

**PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
HORSESHOE CRAB MANAGEMENT BOARD**

**The Westin Crystal City
Arlington, Virginia**

August 3, 2022

Approved November 10, 2022

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1. **Move to approve Agenda** by Consent (Page 1).
2. **Move to approve Proceedings of May 3, 2022** by Consent (Page 1).
3. **Move to approve Draft Addendum VIII for public comment** (Page 7). Motion by Roy Miller; second by Mike Luisi. Motion carried (15 in favor) (Page 17).
4. **Move to approve Horseshoe Crab Advisory Panel nominations for David Meservey from Massachusetts, and Jordan Giuttari and Matt Sarver from Delaware** (Page 23). Motion by Dan McKiernan; second by Emerson Hasbrouck. Motion approved by consent (Page 23).
5. **Move to elect Dr. Justin Davis of Connecticut as Vice-chair of the Horseshoe Crab Management Board** (Page 23). Motion by Joe Cimino; second by Jim Gilmore. Motion approved by consent (Page 23).
6. **Motion to adjourn** by Consent (Page 23).

ATTENDANCE

Board Members

| | |
|--|---|
| Dan McKiernan, MA (AA) | Mike Luisi, MD, Administrative proxy |
| Raymond Kane, MA (GA) | Russell Dize, MD (GA) |
| Sarah Ferrara, MA, proxy for Rep. Peake (LA) | Pat Geer, VA, proxy for J. Green (AA) |
| Conor McManus, RI, proxy for J. McNamee (AA) | Bryan Plumlee, VA (GA) |
| David Borden, RI (GA) | Chris Batsavage, NC, proxy for K. Rawls (AA) |
| Eric Reid, RI, proxy for Sen. Sosnowski (LA) | Jerry Mannen, NC (GA) |
| Justin Davis, CT (AA) | Mel Bell, SC (AA) |
| Bill Hyatt, CT (GA) | Malcolm Rhodes, SC (GA) |
| Sen. Craig Miner, CT (LA) | Chris McDonough, SC, proxy for Sen. Cromer (LA) |
| Jim Gilmore, NY (AA) | Doug Haymans, GA (AA) |
| Emerson Hasbrouck, NY (GA) | Spud Woodward, GA (GA) |
| Joe Cimino, NJ (AA) | Erika Burgess, FL, proxy for J. McCawley (AA) |
| Tom Fote, NJ (GA) | Gary Jennings, FL (GA) |
| Peter Clarke, NJ, proxy for T. Fote (GA) | Marty Gary, PRFC |
| John Clark, DE (AA) | Chris Wright, NMFS |
| Roy Miller, DE (GA) | Rick Jacobson, US FWS |

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

Ex-Officio Members

| | |
|---|--|
| Natalie Ameral, Technical Committee Chair | Nick Couch, Law Enforcement Representative |
| Brett Hoffmeister, Advisory Panel Chair | |

Staff

| | | |
|----------------|-----------------|----------------|
| Robert Beal | Kristen Anstead | Adam Lee |
| Toni Kerns | Lindsey Aubart | Sarah Murray |
| Maya Drzewicki | Lisa Havel | Heather Power |
| Tina Berger | Chris Jacobs | Caitlin Starks |
| Pat Campfield | Jeff Kipp | |

Guests

| | | |
|--------------------------------|----------------------------------|-----------------------------|
| Pat Augustine, Coram, NY | Diane Bynum | Jacob Espittia, FL FWC |
| Linda Barry, NJ DEP | Nicole Caudell, MD DNR | Sheila Eyler, US FWS |
| Rachel Barrales, Cape Cod CFA | Mike Celestino, NJ DEP | Catherine Fede, NYS DEC |
| Meredith Bartron, US FWS | Laura Chamberlin | James Fletcher |
| Henrietta Bellman, DE DFW | Kristin Comolli, DE DFW | Angela Giuliano, MD DNR |
| Ruth Bergstrom | Margaret Conroy, DE DFW | Dave Grant |
| Alan Bianchi, NC DENR | Heather Corbett, NJ DEP | Ellie Gruber |
| Nora Blair, Charles River Labs | Deborah Cramer | Helen Takade-Heumacher, EDF |
| John Bloomfield | Claire Crowley, FL FWC | Harry Hornick, MD DNR |
| Jeff Brust, NJ DEP | Tim Dillingham, Littoral Society | Jessie Hornstein, NYS DEC |

Guests (continued)

Lani Hummel
Christian Hunt
Aidan Kaiser-Bulmash
Adam Kenyon, VMRC
Karen Knotts, USGA
Rob LaFrance, Quinnipiac Univ
Lynn Lankshear, NOAA
Christina Lecker, Fuji Film
Benjamin Levitan, EarthJustice
Tom Lilly
Susan Linder
Olivia Liu
Loren Lustig, PA (GA)
Samantha MacQuesten, NJ DEP
Shanna Madsen, VMRC
Jennifer Malpass, US Geo. Survey
John Maniscalco, NYS DEC
Cathy McConnell, OptOnline
Kim McKown, NYS DEC
Nichola Meserve, MA DMF
David Meservey, Chatham, MA
Steve Meyers
Mike Millard

Kirby Rootes-Murdy USGS
Josh Newhard, US FWS
Thomas Newman
Tamara O'Connell, MD DNR
George O'Donnell, MD DNR
Joanne Pannone
Derek Perry, MA DMF
Jessica Ponder, PCRM
Jill Ramsey, VMRC
Kathy Rawls, NC (AA)
Harry Rickabaugh, MD DNR
Karla Rossini
Mike Ruccio, NOAA
Dan Ryan, DC
Matthew Sarver
Amy Schueller, NMFS
Chris Scott, NYS DEC
Ross Self, SC DNR
Jeff Shenot, NOAA
Ethan Simpson, VMRC
Somers Smott, VMRC
Renee St. Amand, CT DEP
David Stormer, DE DFW

John Sweka, US FWS
Toni Rose Tablante, Littoral
Society
Joseph Tricarico
Corinne Truesdale, RI DEM
Christina Vaeth
Carly Valco
Scott Curatolo Wagemann,
Cornell
Mike Waine, ASA
Wendy Walsh, US FWS
Ritchie White, NH (GA)
Quinn Whitesall, Littoral Society
Kelly Whitmore, MA DMF
Kristoffer Whitney, RIT
Meredith Whitten, NC DENR
Chris Wright, NOAA
Jennifer Zarcone
Faith Zerbe, DE Riverkeeper
Erik Zlokovitz, MD DNR
Renee Zobel, NH F&G

The Horseshoe Crab Management Board of the Atlantic States Marine Fisheries Commission convened in the Jefferson Ballroom of the Westin Crystal City Hotel, Arlington, Virginia, via hybrid meeting, in-person and webinar; Wednesday, August 3, 2022, and was called to order at 10:15 a.m. by Chair John Clark.

CALL TO ORDER

CHAIR JOHN CLARK: Welcome, everybody. This is the call to order for the Horseshoe Crab Management Board. I'm John Clark, I'm the Administrative Commissioner from the fabulous first state, and I will be chairing this meeting.

APPROVAL OF AGENDA

CHAIR CLARK: We will now move on to our Board consent items. Does anybody have any changes to the agenda?

I do not see any, so we will consider that approved by consent.

APPROVAL OF PROCEEDINGS

CHAIR CLARK: Everybody has had a chance to look at the proceedings from the May, 2022 meeting, does anybody have any revisions to the proceedings? Not seeing any; those are approved by consent.

PUBLIC COMMENT

CHAIR CLARK: We'll move on to the next item, Public Comment, and this is public comment for items that are not on the agenda.

We know there is a lot of interest in the next agenda item, and when we discuss that we will take public comment on that item. But right now, this is public comment on items that are not on the agenda.

CONSIDER DRAFT ADDENDUM VII ON THE IMPLEMENTATION OF RECOMMENDED CHANGES FROM THE 2021 ADAPTIVE RESOURCE MANAGEMENT REVISION AND PEER REVIEW REPORT FOR PUBLIC COMMENT

CHAIR CLARK: I don't see any hands, we don't have any sign ups, so now we'll move on to the next item. That is to consider Draft Addendum VII on the implementation of recommended changes from the 2021 Adaptive Resource Management Revision and Peer Review Report for Public Comment.

As you know, we approved the ARM for management use at the January Board meeting, and we approved starting the Draft Addendum at the May meeting, and so now Caitlin is going to bring us up to speed as to where we are now and where we will be going next. Thank you, take it away, Caitlin.

