 2021 NJ Draft Climate Change Resilience Strategy, 2020 NJ Global Warming Response Act 80x50 Report, Sea-Level Rise Guidance for NJ (June 2021)	Research and monitoring initiatives for offshore wind in relation to impacts and climate change; NJDEP and Rutgers University exploring opportunities to address ocean acidification impacts (https://njclimateresourcecenter.rutgers.edu/resources/opportunities-to-address-ocean-acidification-impacts-in-new-jersey/)	Interagency Council on Climate Resilience	2020 NJ Scientific Report on Climate Change, 2021 NJ Draft Climate Change Resilience Strategy, 2020 NJ Global Warming Response Act 80x50 Report, Sea-Level Rise Guidance for NJ (June 2021)	<ul style="list-style-type: none"> Recovery from Superstorm Sandy has incorporated resiliency to climate change. Office of Emergency Management (http://www.ready.nj.gov/) OEM is largely mitigation (not from a climate pollutant perspective but mitigation of flood conditions) Coastal Engineering projects Beneficial reuse pilot projects to raise marsh platforms Living shoreline/restoration projects 	Climate change-related community preparedness programs, social media outreach and education on climate change
Pennsylvania	Pennsylvania Climate Change Act, Climate Change Advisory Committee to the Department of Environmental Protection	Pennsylvania Climate Change Act, Climate Change Advisory Committee to the Department of Environmental Protection	Pennsylvania Climate Action Plan, Pennsylvania Climate Impacts Assessment			PFBC Strategic Plan 2020-2023; PA DCON Climate Change Adaptation and Mitigation Plan; 2015-2025 PA Wildlife Action Plan;		PA DEP Local Climate Action Program
Delaware	Delaware Renewable Energy Portfolio Standards Act (updated 2021); Region Greenhouse Gas Initiative; Joined U.S. Climate Alliance with greenhouse gas emissions goals by 2025	Executive Order 41 (2013) Preparing Delaware for Emerging Climate Impacts and Seizing Economic Opportunities from Reducing Emissions; Coastal Zone Act Amendments (2017)	Delaware's Climate Action Plan (2021); Delaware Climate Change Impact Assessment (2014); Climate Framework For Delaware (2014)	DNREC DAQ Greenhouse Gas Inventory; DNREC lead long term monitoring, Coastal Inundation Maps (updated 2017)	Resilient and Sustainable Communities League; DNREC Coastal Training Program	Delaware's Climate Action Plan (2021); State of Delaware All-Hazard Mitigation Plan (2018); Strategic Implementation Plan for Climate Change, Sustainability & Resilience for Transportation (2017); Delaware Wildlife Action Plan (2015)	Energy Efficiency and Clean Transportation Programs administered through DNREC DCCE; Resilient Community Partnership Grant Program; Delaware Coastal Flood Monitoring System	Actions supported in Delaware's Climate Action Plan; Resilient Community Partnership; DNREC/Delaware State Partnership to improve public engagement and environmental justice
Maryland	2009 (2016) Greenhouse Gas Emissions Reduction Act	Climate Change and CoastSmart Construction Executive Order, Maryland Commission on Climate Change, Mitigation WG, Adaptation WG	Maryland Commission on Climate Change Annual Reports 2015, 2016, 2017, 2018, 2019 (2020 in prep)	Mitigation Working Group, Adaptation Working Group, Scientific and Technical Working Group	The Working Groups under the MD Commission on Climate Change	2020 Greenhouse Gas Reduction Plan; Two-phase plan to reduce Maryland's vulnerability to climate change; 2015 State Wildlife Action Plan, local Nuisance Flood Plans, State Forest Management Plans, many municipal Climate Adaptation plans/Comprehensive plans	Resiliency through Restoration grant program, beneficial use of dredge material restoration program, Climate Resilience easements/strategic land acquisition	Education, Communication, Outreach Working Group, Environmental Justice Working Group
Virginia	Governor's Commission on Climate Change, Joined RGGI, Development of a statewide electric vehicle charging network and school bus replacement program, Virginia Clean Economy Act	Commonwealth Center for Recurrent Flooding Resiliency, Established the Virginia Coastal Resilience Technical Advisory Committee, Established a Chief Resilience Officer, Established the Governor's Conservation Cabinet	Virginia's Coastal Resilience Master Plan; www.asadptva.com .	Commonwealth Center for Recurrent Flooding Resiliency, Old Dominion Universities Institute for Coastal Adaptation and Resilience, Virginia Institute of Marine Science, Virginia Coastal Policy at William and Mary.	Commonwealth Center for Recurrent Flooding Resiliency; Hampton Roads Resilience Partnership, Virginia Coastal Resilience Technical Advisory Committee.	Updates to tidal wetlands and riparian buffer law to consider climate change and sea level rise in approved projects. Living shorelines are mandatory unless best available science says otherwise. New Tidal Wetlands Guidelines address coastal resiliency. Department of Transportation resiliency standards.	U.S. Department of Housing and Urban Development grant to support innovative resilience projects in the Ohio Creek Watershed; Resilience Partnership to reinvent the Hampton Roads region for water resiliency; State Code and tax incentives promote living shorelines, Incorporation of sea level rise and resiliency in wetlands and buffer laws. New Freeboard standard for all state owned buildings.	Commonwealth Center for Recurrent Flooding Resiliency, Virginia Institute of Marine Science Adaptva.org , Living Shoreline and Buffer Collaboratives, Virginia's Coastal Resiliency Master Plan.
North Carolina	Governor's EO80 - Climate Change Interagency Council	North Carolina Coastal Resource Commission Science Panel; Governor's EO80 - Climate Change Interagency Council; Natural Working Lands Subcommittees	North Carolina Coastal Resource Commission Science Panel completed five-year update of 2010 report in 2015; NC Climate Science Report (2020)	NC NERR and National Wildlife Refuge research - mostly hydrologic restoration and wetland mitigation on SLR; NC Sentinel Site Cooperative (NCSSC) - long-term monitoring of elevation change using surface elevation tables (SET). There are currently over 125 SETs throughout coastal NC generating information on the degree to which coastal marshes are keeping up with SLR.	Governor's EO80 - Climate Change Interagency Council; NC Office of Recovery and Resiliency	2015 State Wildlife Action Plan; 2016 update to NC's Coastal Habitat Protection Plan; Albemarle-Pamlico National Estuary Partnership 2012-2022 Comprehensive Conservation and Management Plan; NC NERR strategic plan; NC Climate Risk Assessment and Resilience Plan; Natural Working Lands Action Plan; CHPP 2021 Amendment	Recovery from hurricanes Matthew, Florence, and subsequent hurricanes has incorporated resiliency to climate change; NC Office of Recovery and Resiliency; Resilient Communities Program	APNEP actions include engaging state, regional, and local governments regarding SLR in their planning; NC Climate Risk Assessment and Resilience Plan; Natural Working Lands Action Plan; NC Office of Recovery and Resiliency; Resilient Communities Program