MS. CAITLIN STARKS: Thanks, John did a quick summary of where we are, but for the presentation today I'm just going to cover some of that background leading up to this meeting, and then review the recommended changes to the ARM that are being considered in the Addendum.

The proposed action timeline, the proposed management options, and then finally wrap up with the Board action for consideration and next steps. Just as a refresher, on the current management process, Addendum VII to the Horseshoe Crab FMP established the Adaptive Resource Management or ARM Framework for recommending bait harvest quotas for the Delaware Bay Region, and under Addendum VII the ARM annually recommends a bait harvest package, which is based on the abundance of both horseshoe crab and red knot. As you all know, this ARM went through a revision process and peer review process, which the Board accepted in January, 2022. Through that process the ARM was updated to address some of the peer review critiques that were made about the original ARM framework.

It includes new data sources to improve the models, and also adopt a new modeling software to replace the previously used program, which is now obsolete

and can no longer be used to run the ARM model. At that January meeting, the Board also initiated Draft Addendum VIII to consider using the revised ARM to set the annual specifications for horseshoe crabs of Delaware Bay origin, which is what the Board is discussing today.

This slide shows the conceptual model of the ARM framework, which I just wanted to briefly show to remind everyone how it works. You can see the ARM involved the population models for both horseshoe crabs and for red knots, which incorporates survey data for both species.

In the ARM revision, the major changes that were made to the whole framework were improvements to the horseshoe crab population dynamics model, and the red knot population dynamics model, revised reward function that relates those two, and the transition to the new software, as well as harvest recommendations on a continuous scale, rather than discreet harvest packages, and the model can now be more easily updated with new data.

I want to note here that through that review process the conceptual model of horseshoe crab abundance influencing red knot survival and reproduction has been maintained, to ensure that the abundance of horseshoe crabs does not become a limiting factor for the population growth of red knots.

This is our current timeline for Draft Addendum VIII. The Board initiated the Addendum in January, and since then the PDT or Plan Development Team has met a number of times and developed the Draft Addendum document before you today. Today the Board will consider Draft Addendum VIII for public comment. If it is approved today, the public comment period could occur in September or late August through September, and the Board could meet again in November, 2022 to consider final action on the Addendum.

Within the Draft Addendum we have two main options. Option A would be a no action option, and Option B would be to use the revised ARM for

management, to set bait harvest specifications for the Delaware Bay. For Option A, we used the no action option, because true status quo is no longer an option, due to the fact that the previous ARM model and the software that was used for it is now outdated, and it cannot be updated.

This means it is no longer adaptive resource management. Option B would incorporate all of the changes that were recommended in the 2021 ARM Revision and in the peer review, in terms of the data and model updates. But the general structure of how the ARM optimal harvest recommendation is allocated among the four Delaware Bay states would essentially be the same. I'll go over exactly what the proposed changes are in a few slides. Under Option A, if we take no action the management would revert back to the provisions of Addendum VI, and this means the quotas for the four states of New Jersey through Virginia would go back to what is shown in this table. In addition to those quotas, Addendum VI prohibits directed harvest and landing of all horseshoe crabs in New Jersey and Delaware from January 1, through June 7, and it prohibits female horseshoe crab harvest in New Jersey and Delaware for the remainder of the year from June 8 to December 31.

It also prohibits the landing of horseshoe crabs in Virginia from federal waters from January 1 through June 7, and it mandates that no more than 40 percent of Virginia's annual quota may be harvested east of the COLREGS line in ocean waters, and it also requires that horseshoe crabs harvested east of the COLREGS line and landed in Virginia must be comprised of a minimum male to female ration of 2 to 1.

Alternatively, Option B would adopt the changes recommended in the 2021 ARM revision, and going forward the revised ARM would be used for recommending and setting the bait harvest specifications for Delaware Bay origin horseshoe crab. Option B addresses each of the aspects that were established in Addendum 7, related to how harvest specifications are set.

This includes the harvest recommendations that come out of the ARM. The adaptive management cycle, the percent harvest of Delaware Bay origin crab for each state, and then the state allocations and fallback options. I'm going to walk through each of these one by one, and review what's proposed in Draft Addendum VIII.

First on the issue of harvest recommendations, the Addendum proposes that the revised ARM be used to annually recommend the optimal harvest levels for males and females. I want to note that the maximum number of males and females that the ARM can recommend is the same as before at 500,000 males and 210,000 females.

However, where the original ARM recommended 1 of 5 discreet harvest packages of males and females, the revised ARM recommends sex-specific harvest levels on a continuous scale. That means that the optimal harvest recommendation for males and females could be any number from 0 to the maximum amount of males and females.

For this issue there are two sub-options that would take that optimal harvest output from the ARM for each sex, and round it down to the nearest 25 or 50,000 crabs. Rounding the harvest recommendation to some degree is necessary, because Delaware Bay specific biomedical data, which is confidential, would be fed into the model.

Rounding that output would prevent anyone from being able to back calculate the biomedical mortality input data. Sub-Option B1 would generally result in a harvest recommendation that is closer to the optimal harvest, and Sub-Option B2 would generally result in a more conservative harvest recommendation.

But one clarification here to add is that if the ARM does recommend the maximum amount for either males or females, rounding would not be necessary to protect the confidential data, because in that case you're already doing that by limiting it to the maximum. This table shows what the harvest recommendations for 2017 through 2019 would have been if they had been produced with the

revised ARM. As a note, in these examples the CMSA or Catch Multiple Survey Model uses the coastwide biomedical mortality data, rather than Delaware Bay specific data. This means these numbers are slightly overestimated from what would come out of the model if we used the Delaware Bay specific biomedical data.

As you can see here, each of these years the ARM recommends a maximum amount of male harvest and a varying amount of female harvest around 150,000 crabs. Using the 2019 optimal harvest recommendation from the last slide, which are shown again in the uppermost table here. The lower two tables below that show what each of the two sub-options for rounding would produce for the final harvest recommendation.

Under B1 the optimal harvest of 144,803 crabs gets rounded down to 125,000 crabs, and under B2 the female harvest gets rounded down to 100,000 crabs. As I noted before, the male harvest does not get rounded down, because it's already being capped at 500,000, and so the biomedical mortality data could not be back calculated.

This is the second item under Option B and it is the management process for using the ARM framework, so it's slightly modified from the text in Addendum VII to more clearly describe each of the steps of the short- and long-term management process in ARM revision process. Under the Option B there is a three-level process that would be adopted, including an annual management process, an interim update process, and a revision process.

The annual management process is basically the same as the annual cycle described in Addendum VII, which is what we use now, where the ARM framework is used to produce harvest recommendations for the upcoming fishing year. The interim update process is a new addition, and that is that every three years the model parameters, including things like red knot survival and recruitment and horseshoe crab stock recruitment relationships would be updated based on the most recent years of data that are routinely collected for the region.

Then the third level is a more intensive revision process that would occur every 9 or 10 years, or sooner if desired by the Board, in which the ARM framework would undergo a revision process similar to what occurred for the 2021 ARM revision. This 9-to-10-year timeline was selected, because it allows for two interim updates to occur, and it also encompasses a generation for horseshoe crab.

Our third issue is the proportion of harvest that is of Delaware Bay origin for each state, and this value is called Lambda. As the 2021 revision recommends, Option B would update the Lambda values for each state based on more recent genetic data, and this would result in decreases to the proportion of Maryland and Virginia's harvest that is assumed to be of Delaware Bay origin, and Delaware and New Jersey's proportions would remain unchanged.

As you'll see shortly, these Lambda values do affect the state-by-state allocations of the overall Delaware Bay quota. This is a comparison of the current Lambda values that are used in the original ARM in Addendum VII, with the proposed updated Lambda values. The fourth issue is the methodology for calculating the state allocations of the total Delaware Bay harvest. Under Option B in Draft Addendum VIII, the only change to the allocation methodology from Addendum VII is that those updated Lambda values would be used, which results in new allocation weights for each state. With this change the new state allocations of the Delaware Bay harvest limit would be shown in the top table, and with the change the allocations for New Jersey and Delaware slightly increased, and the allocations for Maryland and Virginia slightly decrease.

The other two aspects of the state allocations, which are the harvest cap provision and the 2:1 male/female offset provision would remain status quo from Addendum VII under option B. Just to describe what those are, the harvest cap for Maryland and Virginia limits the total level of allowed harvest by those two states, in order to provide some protection to crabs that are not of Delaware Bay origin.

The caps are shown in the bottom table, and those were based on Addendum VI quota levels for Maryland and Virginia. These caps do not apply when the ARM framework outputs and optimized harvest output prohibits female harvest of horseshoe crab. As a result, to date these harvest caps have not come into play, because since the original ARM was implemented, it has not recommended female harvest.