South Carolina	Indirect, but the 2019 Energy Freedom Act helped to remove barriers to increasing solar energy capacity in the state.	Does not explicitly refer to climate change, but the 2020 Disaster Relief and Resilience Act established the SC Office of Resilience, tasked with developing and implementing a Strategic Statewide Resilience and Risk Reduction Plan to coordinate efforts across agencies to increase resilience and recover from natural disasters; flooding is a focus area.	DNR Report (2013): Climate Change Impacts to Natural Resources in South Carolina; The 2018 South Carolina Hazard Mitigation Plan has a section on Sea Level Rise; The SC Emergency Management Division will include a more hazard-specific discussion of climate change in the 2023 Hazard Mitigation Plan (required by FEMA in order for the State Plan to be considered an Enhanced Hazard Mitigation Plan).	DNR is examining the effects of fluctuating climatic variables on key fishery species and estuarine habitat quality; The SC State Climatology Office is monitoring climatological trends and variability across the State (1900 – present).	The SC Sea Grant Consortium includes multiple state agencies as members and plays a convening and facilitation role, funds research, and provides technical assistance on climate issues; The Carolinas Integrated Sciences and Assessments RISA Team is based at the University of South Carolina; CISA organizes a biennial Carolinas Climate Resilience Conference which supports on-the-ground climate resilience efforts by providing managers and regional experts an opportunity to share lessons learned and discuss resources and tools for incorporating climate information into their work.	2015 State Wildlife Action Plan (Conservation Action Area 9: Climate Change)	Implementation of living shorelines by DNR to mitigate SLR; Inclusion of living shorelines in coastal zone regulations in 2021 (result of an ongoing collaboration between DNR and the coastal regulatory agency DHEC OCRM)	The SC Sea Grant Consortium and CISA do climate change outreach; The SC State Climatology Office hosted two climate related workshop series (in 2012 and 2017) in collaboration with CISA and the SC Water Resources Center; DNR Coastal Reserves and Outreach discusses sea level rise and coastal flooding in most of their outreach programs; The purpose of the Citadel's Center for Climate Studies is to enhance understanding of climate and its variability, change, and risks through education, research, outreach, and the development of public-private partnerships; the SC Department of Education added climate change to the state science standards in 2021. DNR provided training to State Park interpreters on communicating climate change; the DNR/ACE Basin NERR's multi-day Teachers on the Estuary and Climate Explorers programs directly address climate change research and monitoring; SC Dept. of Health and Environmental Control's SC Green Ribbon Schools recognizes schools that have reduced environmental impacts and provided hands-on learning experiences in sustainability, such as by reducing greenhouse gas emissions.
Georgia	Drawdown Georgia State-centered working Group led by Ray C. Anderson Foundation	Governor Brian Kemp adopted the State Hazard Mitigation Plan in April 2019, which included the impacts of Climate Change and Sea Level Rise for the first time in history. The Georgia Coastal Management Program along with Georgia Sea Grant hosts the Georgia Coastal hazards Community of Practice working group.	GA's Coastal Management Program Coastal Incentive Grant has funded 37 Climate related projects that have produced reports, tools, and plans. Coastal Bird SWG 2020 Interim Report:	There are 8 SLR and habitat monitoring sites along Georgia's coast. Climate Change Capacity Assessments have been completed for all 11 coastal counties. Completed vulnerability assessments for the 6 ocean-facing counties have begun in 2021.	Along with the Georgia Coastal hazards Community of Practice the state hosts a Living Shoreline Working Group and partners on the Georgia Climate Project team, the Southeast and Caribbean Disaster Resiliency Partnership.	2015 State Wildlife Action Plan, 2019 State Hazard Mitigation Plan, Disaster Recovery and Redevelopment Plans, State CDBG-DR/MIT Action Plan		2016 and 2021 Host for the Georgia Climate Conference "Minimizing Georgia's Risk, Maximizing Georgia's Future" funded by NOAA and DNR
Florida	No legislation or working group	Senate Bill 1954 (2021): Statewide Flooding and Sea Level Rise Resilience; Established the Florida Resilient Coastlines Program within the Florida Department of Environmental Protection's Office of Resilience and Coastal Protection; secured continued funding for local and regional resilience planning and natural infrastructure development in Florida's coastal and inland counties	Florida's Wildlife: On the Front Line of Climate Change; The Effects of Climate Change on Florida's Ocean and Coastal Resources, plus update in 2010; Sea Level Impact Projection (SLIP) Study https://floridadep.gov/rp/florida-resilient-coastlines-program/content/sea-level-impact-projection-slip-study	evaluation of adaptation required for all conservation and development projects/Coastal Habitat Integrated Monitoring and Mapping Program	Stakeholder summit held in 2008; Shoreline Resiliency Working Group; Southeast Florida Coral Reef Initiative; South Atlantic Alliance; Florida Estuarine Restoration Teams; Florida Resilient Coastline Program	2015 State Wildlife Action Plan/ SLIP Study and on-line assessment tool/estuarine habitat priority assessment tool/living shoreline sustainability tool being created for public use	funding has been provided to projects that support adaptive strategies, restoration, and enhancement of aquatic habitats via nature-based infrastructure	sponsored living shorelines summit; living shoreline training academy; living shoreline website for private property owners; Coastal Resilience Forum
12	15	15	14	14	15	13	15	
0	0	0	0	0	0	0	0	0
3	0	0	1	1	0	2	0	



A team from the Virginia Department of Game and Inland Fisheries uses electrofishing to monitor invasive blue catfish in the James River in 2011. (Photo by Matt Rath/Chesapeake Bay Program)

I. Introduction

This management strategy portrays the outcomes of an interactive workshop ([2020 Invasive Catfish Workshop](#)) held by the Invasive Catfish Workgroup at the Virginia Commonwealth University (VCU) Rice Rivers Center in Charles City, Virginia on January 29-30, 2020. The workshop convened a diverse group of stakeholders to share the current scientific understanding and priority issues associated with invasive catfishes in Chesapeake Bay. The perspectives shared and insights gained from the workshop were used to develop practical, synergistic recommendations that will improve management and mitigate impacts of these species across jurisdictions within the watershed.

Blue catfish (*Ictalurus furcatus*) and flathead catfish (*Pylodictis olivaris*) are native to the Ohio, Missouri, Mississippi, and Rio Grande river basins, and were introduced into the Virginia tributaries of Chesapeake Bay in the 1960s and 1970s to establish a recreational fishery. These non-native species have since spread, inhabiting nearly all major tributaries of the Bay watershed. Rapid range expansion and population growth, particularly of blue catfish, have led to increasing concerns about impacts on the ecology of the Chesapeake Bay ecosystem.

Blue and flathead catfishes are long-lived species that can negatively impact native species in Chesapeake Bay through predation and resource competition. Blue catfish are generalist feeders that prey on a wide variety of species that are locally abundant, including those of economic importance and conservation concern, such as blue crabs, alosines, Atlantic menhaden, American eels, and bay anchovy. Blue catfish may also outcompete native white catfish for prey, as the two species exhibit high dietary overlap (primarily bivalves) and native white catfish populations declined while blue catfish abundance increased in the region. The diet of flathead catfish consists primarily of ecologically important forage fishes including gizzard shad, river herring (i.e. blueback, alewife), and white perch. In addition to ecological impacts, invasive catfishes affect other fisheries by interfering with gill nets and pound nets and reducing catches of targeted species such as striped bass and white perch. The growing abundance and expansion of blue and flathead catfishes suggests that these two species have the potential to negatively impact important fishery resources (e.g. blue crabs, striped bass) and impede recovery efforts (e.g. American shad, river herring) in Chesapeake Bay.

II. Goal, Outcome, and Current Condition

This management strategy identifies approaches for achieving the following goal and outcome:



Sustainable Fisheries Goal

Protect, restore, and enhance finfish, shellfish, and other living resources, their habitats, and ecological relationships to sustain all fisheries and provide for a balanced ecosystem in the watershed and Bay.

Invasive Catfish Outcome

Reduce the abundance and mitigate the spread and ecological impacts of invasive catfishes in Chesapeake Bay through increased public education and awareness and development of fishery management strategies that ensure ecosystem health and productivity.

Current Condition

Introduction and Monitoring

Blue catfish were first introduced into the James, Rappahannock, and York rivers in Virginia in the 1970s and 1980s. Live transport (i.e. repeated introductions) and extended periods of high freshwater flow, combined with their high salinity tolerance, have since resulted in the spread of blue catfish to all major tributaries on the western shore of Chesapeake Bay as well as several tributaries on the eastern shore of Maryland and Delaware. Flathead catfish primarily occupy the fresher reaches of Chesapeake Bay tributaries. Since their introduction into the James River in the late 1960s, flathead catfish have been found in the upper reaches of the York and Rappahannock rivers in Virginia, the Potomac and Susquehanna rivers in Maryland, and throughout the Susquehanna and Schuylkill rivers in Pennsylvania.

Several jurisdictions and academic institutions across the Bay have monitored invasive catfish populations over the years to track changes in distribution and relative abundance, including the Virginia Institute of Marine Science (VIMS), Virginia Tech (VT), Penn State University (PSU), the Virginia Department of Game and Inland Fisheries (VDGIF), the Maryland Department of Natural Resources (MDNR), the DC Department of Energy and Environment (DOEE), and the Pennsylvania Fish and Boat Commission (PFBC). In 2013, VIMS researchers conducted a mark-recapture study to develop an

extrapolated abundance estimate of nearly 20 million blue catfish in the James River based on a density of 544 fish/hectare within a 12-kilometer study area. For comparison, population models developed by another group of scientists at VIMS estimated a total abundance of 145,000 (\pm 94,000) adult striped bass in the Rappahannock River in 2016. An additional cooperative study by VDGIF and VCU in 2015 estimated blue catfish densities of 1,127 and 565 fish/hectare in the Rappahannock and Pamunkey rivers, respectively. While flathead catfish are not as abundant nor as well-studied as blue catfish in Chesapeake Bay, they are of primary concern in the fresher waters of Pennsylvania, Maryland, and Virginia.

Recreational Fishery

Blue and flathead catfishes have supported valuable recreational fisheries in Virginia since their introduction in the 1960s and 1970s, and are particularly popular in the James River. VDGIF angler surveys indicate that 40% of recreational effort in the James River focuses on blue catfish, exceeding the popularity of other species such as largemouth bass, crappie, and shad (i.e. American, hickory). The James River recreational fishery supports guide services, with approximately 20 charter captains hosting clients from across the United States to catch trophy-sized catfishes. National and regional catfishing tournaments are also held on the James River annually, which may draw 200 or more participants for a single event. Although the total economic impact is difficult to evaluate, VDGIF estimated the economic value of the blue catfish recreational fishery in the James River to be \$2.5 million in 2002, which would exceed the ex-vessel value of the entire Virginia commercial fishery, assuming a price of \$0.60/pound and a maximum landings of 2.5 million pounds. However, participation in the recreational fishery on the James River has slowed in recent years, and the number of guides operating has decreased since reaching a peak in 2015. Decreased participation in the trophy fishery may be due to a decline in the number of trophy-sized catfishes, as the high densities of invasive catfishes in the established tributary result in decreased growth rates. However, this would only explain the recent decrease in trophy angling and not the decrease in overall recreational effort as captured by the VDGIF angler surveys.

The Potomac River is also a hotspot for recreational catfish angling, which occurs nearly year-round. Like the James River, at least four guide services run expeditions to provide patrons an opportunity to catch trophy-sized catfishes. Although the popularity of targeting blue catfish has not been quantified specifically, MDNR has estimated that catfishes (i.e. blue catfish, channel catfish, flathead catfish, bullheads, white catfish) comprised the second most popular targeted group of fish by tidal freshwater anglers in 2017, distantly second to black bass (*Micropterus* spp.). These fishing target estimates are similar to those estimated by MDNR surveys conducted 25 years ago.

While blue catfish are abundant throughout Chesapeake Bay tributaries, flathead catfish are less abundant and widespread, and are therefore caught less frequently by recreational anglers. Flathead catfish are currently most prevalent in Quantico Creek and portions of the non-tidal Potomac River, the lower Susquehanna River (below Conowingo Dam), and Conowingo Reservoir. Flathead catfish are typically consumed when caught in their native range, and MDNR has identified cases of flathead catfish consumption in the Chesapeake Bay sustenance fishery through angler intercepts and monitoring the [MDNR Angler's Log](#).

Commercial Fishery and Marketing

In the 2000s, low market demand and a lack of consumer awareness, as well as lower abundance, limited the commercial value and harvest of invasive catfishes in Chesapeake Bay. However, recent efforts in market development have increased demand of wild-caught blue catfish from the Bay and increased abundances have led to increased catch in commercial gear. As the population in the Potomac

River began to increase in abundance in the early 2010s, Maryland initiated an aggressive marketing campaign. Harvest of blue catfish biomass has been increasing since 2013, with approximately 53,000 pounds sold from Maryland rivers in 2018, not including the Potomac River. The Virginia Marine Resources Commission (VMRC) and the Potomac River Fisheries Commission (PRFC) also observed increases in harvests, with 1.4 million pounds of blue catfish harvested in the James River in 2012 and more than 1 million pounds of harvest each year from 2015-2017 in the Potomac River, respectively. In 2018, commercial harvest of blue catfish from the Potomac River was approximately 2.8 million pounds. To further expand commercial harvests, an experimental fishery using low-frequency electrofishing (LFE) was established in the James and Pamunkey rivers in 2014, and was found to be an efficient method of removal. Despite recent advances in marketing and harvest techniques, United States Department of Agriculture (USDA) inspection requirements mandated by the 2014 Farm Bill have reduced processing capabilities and, according to the processors, have created a bottleneck in the market.

Increased consumer awareness through programs such as Seafood Watch has allowed the commercial fishery for blue catfish to expand in recent years, with fillets being sold at grocery stores such as Whole Foods. The Maryland Departments of General Services, Agriculture, and Natural Resources successfully partnered in 2018 to establish a supply chain of blue catfish to state-owned institutions with food services, such as correctional facilities. Other supply chains to Maryland universities and small businesses are currently being considered, with such partnerships requiring support from watermen, fish processors, state regulators, vendors, and consumers. Flathead catfish, however, remain a marketing challenge. The unappealing, yellowish color of the fillets and the perception of flathead catfish as unpalatable, not to mention the difficulty of processing the fish, make establishing a commercial market particularly difficult. Therefore, flathead catfish currently only support recreational fisheries in Chesapeake Bay, but the Invasive Catfish Workgroup will explore opportunities to further expand markets for this species both regionally and internationally. It should also be noted, however, that flathead catfish are prolific in habitats that cannot be legally sampled with commercial gear and it is unlikely that commercial harvest will be a possible mechanism unless restrictive harvest regulations are first addressed.

Workgroup Efforts

In 2012, a previous workgroup called the Invasive Catfish Task Force was established by the Sustainable Fisheries Goal Implementation Team, and in 2014, the group developed a list of recommendations for jurisdictions to address invasive catfish issues Bay-wide, including:

- Targeted removal from priority areas
- Develop large-scale commercial fisheries
- Evaluate removal methods
- Develop monitoring and response plans
- Evaluate habitat connectivity
- Review fishing policies and regulations
- Develop communication strategies

At the 2020 Invasive Catfish Workshop, the Invasive Catfish Workgroup agreed to focus on several of these recommendations moving forward, particularly development of communication strategies to increase public awareness and market demand, and development of fisheries management strategies that will ensure ecosystem health and productivity. One of the primary goals of this management strategy is to examine the potential to use commercial and recreational harvest of invasive catfishes as a

means to reduce their abundance and mitigate their range expansion and ecological impacts. While this overarching goal pertains to both blue and flathead catfishes, the approaches recommended and/or implemented to reach this goal may differ for these two species, given their differences in abundance, distribution, and market demand. It should also be noted that there is a substantial degree of uncertainty in how this management strategy will play out long-term, given the current lack of population models, socio-economic data, and other pertinent information.

III. Participating Partners

Stakeholder Engagement

Stakeholder engagement is critical to ensure that the management strategy for invasive catfishes considers the needs and concerns of all interested parties. Catfish regulations, management plans, and public campaigns are the responsibility of the management jurisdictions. Academic institutions, non-profits, and federal agencies support research efforts to better understand the impacts of invasive catfishes and to increase public awareness. Commercial fishers, recreational anglers, processors, and marketing experts provide valuable insights on the interests of the public and seafood industry that may inform the development of effective fisheries management strategies.

The following stakeholders participated or expressed interest in the development of this management strategy.