The two-to-one offset is relevant when the ARM recommends zero female crab harvest for the Delaware Bay. When that recommended female harvest is zero, this provision allows a two-to-one offset of males to females, which means the total male harvest allocation of Maryland and Virginia is increased at a two-to-one ratio, and it's allowed to rise above the cap level.

Again here, we're only talking about Virginia's quota for crabs east of the COLREGS line, for clarity. These are the state allocations under Addendum VII, compared with the proposed allocations under Addendum VIII. This is as an example to show you if the total harvest quota for Delaware Bay that comes out of the ARM is 500,000 males and 100,000 females.

The breakdown among the four states would look like this. This is just the Delaware Bay portion of the state's quotas, not their total quotas when you add in non-Delaware Bay origin crab. I'm going to go to the next slide and show you, on this slide you can see both the Delaware Bay origin quotas, which are on the left in blue, and the total quotas on the right in orange. These totals include the non-Delaware Bay origin crabs. You can see for each of the states, using the revised allocation.

Delaware and New Jersey are the same on both sides, because 100 percent of their harvest is considered Delaware Bay origin crab, while Maryland and Virginia's overall quotas, which are in red, are greater than their Delaware Bay only quotas to account for those additional crabs in their harvest that are not of Delaware Bay origin. I also want to note in this example that the harvest cap for Maryland and Virginia are being applied,

because there is female harvest recommended in this example.

The other thing I want to note is that Maryland and Virginia's overall quotas end up being the same as what was in Addendum IV and VI, and the quota for Virginia shown here is just the quota for east of the COLREGS line. The last item in Option B is the fallback option for if the ARM cannot provide a harvest recommendation in a given year. Option B includes the same fallback options as Addendum VII, which is that if in a given year there is not enough data, if a model cannot produce a harvest recommendation, the next year's harvest may be set either based on Addendum VI quotas and management measures for New Jersey, Delaware, Maryland and Virginia coastal waters, or it can be based on the previous year's ARM framework harvest level and allocation for the four states.

Beyond that language the section is just updated to reflect the new datasets that are required for running the revised ARM model, but this is essentially the same as Addendum VII. This is the tentative timeline for the next steps for Draft Addendum VIII. Today again, the Board will consider the document for public comment.

If it's approved today public hearings could be held in September, and the Board could consider the Addendum for final approval at the annual meeting in November this year. With that the two things the Board could choose to do today are to specify any desired changes to the document before releasing it for public comment, and to consider approval of the Addendum for public comment. That's my last slide, I'm happy to take any questions.

CHAIR CLARK: Thank you, Caitlin. If we have questions at this point, and I was remiss before, I wanted to point out that also up here we have Kristen Anstead, who led the ARM development process here, which has been phenomenal. We also have Brett Hoffmeister, who is head of the Advisory Panel for Horseshoe Crab. Does anybody have any questions for Caitlin about the Addendum? Yes, Justin.

DR. JUSTIN DAVIS: I'm hoping Commission staff might be able to speak to the letter that was received from Earth Justice, with the records request, because it seems like that is something we should discuss, as part of this discussion of whether to send the Addendum out for public comment at this point.

As I understood that letter, it was referencing a records request to the Commission and to USGS and U.S. Fish and Wildlife Service, and also asking that this body delay sending the Addendum out for public comment until that records request is met, and the information could be considered. I'm just wondering if Commission staff could speak to how the Commission responded or plans to respond to that request.

You know issues around data confidentiality, that might be relative to that request, and also kind of considerations for what meeting this request or not meeting it, or meeting it partially could mean for sort of the future of the science program that we're conducting here for this species, or even assessments for other species. That's a whole host of stuff, but I'm just kind of hoping someone can speak to that.

CHAIR CLARK: Somebody else is up here that can answer these questions, and it's Toni Kerns, so Toni, do you want to take that?

MS. TONI KERNS: Thank you for the question, Justin. The Commission did receive an information request. It was the first request after we posted our new policy on information requests from Earth Justice. We responded back to Earth Justice on all parts of the information they requested, either with the data or where to reach out to receive the data. What the Commission did provide was information that we own, I guess you would call it, or information that the Commission created in-house. For the models that use the ARM, I would call it that we have three main models for that.

The CMSA model, which is what we use to assess the population, is the model that the Commission owns, so we did provide that to the requesters, as

well as, Kristen will inform me if I say this wrong, but the data that was used in the run itself. If you use the raw data, some of that raw data could be confidential, or it's not proprietary to the Commission, because we did not collect that data. We pointed out to them on raw datasets that are used in that, and who it was at the state or federal agency or university that they could make that request to them from. The other two models are not property of the Commission, and they are for USGS, and so we sent them to USGS for that information.

USGS is responding to a very similar FOIA request for them, as well as U.S. Fish and Wildlife Service. In terms of if all of the models were provided to the requesters. As I said before, there are confidential data sources in these models, so the requesters would not be able to receive that confidential information, so they would not be able to replicate the exact runs that the ARM Subcommittee did use because of that.

I will also just point out that in terms of transparency, that question was asked of us earlier at the Executive Committee. The Commission did send out a press release notifying that the ARM Peer Review would be happening. That peer review was open to the public. It was posted on the calendar as well, and anybody that wanted to follow along on how the ARM worked, minority reports that were asked of the Committee, could have done so.

There is public comment during those peer reviews. We went back and looked, and we did not have very many of the public in attendance for those that are asking these questions of the Commission at this time. I'm trying to make sure I'm hitting on all the points that you raised. Am I missing anything that you were hoping to receive, Justin?

CHAIR CLARK: Want to follow up, Justin?

DR. DAVIS: No, I think that pretty much covers it, and I guess to summarize. It would be fair to say that at this point the Commission has released any information that is proprietary to the Commission,

non-confidential that we can release, including some models, so that the models even without the source data. Somebody could look at the modeling code and see how the models work, and that we directed the requester for those sources of information we couldn't provide to where they could go request that information from outside the Commission.

MS. KERNS: John, one more piece.

CHAIR CLARK: Sure thing, Toni.

MS. KERNS: I'll just note that some of the questions that are being raised on the different, I guess data information that there are discrepancies on. Some of that was brought up in these minority reports. The Peer Review looked at those, addressed them, sensitivity analyses were done on those.

That's all in the Peer Review Report, which is posted to the Commission's web page, and those questions could be asked of Committee members as well if people wanted to have more information on this. But we haven't received any specific questions about those minority reports or the Peer Review's review of them.

CHAIR CLARK: Thank you for that question, Justin, and thank you for the very thorough answer, Toni. It's good to get that on the record. Are there other questions about the Addendum itself from the Board? Is there anybody online? Okay, at this point if we have a question from the audience there, if you would like to come up to the public microphone.

DR. JON HARE: Thank you very much, Jon Hare, NOAA Fisheries. Toni, thank you for describing the Peer Review process for the Horseshoe Crab model. Is that sort of the standard process that ASMFC follows for all of its assessments and advice?

MS. KERNS: That is correct, Jon.

DR. HARE: Thank you very much, may I comment, Mr. Chair?

CHAIR CLARK: Sure thing, Jon, I'm sorry I didn't recognize you. My eyes aren't what they used to be.

DR. HARE: My eyes aren't good either.

CHAIR CLARK: Go right ahead.

DR. HARE: Again, there has been a thorough Peer Review process, which is how we have defined evaluating science to use in our management decisions, and if that process needs to be revisited, the Science Center is happy to work with ASMFC on revisiting processes and helping where we can. Listening to Toni describe, it sounds like your Peer Review and scientific process has been followed. There are opportunities to bring new science into that process, so I just encourage you to think about supporting the processes that you have in place.

CHAIR CLARK: Thank you, Jon. Is that all we have in terms of questions at this point? All right, I would say to the Board, maybe the next step could be that we get a motion up here about this Addendum, and then we can have a discussion amongst the Board, and also then take comments from the public at this point. Is anybody ready to offer a motion? I see Roy Miller.

MR. ROY W. MILLER: Hopefully staff has this motion prepared. That's the quick and dirty version. Just for clarification purposes, let me say what that entails. It would be: Move to approve Draft Addendum VIII on the implementation of recommended changes for the 2021 Adaptive Resource Management Revision and Peer Review Report for public comment, which has been whittled down to read: **Move to approve Draft Addendum VIII for public comment**, as modified today. I don't know as we modified it today.

MS. STARKS: Correct. Maya, could you please remove "as modified today" thank you.