Management Jurisdictions

- Atlantic States Marine Fisheries Commission (ASMFC)
- DC Department of Energy and Environment (DOEE)
- Delaware Department of Natural Resources and Environmental Control (DNREC)
- Maryland Department of Natural Resources (MDNR)
- Pennsylvania Fish and Boat Commission (PFBC)
- Potomac River Fisheries Commission (PRFC)
- Virginia Department of Game and Inland Fisheries (VDGIF)
- Virginia Marine Resources Commission (VMRC)

Participants and Interested Parties

- Chesapeake Bay Foundation (CBF)
- Chesapeake Bay Program (CBP)
- Commercial fishers
- James River Association (JRA)
- Maryland Department of Agriculture (MDA)
- Maryland Department of Environment (MDE)
- Maryland Sea Grant (MDSG)
- Mid-Atlantic Panel on Aquatic Invasive Species (MAPAIS)
- Morgan State University, Patuxent Environmental & Aquatic Research Laboratory (PEARL)
- National Oceanic and Atmospheric Administration, Chesapeake Bay Office (NCBO)
- Nixon Fishery Inc. (Wholesale/retail)

- Pamunkey Indian Tribe
- Pennsylvania Sea Grant (PASG)
- Recreational anglers
- Reliant Fish Co. (Processing/distribution)
- Smithsonian Environmental Research Center (SERC)
- The Nature Conservancy (TNC)
- United States Department of Agriculture (USDA)
- United States Fish and Wildlife Service (USFWS)
- United States Geological Survey (USGS)
- University of Maryland Center for Environmental Science (UMCES)
- University of Maryland Eastern Shore (UMES)
- Virginia Commonwealth University (VCU)
- Virginia Institute of Marine Science (VIMS)
- Virginia Marine Products Board
- Virginia Sea Grant (VASG)
- Virginia Tech (VT)
- Wide Net Project

IV. Factors Influencing Success

Invasive catfish populations and their associated fisheries are impacted by a variety of natural and human factors that present logistical, social, and economic challenges to meeting the objectives of this management strategy. While some of these factors may be addressed directly through this strategy, others will require managers and policy-makers to use the best available science to make informed management decisions. The following are factors that influence invasive catfish populations and the workgroup's ability to develop a strategy to meet the aforementioned outcome: reduce the abundance and mitigate the spread and ecological impacts of invasive catfishes in Chesapeake Bay through increased public education and awareness and development of fishery management strategies that ensure ecosystem health and productivity.

Ecology and Life History

The ecology and life-history characteristics of blue and flathead catfishes make them particularly successful invaders in Chesapeake Bay. These catfishes have a broad tolerance of environmental conditions. For example, blue catfish can survive low food rations for several months while maintaining body condition; furthermore, they can survive 3-day exposures to salinities up to 15.7 ppt. Flathead catfish have a similar salinity tolerance of up to 15.8 ppt. These catfishes are also long-lived and have a reproductive strategy that optimizes juvenile survival by producing large eggs and providing parental care. Both blue and flathead catfishes are opportunistic predators that feed on locally abundant species; blue catfish are generalist feeders, consuming a wide variety of fishes, invertebrates, and plants, while flathead catfish are largely piscivorous. These characteristics not only make blue and flathead catfishes successful invaders, but also present challenges to our ability to mitigate their spread and reduce their abundance and ecological impacts in Chesapeake Bay.

Climate Change

Climate change has shifted species distributions and altered the abundance of key species around the world, and is expected to significantly impact the Chesapeake Bay ecosystem in the coming years, including direct impacts on invasive catfish populations. The Bay region has experienced increases in mean water temperatures and increased frequency and severity of storm events that deliver freshwater input to the Bay. In particular, the Chesapeake Bay watershed experienced the wettest years on record in 2018 and 2019, resulting in an unprecedented range expansion of blue catfish. With continued increases in freshwater inputs, blue catfish are likely to continue their range expansion into and across the Bay and its tributaries, and could become established in new areas such as Delaware Bay by movement through the Chesapeake and Delaware (C&D) Canal. Increased freshwater inputs would also increase inputs of run-off into the Bay, leading to higher rates of eutrophication. While eutrophication is detrimental to many species, blue catfish are tolerant of eutrophic conditions and therefore may exploit these degraded habitats, leading to further increases in abundance. Flathead catfish did not exhibit the same response to the high freshwater flows in 2018 and 2019, possibly due to differences in behavior and habitat preference. Increasing water temperatures may result in increased invasive catfish biomass as warmer temperatures often promote faster growth rates. More than anything, the uncertainty surrounding climate change impacts will continue to pose a major challenge to fisheries managers as they work to control invasive catfish populations.

Scientific and Technical Understanding

To increase public education and awareness and develop effective fishery management strategies for invasive catfishes, managers and industry leaders throughout the region need to have a solid, science-based understanding of consumption benefits and risks, population dynamics, and other fishery characteristics (i.e. socio-economics, catch composition, catchability). More specific, quantitative information about the impacts of blue and flathead catfish predation and competition on native populations is also necessary to understand how these species affect the ecology of the Chesapeake Bay ecosystem. The lack of comprehensive scientific and technical studies on invasive catfishes in Chesapeake Bay poses a major challenge to fishery managers. This section identifies and describes topics surrounding invasive catfishes that require further scientific research in order to achieve the invasive catfish outcome.

Consumption Benefits and Risks

Increased and sustained market demand is necessary to develop and maintain commercial fisheries for invasive catfishes. Science-based information about the nutritional benefits and potential health risks of consumption is a key component of an effective marketing strategy that encourages people to eat more catfish. Coordinating consistent messaging about the benefits and risks of catfish consumption will be an essential aspect of public outreach and education programs once this information becomes available.

Population Dynamics

Despite various efforts to monitor and study invasive catfishes in tributaries across the Bay, scientists and managers still lack an in-depth understanding of blue and flathead catfish population dynamics. Population models with appropriate size- and age-structure and stock-recruitment relationships are necessary to develop reference points that will meet management objectives. Stage-based or age-based population models are also necessary to determine how changes in abundance (e.g. enhanced removals) may affect future population size and age structure. This requires an understanding of density-dependent growth and maturation rates, as well as estimates of both natural and fishing

mortality rates. Previous research on blue catfish has shown that growth rates and other aspects of population dynamics vary across Chesapeake Bay tributaries, which suggests that population models and estimates need to be developed individually for each system, and connectivity and movement between systems should be considered. Less is known about flathead catfish population biology; more research should be conducted if a fishery management strategy is to be developed for flathead catfish.

Understanding how environmental factors affect population dynamics (i.e. reproduction, recruitment) is also a critical research need, particularly in the face of climate change. Scientists and managers should consider how populations will respond to increasing water temperatures and freshwater inputs from more frequent and intense precipitation events. Such climate-related changes may also affect the efficiency of gears used to harvest catfishes (e.g. LFE). Identification of aggregation areas (i.e. spawning grounds, nursery habitats) may also improve harvest efficiency of catfishes through targeted removals.

Fishery Conditions and Economics

In addition to understanding population dynamics, managers need to monitor and assess fishery characteristics for effective management of invasive catfishes. Understanding annual harvest fluctuations and factors that affect fishery operations is critical to meet fishery management objectives. Managers are specifically interested in standardizing catch rates for LFE methods and collecting age- or size-based catch composition data. Exploitation rates and annual mortality rates may also be of interest to managers. An assessment model should be developed to estimate allowable harvests and fishing mortality rates based on management objectives.

Managers and other stakeholders also have great interest in quantifying the economic value of the commercial and recreational fisheries for invasive catfishes in Chesapeake Bay, as well as comparing these values with the values of harvests or recreational opportunities foregone due to invasive catfishes. There is particular interest in a comparative assessment of the economic value of trophy catfishes and their impacts on other important fisheries due to predation. To fully assess the trade-offs associated with different management options, it is necessary to determine the monetary value of ecological impacts, benefits from recreational angling, benefits from the development of a commercial fishery, and health impacts from consumption of large, potentially contaminated catfishes.

Ecological Impacts

The greatest concerns regarding invasive catfishes in the Chesapeake Bay region are the impacts on native species and habitat, particularly those that are managed or protected. Throughout the Bay, blue and flathead catfishes feed on ecologically and economically important species such as blue crabs and alosines. Although these prey species have been observed in gut contents, a lack of population data for many of these native species has made it difficult to quantify the impacts of invasive catfishes. Population estimates of blue and flathead catfishes as well as their native prey are necessary to truly understand the extent of the ecological impacts of invasive catfishes in the Chesapeake Bay ecosystem. Bioenergetics models can also be used to explore the effects of invasive catfish predation on native species; however, because of the generalist and opportunistic nature of the catfish diets, particularly blue catfish, such models may yield estimates of predatory impact with low precision. Nonetheless, current tools exist that could improve understanding of the ecological impacts of invasive catfishes in the absence of such information.