CHAIR CLARK: Do we have a second? Mike Luisi. Now let's have discussion on that. Roy, would you like to start the discussion, since you made the motion?

MR. MILLER: I would like to put on record that by approving this Draft Addendum VIII for public comment, it is not approving specific harvest levels that are contained in Addendum VII. That becomes a Board decision at future meetings. In other words, by approving this Addendum, it is not saying necessarily that the Delaware Bay jurisdictions will approve a female harvest scenario. That is yet to be determined.

This is a framework for how we can manage this species in the future, but it will be annual decision making involved. I just wanted to state that. But I think if we're going to hang our hat on the ARM model, which we have for many years now, this is an upgrade that needs to happen. The original ARM model is no longer appropriate, it's outmoded, and this is the right thing to do, because it's the best available science for us in managing horseshoe crabs.

CHAIR CLARK: Thank you, Roy, and Mike, did you have anything to add as the seconder?

MR. MICHAEL LUISI: What Roy said. Thanks.

CHAIR CLARK: Anybody else have any comments they would like to make about the motion? Okay, I see Bill, Justin, and Joe and go ahead, Bill.

MR. WILLIAM HYATT: Just a quick question, and I think it's largely a follow up to the question that Justin had asked earlier, and that Toni had responded to. That is obviously there are FOIA requests that are being filed elsewhere for information that the Commission does not have control over. I think some of the people that are reaching out to us and others would ask, is there benefit in waiting until those FOIA requests are addressed elsewhere before taking this first step? I'm not advocating for that. But I feel that the question needs to be asked.

CHAIR CLARK: Would you like to respond to that? Bob. Thank you.

EXECUTIVE DIRECTOR ROBERT E. BEAL: I don't think I have much to add, Bill, beyond what Toni said

earlier. I think our Peer Review Process was followed, and it's an open and transparent process, and the public was able to participate throughout that process. We at ASMFC have responded as well as we can, with all the information we do have that is non-confidential to the folks that asked for information from us.

You know I think the difficult part is, at the end of the day you know some of the requesters of this information want to recreate the model. They want to be able to rerun the model, tweak the model, and recreate the output that went through Peer Review. The difficult part there is going to be that recreating the exact runs that the Technical Committee, Stock Assessment Committee, and Peer Reviewers looked at. You can't do that unless you have access to all the confidential data. Someone could rerun that model if they had the software package, which is pretty complicated to do that. But they could probably get kind of close by making assumptions about confidential data, and lumping together that confidential data and other things.

But they won't be able to recreate the total runs, because of the data confidentiality laws at the state and federal level. I guess where I'm going is I'm not sure how much additional information the public will have at the end of the day, once all those FOIA requests at the federal level are fulfilled.

I don't think the requesters will be able to completely rerun the model and do exactly what the technical folks have done, just because of confidential data. I don't like giving that answer, because you know I wish everyone could access all the data, we could see everything and it was an open book.

But the confidentiality laws are what they are, and we can't share those things, so those are the laws. I don't know, I guess the question is what additional information would be available, and how much better would the public be able to comment? They won't be able to recreate everything that has taken place up to now.

CHAIR CLARK: Do you want to follow up, Bill?

MR. HYATT: Yes, thank you, Bob, I appreciate that response. I just want to mention that I also appreciate the point that Roy made earlier that this model is providing recommendations, and that the Board is not obligated to determine and set harvest levels at the numbers that are kicked out by the model, if it ultimately does get approved and put into practice.

CHAIR CLARK: Next I have Justin Davis.

DR. DAVIS: My question is, what would be the implications of delaying sending the Draft Addendum out for public comment at this point, you know perhaps indefinitely until all the records request were satisfied? You know what would be the implications for management next year of the horseshoe crab fishery?

MS. KERNS: As you all know, we can no longer run the old ARM model, so we would not be able to do the interactions with current information. The only thing that we would be able to do is Addendum VII allows us to, in the event that you can't run the arm, you can just use the previous year's package, or the Board can default back to the Addendum VI quotas, and that is pre-ARM, so it takes no consideration how horseshoe crab and red knot interact.

CHAIR CLARK: All right, thanks, next question is from Joe Cimino.

MR. JOE CIMINO: Yes, not really a question, just a discussion on the motion, Mr. Chair. You know since we did have the minority report, and the authors of those were given the opportunity to be at the Peer Review and give their responses. I think that that added level of exchange is important. I think really the public has a great deal of information to go back through the Peer Review and the responses to the minority reports. That is available prior to this document coming out, and their chance to go through the public comments. I think one of the interesting things that came out of the peer review was not really a concern for the model.

But just where the ARM model is trying to bring management, or co-management for these species, was talked about by the Peer Reviewers, with suggestions that maybe there is a next step to come. One of the suggestions I believe was to consider management strategy evaluation. I think through this public process that might be part of the discussion that you have done well. I fully support the motion.

CHAIR CLARK: Next we have Mike Luisi, then we have a couple from online.

MR. LUISI: I said it before. I fully support the rationale that Roy gave, in continuing to develop Draft Addendum VIII, and moving this forward to the public. I certainly understand the concern about this request for information. I support third party requests for information to try to understand more fully the work that is being done and presented to the Board. My concern about delaying as a result of a third-party request for information is that it could set up a precedent down the road for whenever a third party wants a delay.

They would ask for information that may or may not be available, to try to slow down the process that we're undertaking. I just don't like that idea that somebody could just asking for more information just to slow us down if we decide that we would pause here, and wait for something more to develop with that request. I support moving forward today, and will look forward to hearing from the public if that is approved.

CHAIR CLARK: Online we have Rick Jacobson of the Fish and Wildlife Service would like to make comment.

MR. RICK JACOBSON: Just for everyone else, my name is Rick Jacobson; I'm the Assistant Regional Director for Fisheries and Aquatic Conservation in the Northeast Region, and I'll be representing the Service on the Horseshoe Crab Management Board portion. We at the Service are committed to the duality of species recovery and sustainable use.

In that context we've been actively engaged in the acquisition and compilation of analysis and interpretation of best available science to guide our decision making, and fulfilling these dual roles. We've concluded that the ARM Revision is a manifestation of that best available science. The Service is aware of concerns from some stakeholders about the possibility of take under the ESA if the ARM Revision is adopted for management use.

With that we've conducted an analysis to evaluate the risk of take, and have determined that the risk of take of red knot under ESA is negligible. Thus, we're supportive of moving the Draft Addendum forward for public comment. The Service is also committed to transparency. To meet that commitment, we will make our analysis available to the public before or coincident with the start of the ARM Revision public comment period. Thank you.

CHAIR CLARK: Thank you, Rick, next up we have Chris Wright from NOAA Fisheries.

MR. CHRIS WRIGHT: Yes, I just wanted to say that we support moving forward with the current process, and going out to the public. I just wanted to, maybe we should clarify that the Peer Review Process was an independent process. You know the Peer Reviewers were independent.

In that I believe they also had access to that confidential data, so that I believe they did have that. If we can clarify that for the public, so that they know that those Peer Reviewers saw the whole thing. I think that might help. But we're in support. I think it is critical that we move forward with this, since we don't have the old model any more, and I think this helps more with the red knot situation and our ESA requirements on the federal side.

CHAIR CLARK: I'm going to turn it over to Kristen to answer your point about the Peer Review.

DR. KRISTEN ANSTEAD: For the 2019 benchmark, the full SAS and the Peer Review Panel all had access to confidential data. That's when the catch survey model was originally brought forward for a

model for horseshoe crab, and fully reviewed gridding into that data. For the ARM revision we used the same model.

We used coastwide data to develop this full ARM model, so that we didn't have to deal with the confidential data at that scale. The Peer Review Panel actually didn't have access to the confidential data. They saw the run using coastwide data, they saw the output of models with confidential data, and determined that the sensitivity runs around that, it's didn't really move the needle all that much.

We're not talking about large numbers here. The Peer Review Panel actually didn't see the confidential data. That's not the only confidential data that is in question here. There is also tagging bird data that is confidential. It's not just biomedical that is a question mark here. Some of the inputs to the bird side of the models also is confidential.

CHAIR CLARK: Thank you, Kristen, and did that fulfill what you were looking for there, Chris?

MR. WRIGHT: Right, I just wanted to make sure that folks knew that throughout the whole process there was access to that data, especially initially in that, as Kristen mentioned, that there was a lot of scrutiny under this from both the federal side and from the public. There was a more than ample opportunity for folks and the Peer Reviewers to access and have a full review of the process.