Partner Coordination

At the 2020 Invasive Catfish Workshop, it was agreed that the consideration and understanding of all stakeholder perspectives would be the key to developing a comprehensive and inclusive management strategy. Continued collaboration and coordinated support, particularly across jurisdictions, is critical for achieving our outcome of reducing the abundance and mitigating the spread and ecological impacts of invasive catfishes in Chesapeake Bay through increased public education and awareness and development of fisheries management strategies that ensure ecosystem health and productivity.

Public Engagement

Blue catfish are a tasty and nutritional source of protein, but a pervasive negative perception of blue catfish as a “dirty fish” has inhibited market demand and, consequently, limited harvest in Chesapeake Bay. Increasing market demand and recreational interest in blue catfish is necessary to develop and maintain profitable fisheries that remove biomass from the ecosystem. Therefore, public education and outreach campaigns that inform consumers and anglers about the palatability, nutritional value, health benefits, and ecological benefits of eating blue catfish are critical. Information about potential contaminant risk and consumption advisories for larger size classes of blue catfish should also be provided to the public. Maryland and Pennsylvania provide consumption advisories for flathead catfish, but further studies would be beneficial if jurisdictions want to market them for human consumption.

Policy and Regulations

Current federal policy and state-specific management regulations may be limiting commercial and recreational harvest of blue and flathead catfishes in the Chesapeake Bay region. In 2017, all catfishes were placed under the regulatory jurisdiction of the USDA’s Food Safety and Inspection Service, including wild-caught, domestic blue catfish. The establishment of this inspection program placed constraints on catfish processing in the Bay region. The mandatory inspections are typically scheduled for standard business hours, which is a reasonable condition for poultry, beef, and pork industries given their relatively predictable production and processing schedules. The harvest and processing of blue catfish, however, is much more variable, depending on weather and other environmental conditions, and often results in processors working unusual hours. In these instances, processors are required to pay costly overtime fees for inspectors in order to comply with the inspection regulation. Between the limited inspection hours and the unavoidable fees due to processing times, the number of blue catfish processors, particularly smaller operations, in the Chesapeake Bay region has significantly declined, placing constraints on the commercial fishery. It is worth noting that catfishes are the only wild-caught fishery species that are required to undergo this inspection process.

State-level management regulations, such as gear and harvest restrictions, also affect the ability to remove invasive catfish biomass. For example, Virginia and Pennsylvania do not currently allow use of recreational fish trotlines, and in Pennsylvania, invasive catfishes fall under the same hook-and-line creel limits as other populations in the Commonwealth where they are native.

Funding and Resources

Availability of funding, staff, and other resources limits the Invasive Catfish Workgroup’s ability to attain certain objectives of this outcome. Financial and staff support are required to conduct scientific research, establish and maintain monitoring programs, and develop and deliver effective education programs and marketing campaigns.

V. Current Efforts and Gaps

Scientific and Technical Understanding

Consumption Benefits and Risks

Understanding the health benefits and risks of catfish consumption is crucial to effectively market the product to consumers and increase market demand. In 2011, VIMS researchers conducted a study of contaminants in blue catfish in Virginia tributaries and the Potomac River, which found that larger fish tend to have higher contaminant concentrations; however, the correlation is relatively weak and varies by location. Fish from the upper reaches of the tributaries also tended to exhibit higher contaminant concentrations than fish from the lower reaches. Results from a nutritional study on blue catfish fillets will soon be released by Virginia Sea Grant, along with more contaminant information, to be used for marketing purposes. The Virginia Marine Advisory Service has also examined the feasibility of marketing blue catfish roe for human consumption.

In Maryland, the Department of Environment (MDE) has conducted contaminant studies of blue and flathead catfishes from various locations throughout Chesapeake Bay, and routinely tests tissues to establish consumption advisories, which are posted [online](#). A factsheet detailing nutritional information and fishing tips for blue catfish has been produced by the University of Maryland Eastern Shore and is currently being reviewed by MDE. This factsheet will be an important outreach product for consumers and others in the supply chain. MDNR and MDE are also exploring ways of preparing large catfish by removing red muscle to lower the contaminant risk, similar to recommendations for striped bass.

These efforts are a good starting point, but there is interest in gathering more location- and size-specific information about nutritional value and contaminant risk of blue catfish for consumers and anglers. More data are also needed to assess the health benefits and risks for different groups of people and methods of preparation (i.e. fillets vs. whole frying). Although flathead catfish are not widely available in commercial markets of the Mid-Atlantic region, MDE testing of flathead catfish from the Susquehanna River drainage for polychlorinated biphenyls (PCBs) has indicated that consumers are able to safely eat two meals per month. If jurisdictions want to explore the possibility of developing a market for flathead catfish, either regionally or internationally, more extensive nutrition and contaminant studies should be conducted throughout the Bay.

Population Dynamics

Several studies and surveys have been conducted to assess the relative abundance, growth, survival, and movement of invasive catfishes in Chesapeake Bay and its tributaries. These studies indicate that population characteristics vary spatially, suggesting that population models need to be developed for each tributary in order to generate reference points that will meet management objectives. However, critical information required for effective fishery management is still lacking. The following is a list of gaps identified by scientists and researchers throughout the Bay, and some of the efforts to address them.

Gaps:

- Population estimates, size- and age-structure, and stock-recruitment relationships for all major tributaries in Chesapeake Bay
- Estimates of harvest rates, effort, and economic value of the recreational fishery, including the trophy fishery

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- Detection probabilities associated with fishery-independent surveys
 - Better understanding of movement and connectivity between tributaries
 - Environmental effects on population dynamics (i.e. reproduction, recruitment)
 - Identification of aggregation areas (e.g. spawning grounds, nursery habitats) for targeted removal
 - Identification of fishery interests (i.e. commercial, trophy, consumption) in each major tributary of the Bay to inform tributary-specific management
 - Use of ecosystem models to examine trade-offs of management objectives and/or various harvest scenarios
 - Better understanding of flathead catfish biology, distribution, and population dynamics

Completed Efforts:

- VIMS tagging study estimated the population size of blue catfish in the James River
- VT developed indices of relative abundance for blue catfish in the James, York, and Rappahannock rivers and used results to assess predation impacts on native species
- SERC telemetry study examined blue catfish movement patterns and habitat use in the Patuxent River
- MDNR examined growth, maturation, age structure, and feeding habits of blue catfish in the Potomac River
- VIMS and MDNR tagging study examined blue catfish movement in the Potomac River
- VIMS conducted study on blue catfish salinity tolerance and modeled habitat suitability
- VIMS examined blue catfish growth, maturation, fecundity, metabolic rate, and body condition through a series of experiments and tributary-specific modeling exercises
- VT examined distribution, growth, and feeding habits of invasive catfishes

Ongoing Efforts:

- VCU collects abundance data in the James and Pamunkey rivers using LFE surveys
- VIMS trawl survey collects abundance and size (length) data in the James, York, and Rappahannock rivers
- VIMS ChesMMAAP survey collects abundance, size (length and weight), and age data from the mainstem of the Bay
- VDGIF conducts LFE surveys, angler surveys, and age and growth research
- MDNR collects presence/absence data from fisheries surveys
- PFBC conducts abundance surveys, age and growth analysis, and diet research for flathead catfish in cooperation with PSU
- MDNR collects blue catfish from the Potomac and Patuxent rivers for diet analysis
- MDNR collects flathead catfish from Conowingo Reservoir and lower Susquehanna River (below dam) to assess growth, age distribution, and feeding habits
- VT is developing a size-based assessment model for blue catfish
- VIMS is developing a full life-cycle bioenergetics model for blue catfish
- VIMS is conducting a diet study of blue catfish predation on blue crabs in the mesohaline portion of the James River

- MDNR tagging project aims to identify blue catfish spawning grounds and improve harvest efficiency of catfishes through targeted removals

Fishery Conditions and Economics

A key aspect of fishery management is the development and implementation of plans and regulations that are based on the best available science. This requires a solid understanding of the fishery characteristics including total harvest, catch compositions (i.e. age, size, sex), harvest locations, fishing effort, market price, and catchability. Much of this information is lacking for both blue and flathead catfishes in Chesapeake Bay. While MDNR receives some recreational catch and harvest data from their Volunteer Angler Survey, their online Angler's Log, and state record and award programs, sampling surveys that monitor and verify catch compositions throughout the Bay would provide further insight into fishery operations. A routine angler intercept survey is being planned for the Potomac River through a partnership between DOEE, VDGIF, and MDNR, which should begin in 2021.

Although managers and scientists have a solid understanding of factors that affect LFE catchability, more data on these factors (i.e. temperature, salinity) are needed to standardize catch rates. Population models and assessments for each fishery (e.g. James River blue catfish) would allow for estimation of allowable harvests and fishing mortality rates, and also improve understanding of annual harvest fluctuations. As mentioned in the previous section, a size-based assessment model for blue catfish is currently being developed by scientists at VT, which would support this endeavor.

Invasive catfish management can be optimized by assessing the economic value generated by both the commercial and recreational fisheries and the negative ecosystem impacts of invasive catfishes. Maryland Sea Grant researchers may conduct these economic analyses in the future. Chesapeake Bay ecosystem models may also provide some insight into this knowledge gap and may be used to inform fishery management objectives.

Ecological Impacts

Understanding and mitigating the ecological impacts of invasive catfishes on Chesapeake Bay's native species is one of the primary objectives of the Invasive Catfish Workgroup. While scientists have a good grasp of blue and flathead catfish diets (to a lesser extent in Pennsylvania) from studies conducted throughout the Bay, the information needed to quantify these predation impacts is lacking. To assess the impacts of catfish consumption on native species, scientists and managers require reliable abundance data and complex population models for both invasive catfishes and their prey species. VIMS and MDNR fisheries surveys can provide some of this information for blue catfish and their prey species, but these surveys are spatially limited to sampled tributaries; a Bay-wide analysis is not possible at this time without initiation of further sampling efforts. Scientists are also interested in evaluating how the magnitude of predatory impact changes as invasive catfishes grow and increase prey consumption.

Ecosystem models are useful tools that may identify ecosystem impacts of invasive catfishes in Chesapeake Bay. Given the tributary-specific population characteristics of invasive catfishes and the lack of funding needed to perform surveys and studies in every tributary, the application of these models could be a good first step in evaluating invasive catfish impacts. The greatest benefit of applying ecosystem model approaches is that they integrate the best available science (i.e. population dynamics, life history, predator-prey dynamics, habitat impacts) for invasive catfishes and other species to identify ecological impacts that might not otherwise be identified, or expected. Such approaches can also be important for identifying the most critical research gaps for meeting fishery management goals.

Two ecosystem modeling tools are currently available for the Chesapeake Bay system: the Chesapeake Atlantis Model (CAM), a Bay-wide biogeophysical model that includes predator-prey interactions; and the Chesapeake Bay Fisheries Ecosystem Model (CBFEM), a predator-prey mass-balance approach. Current versions of both models allow the spatial simulation of catfish populations in the major tributaries of each Chesapeake Bay jurisdiction, allowing animals to optimize their movements based on available resources. Both models can also estimate contaminant biomagnification and quantify effects of invasive catfishes on habitat (i.e. SAV) and other living resources. Ecosystem models and indicators developed from model estimates could inform the status, risk, and ecological impacts of invasion over time, and potentially assist in the development of triggers for management actions.

Partner Coordination

In 2019, the Invasive Catfish Workgroup was revitalized after the Sustainable Fisheries Goal Implementation Team expressed concerns about increasing abundances of invasive catfishes in the Chesapeake Bay region. The workgroup was reorganized to be collaborative and membership was expanded to include diverse interests; current members represent management jurisdictions throughout the watershed, commercial and recreational fishers, seafood processors and distributors, federal agencies, academic institutions, and conservation organizations. The primary objectives of the newly-established Invasive Catfish Workgroup were to: (1) coordinate, synthesize, and communicate scientific research on invasive catfishes in Chesapeake Bay; and (2) develop a science-based management strategy that mitigates the growth, spread, and negative impacts of invasive catfish populations in the Chesapeake Bay ecosystem.

In the past, conflicting interests among stakeholders hindered identification of a common goal and, consequently, the development of a management strategy for invasive catfishes in Chesapeake Bay. The 2020 Invasive Catfish Workshop aimed to overcome this challenge by bringing together all stakeholders to discuss their interests and develop collaborative solutions that could be implemented in a Bay-wide management strategy. The table below provides a summary of stakeholder interests in invasive catfishes as discussed at the workshop. Progress on this Bay-wide issue will be realized only with continued communication and coordination, particularly across jurisdictions and stakeholder groups.

Table 1. Summary of stakeholder interests identified at the 2020 Invasive Catfish Workshop.

Stakeholder Group	Blue Catfish	Flathead Catfish
Processors	Mid-sized fish: 19-28"	None
Commercial fishery	Small- to mid-sized fish: ≤ 30"	None
Recreational fishery	Trophy fish: ≥ 32" Consumption: ≤ 24"	Trophy fish: ≥ 32" Consumption: < 30"
Conservationists	Reduce biomass to minimize impacts	Reduce biomass to minimize impacts
Scientists	Provide best available science to guide development of effective fisheries management strategies	Provide best available science to guide development of effective fisheries management strategies

Note: These are averages based on notes from the workshop - there are some differences within stakeholder groups and across jurisdictions.

Public Engagement

In the last decade, consumption of Chesapeake Bay blue catfish has been promoted across the region through social media, seafood festivals, chef demonstrations, restaurant showcases, recipe sharing, and programs like Seafood Watch. For example, MDNR has hosted derbies and staffed outreach booths to promote harvest of invasive catfishes in partnership with the Maryland State Fair and Maryland Office of Tourism. Blue catfish have also been displayed at the Seafood Expo North America in Boston; the Virginia Marine Products Board will be providing samples of fillets at this expo, as well as the Seafood Expo Global, for the first time in 2021. Developing new partnerships with organizations focused on invasive species (e.g. Mid-Atlantic Panel on Aquatic Invasive Species), consumer education, and outreach could provide additional support for this strategy. Similar efforts should be considered for flathead catfish if jurisdictions choose to market the species for consumption.

Recreational angling could also be a powerful platform for public engagement. Several anglers and guides in Virginia are currently working to promote catfish angling both for recreation and consumption. Jurisdictions should continue to engage leaders of local recreational fishing communities and catfish guide operations (e.g. Discover the James) to provide outreach support and encourage recreational angling and consumption of invasive catfishes. In addition to sharing information about the benefits and risks of catfish consumption, these leaders can also educate anglers about the risks of live transport to help prevent the spread of invasive catfishes.

Policy and Regulations

The USDA inspection requirements for wild-caught Chesapeake Bay catfishes need to be addressed because current requirements appear to limit processing capabilities and, consequently, removal of biomass in the region. The 2020 Invasive Catfish Workshop initiated the conversation with USDA, but the workgroup will need to continue working with the USDA and local and state governments to create flexibility in the inspection process. Efforts are currently underway at the state level; for example, a [Senate bill](#) introduced in January 2020 that would exempt wild-caught catfishes from certain inspection requirements was passed in March 2020 and is now going through the House reading process.

Jurisdictions should also explore options for relaxing gear restrictions for blue and flathead catfishes to increase harvests. For example, Maryland does not currently restrict blue or flathead catfish harvest with creel limits, size limits, or seasonal limits. The state has recently permitted two new opportunities aimed at increasing harvest of invasive catfishes: (1) individuals may secure a \$15 permit to commercially harvest catfishes using trotlines in tidal waters; and (2) individuals may now harvest catfishes using jugs in tidal waters, in addition to other legal gear such as hook-and-line and bow-and-arrow. This new commercial license is much cheaper, and therefore more accessible, than other commercial licenses in Maryland (e.g. hook-and-line). States throughout the watershed also have regulations to help prevent the spread of blue and flathead catfishes in the Bay. For example, individuals are not permitted to release live invasive catfishes into a waterbody other than the one where it was caught, and individuals are not allowed to stock ponds or impounded waters without a stocking permit.