CHAIR CLARK: Do we have any other comments from Commissioners, either at the table or in the virtual realm? Okay, we don't have any there. Before we call the question, is there anybody from the public then that wants to make comments? Just give us a second here. Okay, we have a comment from Tim Dillingham. Tim, please go right ahead.

MR. TIM DILLINGHAM: Tim Dillingham, and I'm the Executive Director for the American Littoral Society, based up in Highlands, New Jersey. We've been involved for a long time in the horseshoe crab and

shorebird recovery work. I want to thank the Board for their thoughtful discussion, and really identifying and raising some of the central questions. I guess we would like to raise two points, and asking you to delay this and to give it further consideration. I don't think anybody opposes the idea of updating the model so that it is functional and can be used, and making it as accurate as possible.

But I think in that technical work of updating the model, the new Addendum changes a fundamental policy that has been in place since 2009, when this conversation started. That is this idea of reserving or not providing utilities of female horseshoe crab take, until the crab populations and the red knot populations have recovered.

I think as far as the idea of whether or not the Peer Review process was sufficient in flagging these important issues. In the Peer Review report itself, it acknowledges. It says, because the changes would lead to the harvest of female horseshoe crabs, which have been restricted since the implementation of the original ARM framework.

The Panel cautions the Working Group to fully consider if the new reward function truly represents the values articulated by stakeholders in the 2009 ARM framework. I think that language that is in the Addendum, and the description of the, so the old model, about these thresholds, in terms of recovery of the knots and the crabs themselves before female harvest is provided for, is now being left behind.

I appreciate Mr. Miller's comments about, you know these are recommendations. But the public, and I think some of the stakeholders one, that question was not debated in a stakeholder process, so these are not one that sort of intricately involved a lot of people, which I think is why you have seen the reaction to it.

But I think it's also we're urging you to maintain that policy, not allow the harvest of females, particularly because of the eggs needed by the birds, and the fact we haven't recovered to the

conservation thresholds that have been identified. I think that's a question that ought to be worked out before it goes out to the public, because it is a fundamental policy frame for your decision making, and we would urge you to retain that as you go forward.

On the transparency part of it, you know I think it's in transparency and whether information is sufficient, and whether people had access to it. It really seems to me that the stakeholders or the public should be the ones to decide whether or not they've had enough information. I understand the confidentiality laws, which are very problematic to me, in terms of the management of a public resource.

But I think you should take to heart the idea of the central stakeholder who is saying, we still have questions about the mechanics of this model, and we would like to examine them for ourselves to our own satisfaction. I appreciate your work, and thank you for the opportunity to provide comments.

CHAIR CLARK: Thank you, Tim. Joe, did you have something you want to follow up on those comments?

MR. CIMINO: Thanks, Mr. Chair, it's an indulgence as a former Chair. Perhaps Dr. Anstead could discuss how the old model would have allowed harvest, and it was knife edge. In fact, if a threshold was hit it would more or less be wide open after that. It's important, I think, to have a discussion on, and of course if this does go out for public comment that discussion can happen on the best way forward. But to talk about what the old model really allowed with that knife edge, and then perhaps why this is a potential improvement as an actual safety measure.

DR. ANSTEAD: Thank you, I'll do the best that I can with this. In the old model there were two thresholds, which you're probably familiar with. There was a horseshoe crab threshold and a red knot threshold, and if you got to one of those thresholds, either one, most likely the harvest

package selected would be the maximum amount of harvest.

In a scenario where horseshoe crabs from the Virginia Tech Trawl Survey hit that 11 million around their population number, you would automatically jump to 210 female harvest and slightly less than that for the males. There was some criticism during the Peer Review that these knife edge functions, so it's all of nothing, was not ideal, and also might not be adaptive management, because you are kind of putting on top of it what the answer should be, by saying you have to hit this level or this level.

That is not really adaptive management. That is sort of a harvest control rule. When we came to the revision, we did two different things. We changed the objective functions so that we would give credit to both red knots and both horseshoe crabs, before it was just credit for horseshoe crabs. You get a little bit of credit if your horseshoe crab populations are hitting some level.

That is not the maximum, it's kind of more of an S shape, so it kind of slowly ramps up to maximum harvest. The same with the birds. Instead of saying you get no credit for birds below the 81,000, it kind of slowly, when you're at the 40 you get just a tiny bit, and it slowly ramps up to that 81,000. In combination you get a little bit of credit if the horseshoe crabs are high, a little bit of credit if the birds are not below certain levels, and more credit as their populations increase.

Those two, kind of work together and that is why you get female harvest now. Those values are still in there, but they are not acting as thresholds. They are kind of acting as an ideal situation we would like to get to. But when the population specifically of horseshoe crabs is growing, you get a little bit more credit. It doesn't automatically jump to that 210, so we thought that that was a way to deal with it, address the Peer Review comments, and continue to use adaptive management to assess the species.

CHAIR CLARK: Thank you for that explanation, Kristen. The next commenter we have from the public is Ben Levitan.

MR. BEN LEVITAN: Hi, thanks so much. This is Ben Levitan. I work at Earth Justice, and I submitted the FOIA requests and information request that you all were discussing. Those were submitted on behalf of New Jersey Audubon and Defenders of Wildlife. I really appreciate the discussion that you all had raising concerns about those FOIA requests, and I just thought that a little bit more context might help inform your consideration of this issue. We submitted requests for information to ASMFC, FWS, and USGS back in February, and as was mentioned, ASMFC did provide us with information about the CMSA model. However, that was only one of the four components of the model that ASMFC described as comprising the new ARM framework. The other three modeling components are all held by USGS. Just to give you an update on where that FOIA request stands.

Last week USGS officially denied the request for those models, pursuant to the deliberative process privilege. Those aren't even pending at this point. USGS has said that those are deliberative and cannot be released. The other thing that USGS informed us over e-mail is that they are actually hoping and intending to publish those models, but they are still undergoing fundamental science practices review within USGS, which is a necessary step before they can be published.

It seems like the review process at USGS is still ongoing for whether these models are even appropriate for public viewing at this point, and on top of that USGS is planning, apparently relatively soon, to release the models to the public. You know from that I would say two things. One, it seems like it would be a real move for transparency for the Board just to allow USGS to release the models on its own timeline, as it's planning to do, before opening the public comment period, so that the public is able to see the model that it's being asked to comment upon.

The other point that I would make, and you know I totally understand the concern that the public could submit records request just as sort of a manipulative technique to delay the process. That is really not where we are. We submitted these requests five months ago, more than five months ago. At this point it's not even about the timeline of our request.

We're just waiting on the federal agency USGS to release the models on its own timeline. The ball is in their court, it's not some strategy that we're using to try to delay this process. We just feel that the public needs to see what they're being asked to comment upon. It seems like the models will be released to the public fairly soon anyway, and that should just happen before the public comment period opens. Thank you.

CHAIR CLARK: Thank you for those comments, Ben, and I don't believe we have anybody from USGS online to address that. We have another hand from the Board, were there any other public comments? Okay, we don't have any other public comments, so Bill Hyatt.

MR. HYATT: Yes, John, I was going to ask the same question you just asked, if there was anybody available who might, from either USGS or who might be able to address some of the comments that were just made relative to timeline and review process, and what is actually happening within USGS. I do think that's valuable information to have.

CHAIR CLARK: Sure, agreed, and we do have one more commenter from the public that is Matthew Sarver. Go ahead, Matt.

MR. MATTHEW SARVER: Hey, thank you. Yes, I just wanted to just briefly echo many of the thoughts, comments that Tim made a few minutes ago around this. I do think it's important for the Board to remember that for a lot of the stakeholders, so first of all I'm the Conservation Chair of the Delaware and Ecological Society here in Delaware, It's all volunteer bird conservation organization. You know we're not all particularly well versed in

the inner workings of ASMFC, and the various boards and processes and so forth. I personally, I mean I'm a professional ecologist.

I have a hard time sometimes finding information on these public comment periods, revisions, et cetera, even on the ASMFC website. I think that is important to keep in mind with thinking about the opportunity for stakeholder and public input into some of these changes. It's not particularly easy for a lot of folks from the public who aren't fisheries management professionals, to know where to find some of this information.

I think that is part of why a lot of folks in the bird conservation world are, you know perhaps weren't involved initially in some of the comment during the Peer Review process and so forth. I think part of that also has to do with what Tim said, which is that you know ostensibly, looking at a technical revision of an adaptive resource framework, doesn't necessary imply to members of the public that there is going to be a major change in stated policy.