Funding and Resources

Several potential sources of funding and support for invasive catfish research and outreach were identified at the 2020 Invasive Catfish Workshop. Sea Grant, The Nature Conservancy (TNC), the Mid-Atlantic Panel on Aquatic Invasive Species (MAPAIS), and the United States Geological Survey (USGS) are interested in supporting research that will lead to improved understanding and mitigation of invasive

catfish impacts in the Chesapeake Bay region. Virginia Sea Grant has funded the research of at least two graduate students (VT, VIMS) whose dissertations focused on the ecology of blue catfish. USGS has provided telemetry equipment and molecular analysis support to MDNR diet and population studies in the Patuxent and Potomac rivers, and also coordinated an acquisition of \$27,000 in blue catfish research funds to MDNR from the Atlantic States Marine Fisheries Commission. MAPAIS distributes an annual request for proposals dedicated to invasive species research in the Mid-Atlantic region; however, these funds are limited (<\$10,000). Members of the Invasive Catfish Workgroup have expressed interest in submitting a proposal to MAPAIS to support invasive catfish outreach and education efforts. Annual funding to conduct invasive catfish work in Maryland has been obtained from the Aquatic Nuisance Species Task Force via the National Invasive Species Act and the United States Fish and Wildlife Service (USFWS) via the Sport Fish Conservation Act. The National Oceanic and Atmospheric Administration (NOAA) also offers funding for fishery development, marketing, and science supporting fishery sustainability through the annual Saltonstall-Kennedy Grant Program; several members of the workgroup have committed to submitting a blue catfish proposal for FY21.

VI. Management Approaches

At the 2020 Invasive Catfish Workshop, stakeholders identified and prioritized several approaches to address the gaps and factors influencing our ability to mitigate the spread and impacts of invasive catfishes in Chesapeake Bay. The Invasive Catfish Workgroup recommends the following actions and strategies to achieve the invasive catfish outcome.

Improve Public Awareness through Outreach and Marketing Campaigns

Public misperceptions and a lack of understanding are the greatest barriers to achieving the invasive catfish outcome. To address these challenges, the Invasive Catfish Workgroup recommends conducting coordinated outreach and marketing campaigns that aim to educate anglers and the general public about invasive catfishes in Chesapeake Bay. The primary objectives of this approach are to: (1) improve understanding of the ecological impacts of invasive catfishes in Chesapeake Bay; (2) increase market demand for blue catfish; and (3) increase participation in the recreational fishery for blue and flathead catfishes.

Clear, concise, and consistent messaging is the key to effective outreach and marketing campaigns. The following is a list of messages that the Invasive Catfish Workgroup recommends focusing on to meet the objectives of this management approach.

- Ecological impacts of invasive catfishes in the Bay
- Ecological benefits of harvesting invasive catfishes for consumption
- Taste and nutritional value of blue catfish
- Contaminant risk of consuming larger blue catfish with specific recommendations
- How to catch, clean, and cook blue catfish

Informative brochures and news articles, social media (e.g. Facebook, Twitter, YouTube), and outreach events (e.g. festivals, expos, conferences, fishing tournaments) will be the primary methods of communication to implement this strategy. Recreational angling and guide services should also be considered as a platform for education and outreach to get the public hooked on catfishing. For consistency in marketing, the Invasive Catfish Workgroup recommends developing a common brand

that can be used to promote Chesapeake Bay blue catfish products across the region as a healthy, eco-friendly choice (e.g. wild-caught Chesapeake Bay blue catfish).

While seemingly straightforward, we need to acknowledge two caveats to this approach. Flathead catfish are not currently on the market for human consumption, nor do we have the information required to develop effective outreach and management strategies for flathead catfish (i.e. nutritional value, contaminant risk). This approach is therefore primarily focused on blue catfish; however, other options for marketing flathead catfish, such as international trade, may be considered. It should also be acknowledged that standard communication methods may not reach underserved communities, such as subsistence fishers who are of greatest concern for contaminant consumption. Alternative methods of communication (i.e. signage at public access points) should be considered to overcome this barrier. Public surveys should also be distributed to evaluate and improve the effectiveness of outreach and marketing campaigns.

Remove Processing Barriers

A major barrier to developing consistent, profitable fisheries in Chesapeake Bay is the USDA inspection regulation, which is limiting the ability to process large volumes of blue catfish. The Invasive Catfish Workgroup recommends continued discussions with USDA representatives to explore the possibility of relaxing the inspection requirements for wild-caught, domestic catfishes to reduce costs to processors. The Invasive Catfish Workgroup also recommends continued communication about the concerns and impacts of this inspection regulation on the blue catfish fishery to the appropriate federal and state government officials. An economic impact analysis of the inspection requirements on the fishery would also strengthen the argument for an exemption.

Conduct and Synthesize Scientific Research

Science-based information is necessary to effectively market and manage invasive catfishes in Chesapeake Bay. A collaborative effort to synthesize the current knowledge of ecological impacts and evaluate options to quantify those impacts will be a key objective of the Invasive Catfish Workgroup. The workgroup recommends developing scorecards to indicate the status and risk of blue and flathead catfish invasions in each major tributary of the Bay to track their range expansion and potential ecosystem impacts. These indicators would likely be developed with the use of Chesapeake Bay ecosystem models, and may be coordinated with the Chesapeake Bay Program's Climate Assessment Model to better understand the effects of climate change on invasive catfish distribution. The catfish invasion scorecards could be used as a communication and management tool across the Bay, and could inform other workgroup indicators (e.g. forage, climate resilience). In addition to quantifying ecological impacts of invasive catfish, members of the workgroup should identify sources of population data and evaluate alternative survey methods for abundance data and early detection. Academic researchers, federal agencies (e.g. USGS), and other interested parties (e.g. TNC, Sea Grant) should collaborate on this effort and discuss the potential to leverage funding sources. Finally, modeling and assessing the economic benefits from both the commercial and recreational catfish fisheries should help inform optimal removal and allocation decisions.

Tributary-Specific Management

Development of management plans for invasive catfishes will be necessary to mitigate their spread and ecological impacts within the Chesapeake Bay watershed. Given the spatial variation in key population

rates (i.e. recruitment, growth, survival, reproduction) and contaminant concentrations, jurisdictions should develop a management plan that considers each tributary (population) individually. To develop effective, tributary-specific management plans, each jurisdiction should define their management objectives for each tributary. Management objectives may be determined with the use of Chesapeake Bay ecosystem models, which can examine economic and ecological trade-offs of invasive catfish removal throughout the Bay. Once management objectives are identified, the Invasive Catfish Workgroup will help compile and evaluate potential sources of data that can be used to generate preliminary population models and estimate targets for removals. These management plans may also reflect the catfish interests in a given location (i.e. consumption, trophy, commercial). For example, trophy angling would likely be a major consideration for invasive catfish management in the James River, but not necessarily the Patuxent River, where there are fewer trophy-sized fish. To determine the catfishing interests in each tributary, jurisdictions should assess existing fisheries data and/or work with leaders of the recreational angling community to conduct surveys to gather that information. Management plans that incorporate allowances for a particular type of fishery (e.g. consumption, trophy, commercial) should be based on the best available science. Jurisdictions should also evaluate the potential to incorporate flexibility in gear and catch limitations for invasive catfishes to promote greater harvest in appropriate locations.

VII. Monitoring and Assessing Progress

The Invasive Catfish Workgroup identified the following approaches that can be used to monitor and assess progress toward the invasive catfish outcome:

- Track sales of blue catfish
- Conduct public opinion and consumer surveys to evaluate effectiveness of outreach and marketing campaigns
- Collect data on recreational fisheries using angler surveys and voluntary reports to assess participation (i.e. trophy, consumption, general) and harvest characteristics (i.e. total harvest, species, gear, location)
- Track volume of blue catfish processed and/or the number of processors to assess processing capabilities
- Develop tributary-specific scorecard indicators to assess the status and/or risk of invasion by blue and flathead catfishes throughout the Bay
- Track research projects focused on blue and flathead catfishes
- Run ecosystem models (e.g. CAM, CBFEM) to evaluate competing interests and harvest scenarios for each tributary
- Develop management objectives for each major tributary
- Develop simplified, preliminary blue catfish population models for each tributary, using VT's assessment model framework

VIII. Adaptively Manage

The Invasive Catfish Workgroup is committed to adaptive management of blue and flathead catfishes in Chesapeake Bay. The workgroup will continually evaluate the effectiveness of these management

approaches in reaching outcome objectives based on fishery and ecosystem indicators. Specifically, the Invasive Catfish Workgroup will:

- Annually evaluate commercial and recreational fishery performance based on harvest levels, and work with jurisdictions to establish tributary-specific harvest targets
- Explore development of tributary-specific indicators and/or invasive catfish “report card”
- Recommend changes to the management strategy and advise jurisdictions on fishery management plans to better achieve the desired outcome as new science and information become available.

Appendix I

Table 1. A stoplight analysis of jurisdiction plans to implement approaches outlined in this management strategy. Each jurisdiction was asked to fill out their respective column with the appropriate color corresponding to their intentions. **Green** indicates that the jurisdiction is actively working on or planning to implement an approach in the near future. **Yellow** indicates that the jurisdiction is interested in implementing the approach, but not likely in the near future and may even require additional resources (but it's feasible). **Red** indicates that the jurisdiction does not support the approach and will not attempt to implement it, OR it is highly unlikely that sufficient resources will be available in the foreseeable future. An **X** indicates that the jurisdiction believes the action will require additional coordination and support from the Invasive Catfish Workgroup.

		DNREC	DOEE	MDNR	PFBC	PRFC	VDGIF	VMRC
Outreach and Marketing Campaigns	Print/Journalism	Green	TBD	Green	Green	Yellow	Green	Yellow
	Social Media	Yellow	TBD	Green	Yellow	Green	Green	Yellow
	Outreach Events	Yellow	TBD	Green	Red	Yellow	Green	Red
	Signage	Green	TBD	Green	Yellow	Yellow	Red	Red
	Common Branding	Red	TBD	Green	Red	Yellow	Green	Yellow
	International Trade	Red	TBD	Yellow	Red	Yellow	Green	Yellow
Remove Processing Barriers	Communicate w/ state/federal gov officials	Yellow	TBD	Green	Red	Green	Green	Green
	Economic impact analysis	Yellow	TBD	Yellow	Red	Yellow	Yellow	White
Scientific Research	Scorecard indicator	Yellow	TBD	Yellow	Red	?	Red	Yellow
	Ecosystem modeling of ecological impacts	Green	TBD	Green	Green	Yellow	Yellow	Yellow
	Economic assessment of optimal removal and allocation	Yellow	TBD	Red	Red	Yellow	Yellow	White
Tributary-Specific Management	Develop a management plan	Green	TBD	Green	Green	Red	Green	Yellow
	Consider tributaries individually	Green	TBD	Green	Green	Green	Green	Red
	Angler interest survey or assessment	Yellow	TBD	Green	Green	Green	Yellow	Yellow
	Ecosystem model application	Yellow	TBD	Red	Yellow	Green	Yellow	White

Table 2. Guiding questions developed to clarify the meaning of each management approach presented in the spotlight analysis.

Outreach and Marketing Campaigns	Print/Journalism	Will the jurisdiction develop print or online news articles, brochures, etc. to inform the public about invasive catfish issues (ecological impacts, consumption advisories, etc.)?
	Social Media	Will the jurisdiction create and/or share social media posts to spread awareness about invasive catfish issues in the Bay?
	Outreach Events	Will the jurisdiction coordinate and/or attend public events (seafood festivals, expos, conferences, tournaments, etc.) to spread awareness about invasive catfish issues in the Bay?
	Signage	Will the jurisdiction place signage at public access points to inform the public about invasive catfish presence, consumption, handling, etc.?
	Common Branding	Is the jurisdiction interested in developing/implementing a common brand for catfish in the Bay (e.g. wild-caught Chesapeake Bay blue catfish) in coordination with other relevant groups?
	International Trade	Is the jurisdiction interested in examining the potential to develop an international market for Chesapeake Bay blue and/or flathead catfish in coordination with other relevant groups?
Remove Processing Barriers	Communicate w/ state/federal gov officials	Will the jurisdiction communicate with state and/or federal government officials in an effort to create flexibility for invasive species in the USDA inspection requirements?
	Economic impact analysis	Will the jurisdiction conduct an economic impact analysis of the USDA inspection requirements on the fishery? Would the jurisdiction use this information to support arguments for an invasive species exemption?
Scientific Research	Scorecard indicator	Would the jurisdiction develop or use a scorecard indicator of invasive catfish status/risk as a communication and/or management tool?
	Ecosystem modeling of ecological impacts	Is the jurisdiction interested in developing or using an ecosystem model to examine tributary-specific ecological impacts of invasive catfish on native species?
	Economic assessment of optimal removal and allocation	Is the jurisdiction interested in developing or using an ecosystem model to examine tributary-specific tradeoffs of commercial and recreational harvest?
Tributary-Specific Management	Develop a management plan	Will the jurisdiction develop a management plan for invasive catfishes? Or include catfishes in an invasive species management plan?
	Consider tributaries individually	Will the jurisdiction consider each tributary as an individual population and tailor the management strategy to fit the needs of each tributary as appropriate?
	Angler interest survey or assessment	Will the jurisdiction conduct an angler interest survey or fishery assessment to determine the primary motivations for catfishing in each tributary/region (i.e. commercial, trophy, subsistence, general angling)? If yes, will these data be used to inform tributary management objectives?
	Ecosystem model application	Is the jurisdiction interested in developing or using an ecosystem model to determine tributary-specific economic and ecological tradeoffs of invasive catfish removals to determine optimal removal targets for individual tributaries?

Table 3. Additional comments about the stoplight analysis provided by each jurisdiction.

Comments	
DNREC	N/A
DOEE	TBD
MDNR	<p>Consensus among managers is to promote harvest and use of blue catfish as a new resource in the Bay while also regarding it as an invasive species. Managing the resource may include tributary-specific population metrics or ecosystem-based metrics, but these data are not currently collected and will require significant financial and staffing resources. Ongoing monitoring data or specific studies might inform a scorecard risk assessment per river, but these data are not currently comprehensive throughout the Bay and appropriate widespread monitoring is not possible without additional financial and staffing resources. However, if scorecards were available, then they should be used as part of outreach. Note, though invasive catfishes are considered a risk to the Bay ecosystem, in general, it may not be appropriate to assess risk of each particular river. It is not desired to invest financially into a comprehensive management strategy that maximizes harvest for recreational and commercial harvest and provide a trophy fishery. We placed x-marks for actions where regional or interstate coordination would improve the outcome, but these actions do not require regional or interstate coordination.</p>
PFBC	<p>Red values do not necessarily note that we would not support efforts, more that commercial fisheries do not exist in PA and so communication is a moot point or we don't have bay-specific jurisdiction. We are on board with most of the tributary-specific aspects (since we don't have bay "frontage"). We are still in data gathering mode so still acquiring data to inform most questions.</p>
PRFC	<p>PRFC Commissioners have discussed the concept of developing a management plan for invasive catfish for PRFC jurisdictional waters. While not opposed in principle, it was determined that staff do not have sufficient time and resources to engage in such an effort and it might be prudent to wait to see the outcome of MD's efforts on an ICMP.</p>
VDGIF	<p>Some concern about broad nature of Outreach items. Support science based management that considers importance and impact of recreational fishery. Operate within the bounds of our jurisdiction (i.e. seafood festivals).</p>
VMRC	<p>Would like to see a regional approach in developing a management plan. Three jurisdictions have an interest in VA catfish management (VMRC, DWR - formerly DGIF, and PRFC). Any activities, policies, and management should be a cooperative effort between the three.</p>