I think I share the same concern that he referenced, with regard to the female harvest threshold that was presented in the past. I think that this sort of policy direction change that seems to be happening within this science/technical process, as a result of changing the ARM, is really the issue here for a lot of us.

Being a little bit blindsided by how that change within what seemed like it was a needed and is a needed and valid process to change the ARM. I would just say that there is a broader issue here for me, at least, and one of those is looking at the ARM goals. To me they don't show targeting and increase back to a higher population level for horseshoe crab, which would support continued success of red knots.

The ARM looks to me to project essentially a no loss, unless I'm misinterpreting it, keeping the population at current levels, which I think a lot of us thought was not the goal long term for this resource. I guess that's just a broader concern here

for me, more so than the exact data, the exact model runs, all that kind of thing.

I have good confidence in the folks who worked on this, the scientists from multiple agencies that had input. I have more of a concern with where we're trying to get, and the overall problem of shifting baselines in fisheries management, and what that means for these connected ecological resources in the future.

One other specific point I would make is again, if I am interpreting the model correctly, is that there was one statistically significant factor for adult red knot survival, which was abundance of female horseshoe crabs. I find it interesting that that was one of the only pieces of data found to be significant in the model, but yet the model is still generating a female harvest.

I didn't really understand that, maybe somebody could clarify that for me. I realize that adult survival for red knots was not found to be the major population determinant, it was more of a recruitment. However, if female horseshoe crab abundance is a significant factor for adult survival, it seems that that should be an important consideration with the federally listed species, even though it's perhaps not the major determinant of population trends for the bird. Anyway, those are my thoughts, and I appreciate your work.

CHAIR CLARK: Thanks, Matt, we appreciate the comments, and Kristen can, to the question you had in there, she can respond to that. Then we are getting a little short on time, so we're going to take one more comment from the public after Kristen responds here.

DR. ANSTEAD: Yes, thank you for that question. You are correct that there is a link between female horseshoe crab abundance and red knot survival. I think that where the confusion might be is that the horseshoe crab female population has been increasing, the adult, mature population that is going to spawn.

If you look at either the Virginia Tech Trawl Survey by itself, we use the Delta Distribution Swept Area estimate. There are several time series in their report each year, but there is one that we use specifically, or you use our catch survey population estimates, which we think are the best estimates available.

Both of those have been increasing over time. If their female population is around 10 million mature female horseshoe crab, the model is still recommending some female harvest, because that population is considered quite high. If you have 10 million females and the harvest coming out is about 140,000 females, the model doesn't see that as conflicting in the purpose of the management.

CHAIR CLARK: We have one more comment from the public, because we are running short on time. The commenter is Faith Zerbe. We are going to have to limit it to three minutes, so thank you and take it away, Faith.

MS. FAITH ZERBE: Thank you very much, Commissioner. My name is Faith Zerbe; I'm Director of Monitoring with the Delaware River Keeper Network. I won't be using a three-minute time, so perhaps you could have others speak, if possible, if there are others. We've been monitoring horseshoe crabs along the Delaware Bay.

Myself, I've been out there for over 22 years. This year of course you've also participated in egg survey density studies that have been done by the shorebird team. We're learning a lot on the ground. I really would just urge you to use the precautionary principal here, and not allow this to move forward at this time.

Certainly, Mr. Levitan from Earth Justice has talked about the issue of USGS and this information that if they are still looking at information related to the models, understanding if the model is really operating as they would choose. Moving this forward now at this point would be premature, in our eyes.

We also would just say that the peer and then again, the presentation by the presenter was very good. It was nice to see those slides, it was very fast. There is a lot of information there also to digest, of course, so we can't just take it on the Agency standard that this is adequate for the public. The other point I would note is that it was talked about if the Commissioners do decide to move this forward today, that there may be public hearings, I believe in August or September, which we would also urge is completely premature, and would not allow adequate time for the public.

People will take vacations in August, they're getting their kids ready to go back to school, as you all talk about and have said, the public has a hard time looking at this information. It's a lot of information to digest, and Earth Justice doesn't even have the information that they requested in February. This just feels like a rush job forward, to basically turn up more female crabs for fish bait.

Again, we're on the water, we see the crabs during our spawning surveys. We've participated in bird surveys last year; the red knot was the lowest it had been in years. This just is completely flying in the face of what we need, to the point that you might have this ARM model and then you have a framework. But then we may decide not to take female crabs.

Just looking at how the industry works, and how things have been in the past. Again, we've been doing this for decades, working on this. I'm sure that if the ARM model is recommending female crab harvest, it is going to be very hard to stop that train coming from off the tracks. I would just urge you to hold the line.

It sounds like USGS is also not available to acknowledge what Mr. Levitan said. We would echo what American Littoral Society has said, and really just others on the ground and the scientists on the ground, to just please hold the line right now, and vote to not take this forward at this time. Thank you very much for your time and your attention.

CHAIR CLARK: Thank you for the comment, Ms. Zerbe. To your specific point about the public comment period. I just want to turn it over to Caitlin again to refresh us on that before we call the question, but also to remind you that you don't have to attend a public hearing in order to comment. The comment period is going to be open for much longer. Written comments are accepted, they can be e-mailed, and they can be mailed. We want as much public input as possible in this process, and I'll let Caitlin comment further on that.

MS. STARKS: Yes, so if the document is approved today, it would take a little bit of time to set up a public hearing schedule, and get the notice out on that. It's unlikely that hearings would occur in August. I think the public comment period would be open.

But the typical process is that we have the public comment period open two weeks in advance of any public hearings, and then following the public hearings as well. There would be more time for public comment via written comments, which again can be e-mailed, mailed or faxed. Then those public hearings would probably occur in September.

CHAIR CLARK: Is there any further discussion on this motion by the Board? Okay, not seeing any, do we have any online? Given that I will call the question. Do we need time to caucus? All right, I'm not seeing anybody. Oh, you do want to caucus. Three-minute caucus.

MS. KERNS: I just want to note really quickly a clarification to what Caitlin said. We will do our best to have a two-week opening, two weeks prior and two weeks after. It is not required in Addenda, but we have heard from the public that this is complicated, and so therefore we will do our best. But if some state wants a late hearing, then we may not be able to make that perfect.

CHAIR CLARK: Okay, did everyone have enough time to caucus? Does anybody need more time? Do you need more time, Mike? Okay, before I go to you, Mike, Bill Hyatt asked to ask a question, and then I'll go to you.

MR. HYATT: If today we were to approve this to go out for public comment, and assuming then at the annual meeting we would be looking to take further action. Is it safe to assume that we could get, as that process is unfolding, some updates on where things stand relative to USGS and how they are handling the requests that have been put forth?

CHAIR CLARK: Kristen, do you want to respond to that?

DR. ANSTEAD: I want to talk a little bit about the models, just to manage expectations about this. I'm not speaking on behalf of the USGS at all. The way that this ARM revision model works is there are several models that feed into the adaptive management entirety model, so I have part of it, Anna Tucker at USGS did the bird modeling, and then they feed into this larger model.

What we have struggled with, even as a committee, is how to get that model all in one place, because of the massive size and complexity of it. Even now, my computer doesn't have enough cores to run the full ARM model, because the vision was to hand over the model to me, so I can run it each year. We have not resolved how to do that yet.

It's fairly common for a stock assessment to have models spread over several computers, so that is not unusual in this case. But this is one of the most complex models that I've worked with, and I'm not sure what the platform will be to make, that's not to say we don't want to make it public, but it will probably have to go in a GitHub, and I don't know how we will run it from there as individual people, apart from the data confidentiality. These are not excuses, this is just something we have struggled with.

MS. KERNS: Bill, we can give you an update, you know if we can get something from USGS on where they are in their internal deliberative process, to give you that. But I think what Kristen is trying to say is that your average stakeholder would not be able to run the model itself. Yes, there are individuals out there in the world that can look at

this and do this, but your average person, I myself could never do it, I'm included in that group.

CHAIR CLARK: Follow up, Bill.

MR. HYATT: Yes, thank you, Mr. Chair. Yes, I was asking just for an update. It was specifically because what I thought I heard before, while not coming directly from the USGS, was that there was an internal review going, and that there was a commitment to, in one form, shape or another, to be able to provide this model out to those who are interested in looking at it. I don't know what form or shape that will take. What I was asking primarily is just as long as we can be assured that we're going to be updated, as information is available. Thank you.

CHAIR CLARK: Mike, you had a comment?

MR. LUISI: Yes, it was along the same lines that Bill was just asking about. I was talking to Roy, and we were saying, you know the points that were made through public comment were good points. If USGS, you know it's a shame we can't get any update from them today. But I just wonder if.

I was starting to think that maybe we can just get an agreement as direction to staff from the Board in moving forward that we pump the brake just a little bit, and give a little bit more time to the USGS to get that information out before we start to have the hearings. But I don't know if there is any appetite around the table for trying to set up something like that.

What I was thinking was, if we don't have information from USGS by October 1st, we could then go to the public to get feedback, or as part of the public comment the comment could be, we don't have the right information to comment on, and then the Board gets to deliberate on that in November as well. I see there being two ways forward, so that we get the feedback that we need from the public. But I'm not trying to complicate things.

CHAIR CLARK: Thanks, Mike, Toni has a response for you.

MS. KERNS: Mike, if we waited until October, we would not be able to bring this back to you all, so that would be too late for November. Again, I'll restate that we have had a very open and transparent process for the review of this model. If the public want to comment that they want to see different thresholds, I'm using that as a paraphrase, I know that is not the exact right term, Kristen, some other evaluation of the bird data.

Then they can provide that data to the Board and the Board can consider that as you decide how to move forward. These are products. You know what comes out of the ARM is a package, and the Board gets to decide what to do with that package. You don't have to have female harvest, and then a state can decide if they want to have female harvest if the Board approves that package.

You know I think the public can add all of these types of comments to their public comment, but in terms of the model itself and the review of it, you know we've had this transparent process. I'm not sure that is going to change. I think USGS, when they have models, do internal reviews. It's not necessarily doing this independent peer review like we completed, I think it's just an in-house process before they release packages.

CHAIR CLARK: Thanks, Toni. Before I call the question, we have another comment from Rick Jacobson.

MR. JACOBSON: This really builds on Bill and Mike's comments. If I am correct, a decision of the Commission to move forward with this motion, to adopt this motion, and go to public comment, in no way binds Commission's actions come the November meeting. Is that correct? I mean we have the opportunity to review what public comment comes in, and then consider anew what actions we feel are most appropriate to take at that time. Is that correct?

CHAIR CLARK: That is correct, Rick. Okay, thank you. We've had a very good discussion on this, but now it's time to call the question. All those in favor of the motion, please indicate by raising your right hand.

MS. KERNS: I have Rhode Island, Massachusetts, Connecticut, New York, New Jersey, Florida, Georgia, South Carolina, North Carolina, Virginia, Potomac River Fisheries Commission, Maryland and Delaware.

MR. WRIGHT: NOAA Votes yes.

MR. JACOBSON: U.S. Fish and Wildlife Service votes yes as well.

CHAIR CLARK: Okay, so we have two yes votes from online. All right, are we ready for no votes? **Okay, all those opposed, please raise your hand. Seeing none, and I think by process of elimination we don't have any abstentions or null votes, do we? No, okay, it looks like the motion passes, and what is the final tally, Caitlin? It's 15 in favor, 0 opposed, 0 abstentions and 0 null votes.** What are the next steps now, Caitlin? We just want to review that again.

MS. STARKS: After this meeting we will publish the document for public comment. We will release a press release with a hearing schedule. I will be reaching out to all the states to get information from each state on whether they would like having an in-person public hearing, and what their availability is to put that schedule together. Those should be our next steps; we will have a public press release to let everyone know when that comment period is open.

CHAIR CLARK: Thank you very much, Caitlin, thank you to the Board for the discussion on that and the public.

UPDATE ON PLAN DEVELOPMENT TEAM REVIEW OF THE BIOMEDICAL MORTALITY, BIOLOGICALLY-BASED OPTIONS FOR SETTING THE THRESHOLD, AND BEST MANAGEMENT PRACTICES FOR HANDLING BIOMEDICAL COLLECTIONS

CHAIR CLARK: Now we'll move on to our next agenda item, which is going to be back with Caitlin again, which is to update on Plan Development Team Review of the Biomedical Mortality Biologically-based Options for Setting the Threshold, and Best Management Practices for Handling Biomedical Collections. Take it away, Caitlin.

MS. STARKS: Thank you again. Just quickly, in this presentation I am going to go over the Board task to the Plan Development Team, provide some background information and data on the topic, and then I am going to pass it off to our Technical Committee Chair, Natalie Ameal, to cover the TCs discussion and recommendations on this issue.

Then Brett Hoffmeister, who is here at the front with us, is the Advisory Panel Chair for Horseshoe Crab, and he'll cover the AP Report. Then I will wrap up with the PDT recommendation, and set the Board up for a discussion today. The task that the Board assigned to the Plan Development Team had two components.

The first part was to review the threshold for the biomedical mortality, to develop biologically based options for that threshold, and to develop options for action when that threshold is exceeded. The second part was to review the best management practices for handling biomedical catch, and suggest options for updating and implementing the BMPs. Then the reason that the Board assigned this task, is that during the FMP review last year it was noted that the annual threshold for mortality for crab used for biomedical purposes, which is established in the fishery management plan, has been exceeded in almost all of the last 13 years.

The Board wanted to take a look into this and assign this task to the PDT. The FMP language on this states that if horseshoe crab mortality associated

with collecting, shipping, handling or use by the biomedical industry exceeds 57,500 horseshoe crabs per year, the Commission would reevaluate potential restrictions on horseshoe crab harvest by the biomedical industry.

It should be noted that this threshold was set simply based on estimates of the annual biomedical mortality at the time that the FMP was developed in the 1990s, and it does not have any scientific or biological basis to it. To provide more context, this graph shows the bait harvest levels and the biomedical mortality levels.

The orange area is the bait harvest, and the blue sliver on top is the coastwide biomedical mortality estimated in each year. As you can see the vast majority of total mortality throughout the time series is bait harvest, and the blue area representing the biomedical mortality is relatively small, and it doesn't change very dramatically from year to year.

In the whole time series, the biomedical has remained under 20 percent of the total mortality. To show this data another way, this table shows the ASMFC coastwide quota for bait in the top row, and then the second row is the total allowed bait harvest under the more restrictive state quotas. The actual coastwide bait harvest is below that in the third row, and then the next rows are the coastwide biomedical mortality estimates, and the total mortality with bait and biomedical added together.

On the bottom, the two rows there are showing the total mortality, bait plus biomedical, as a percent of the overall ASMFC quota and the combined state quotas. What you see from this is that when the biomedical mortality is added on top of bait harvest, the total has remained well below the ASMFC coastwide bait quota, and then in the final row except in 2017, it has also remained under the bait harvest limit that is allowed under the state restrictive state quotas.

That is how it compares to the ASMFC quotas for bait harvest. As we discussed earlier, the

biomedical mortality is accounted for in the ARM, in the framework revision for the Delaware Bay population, which this is the only population where we have biologically based harvest specifications. If Addendum VIII is adopted, that Delaware Bay specific biomedical mortality would be accounted for in setting the harvest specifications for the Delaware Bay.

Switching gears to the other part of this task, the best management practices for handling biomedical collections were developed by an ad hoc workgroup in 2011. This BMP list is a list of recommended practices to minimize stress injury and mortality of biomedical horseshoe crabs in every step of the process, from when they are collected to when they are returned to the sea. The horseshoe crab FMP recommends that these BMPs be followed by biomedical industry and harvesters, but the BMPs are not required by the ASMFC. What the Commission's FMP does require is that states must issue a special permit for, or authorization for collecting crabs for biomedical purposes, and also, they must return the horseshoe crabs that are taken for biomedical purposes to the same state or federal waters from which they were collected.

TECHNICAL COMMITTEE RECOMMENDATIONS

MS. STARKS: With that background, I'm going to hand it over to Natalie to present on the TC discussion, and Natalie, if you're not unmuted, please raise your hand, so we can unmute you.

MS. NATALIE AMERAL: Good morning. I think I should be unmuted. To summarize our TC discussion on the biomedical mortality threshold, the first thing we did was reach out to the staff to look at multiple CSMA runs, and population simulations. Using those, we did not find any significant impacts.

The real issue here is that we lack coastwide biological reference points, and there are regional differences in stock status. Not only can we not determine how biomedical mortality thresholds would impact each region, we are not sure how to even set that number to begin with. A lot of

emphasis was also placed on sex ratios playing into these issues as well.

To summarize our BMP discussion. To figure out where each state stands, as far as implementing BMPs, each TC member per state provided information on what requirements currently exist. The disparities we saw between states, I think was largely attributed to different seasonality's, and harvest methods employed by each state.

If we go to the next slide, I can summarize our recommendations. Currently we don't have the data to inform upon a biologically based threshold for biomedical mortality, and also importantly, we only have a population estimate for Delaware Bay. To summarize the best management practices.

Right now, we think that our best focus for best management practices for decreasing mortality, would be to assemble a working group. I think that is recommended on the next slide. Really, if we want to spend the time to review, revise and recommend updated BMPs, we will probably need the time allowed to a working group to pursue that option. I think with that I am handing it off to Brett for the AP summery.

ADVISORY PANEL REPORT

MR. BRETT HOFFMEISTER: Thank you, Natalie, thank you, Caitlin. The AP met virtually on July 11. Caitlin started us off with a view of the TC document, or review. Right out of the gate there were comments on biomedical mortality with some of the AP members maintaining the 15 percent estimate we thought was high, pointing to the fact that as many of the papers that were used for the 2019 benchmark assessment did not follow many of the BMPs.

There was only a handful that did, so it was just really a notation. It was also pointed out that the Smith paper released in 2020 was really a good example of the effects of long-term biomedical processes. This looked at, you know almost 70,000 crabs that were bled by biomedical companies over many years.

We thought that that was a good reference. One AP member repeatedly was concerned about egg densities on the beaches, about them remaining low in the Delaware Bay region, as well as post handling effects, or biomedical use on horseshoe crabs, regardless of the estimated mortality level. This prompted some discussion, really talking about the timing of the egg density studies, the design of the studies themselves, and the fact that they weren't used in the benchmark assessment at the time. This member stated that they had a lot of data, and we encouraged them to share that with the ASMFC in the future.

As far as post handling of the biomedical crabs, the BMPs are designed to address some of that. Those were just comments there. Comments directly related to the BMPs. Another member was concerned about the vagueness of the BMP language leaving too much room for interpretation. For example, a recommendation that tows are around 30 minutes suggested that maybe we make that a requirement.

Another would be release area, you know where you should release the crab. Should it be at the same latitude and longitude location where they were caught? The biomedical members kind of countered that really the BMPs were designed to be somewhere variable, because of the practices along the coast.

As the TC noted, each state is very different in its fisheries practices. There are methods of harvest equipment that varies. The BMPs are a pretty comprehensive list of recommendations, but we didn't see that they could really be codified. Again, things such as temperature-controlled transport may make sense in one place and not another. Waters in Massachusetts are much cooler than they are in South Carolina.

Not all things considered equal, it's not really possible to have a lot of recommendations on these BMPs that will fit every nook and cranny. There was concern voiced about collection during spawning activity, and it was a reminder that many states have specific regulations to protect spawning

horseshoe crabs, such as lunar closures, daily quotas, weekly quotas or late seasons, such as I know at least one processor in Delaware Bay Region, they don't even start harvesting until mid-June or late June.

I guess the message from the biomedical industry was that we are following the relevant and applicable BMPs, and doing everything reasonable to address mortality and injury with these crabs. It is in the best interest of the biomedical companies to do that. We need healthy animals for a good product. That was a point of some discussion.

It was also noted that the states have incorporated some of the BMPs into regulations, so things like storage conditions, transport, data collection, marking crabs prevent re-bleeding, or things that are found in some of the permitting or contingencies to permitting in some of the states. Biomedical members were suggesting some minor language changes in the elimination of a recommendation to check salinity at release point.

Prior to this meeting I did reach out to the industry. We reviewed the BMPs, and suggested some minor changes. I think you'll see some of that in the memo that is a part of the materials. It was also stated as a general statement by the biomedical companies, that the preservation of the species is a common goal. I'll just remind people that, you know we've been doing this for about 50 years, long before there was any management of the fishery itself. This has been a goal with the catch and release fishery and what not. Overall, I thought it was a good dialogue with the meeting, and there was some good input but not great surprises here. Thank you.

CHAIR CLARK: Thank you, Brett. Thanks, Caitlin and thank you Natalie. Do you have some comments to follow up?

MS. STARKS: Sorry, I just have a few more slides here. I just want to go to the next slide on the PDT recommendations. Considering what the TC and AP inputted on this issue, the PDT has made a recommendation not to use the biologically-based

biomedical mortality threshold at this time, because there is currently insufficient data to support the coastwide threshold based on biological reference points.

The PDT said that any coastwide mortality threshold would not be scientifically based. The PDT does agree with reviewing and discussing the best management practices to proposed recommended updates, which could be done through a workgroup such as what was originally done and put together to develop those BMPs.

I think to start the Board's discussion on this topic it would be helpful to hear how the Board wishes to move forward, both with the mortality threshold issue, and with the BMPs. Some questions to think about are, is the Board interested in forming a workgroup to address either of these issues, and what should the focus of that workgroup be? With that I can take any questions.

CHAIR CLARK: Okay, thank you, Caitlin. Now, thank you, Caitlin, Natalie and Brett, and does the Board have any questions or comments on the biomedical here? Emerson.

MR. EMERSON C. HASBROUCK: Thank you, Caitlin, Natalie and Brett for your presentations. My question is, since we indicate in the FMP a threshold for biomedical collection of crabs, and every year we exceed that, and we just say well, okay, we exceeded it. How do we go forward here relative to this biomedical threshold? Do we just leave the FMP as it is, and ignore it essentially, or is there some other direction we should go in? Because I understand that we cannot develop a biologically-based threshold for biomedical collection.

CHAIR CLARK: Go ahead, Caitlin.

MS. STARKS: Thanks, Emerson, for the question. I think this is really a matter of what the Board is interested in doing. There is a threshold in the FMP of 57,500 crabs for a mortality threshold for the biomedical industry. Again, that was just based on estimates of what it was at the time. If the Board

wanted to change that threshold in some way, it would require an addendum.

I think the options for something that could be done through an addendum would be removing the threshold, modifying the threshold, or potentially changing it in some other way that a work group could potentially propose. Those are my initial thoughts on how to move forward if you want to change that threshold in some way.

CHAIR CLARK: Do you have any follow up on that, Emerson?

MR. HASBROUCK: Yes, thank you. I don't know what the sense of the rest of the Board is, but we've been ignoring that threshold for, what did you say, Caitlin, 14 years, I think. If we've been ignoring it for 14 years, I guess we could continue to ignore it, unless somebody thinks we really need to move forward with an addendum.

CHAIR CLARK: Okay, are there any other questions for Caitlin? Not seeing any, can we put the PDT recommendations back up on the screen? Oh, Bob.

EXECUTIVE DIRECTOR BEAL: While the recommendations are coming back up. Just to kind of respond to Emerson's comment. I wouldn't characterize it as the Board is ignoring the threshold. I think you know it is reported out every year where we stand relative to that threshold. The Board looks at it and decides whether it's a significant component of the mortality, and if you remember the slide with the orange block and the blue sliver, you know it's a small component.

You know I hear what you're saying. You know they haven't reacted, and haven't made any management changes. But I don't want anyone to perceive that the Board just doesn't care. The Board does get a report out where we stand relative to that number, and looks at it, and hasn't decided that it's met a threshold where we need to have a management reaction to it.

CHAIR CLARK: Caitlin.

MS. STARKS: Yes, if I could just add on to that slightly. Again, the language in the FMP says that if that threshold is exceeded the Commission would reevaluate potential restriction on horseshoe crab harvest by the biomedical industry. I do think it's accurate to say that that is what the Board has been doing every year.

When they get the report out on what the biomedical mortality estimate is, and then through this process that the Board just asked of the PDT to evaluate the information, and look into some options. I think that is a reevaluation of potential restrictions. I think what Bob says stands, and if there needs to be a change to that, the Board can initiate an addendum.

CHAIR CLARK: We have these suggestions here from the Plan Development Team of course, that if the Board was to move ahead with the workgroup, to come up with best management practices, I'm assuming a new addendum could also address the biomedical threshold. Sorry, I think I saw another hand. Dan.

MR. DANIEL McKIERNAN: I'm assuming that in the annual Plan Review Document there is a statement in there that says that even though the threshold has been exceeded, this is inconsequential, because the overall mortality is declining. Is that accurate?

MS. STARKS: Off the top of my head, I don't remember if we have a statement exactly to that effect, but it is given as a percentage of the total mortality. I don't know if there is a desire for more information, we can add it.

MR. McKIERNAN: I would recommend that that be stated, that way there is some position that we're comfortable with that says yes, we know we're exceeding it, but it's no big deal.

CHAIR CLARK: Thanks, Dan, any other comments on this? Does the Board wish to proceed with the recommendations of the PDT on this issue? Dan.

MR. McKIERNAN: Yes, I would welcome PDT analysis of the levels of mortality attributable to the

biomedical firms, maybe on a regional basis, because since we have quotas on a regional basis, I'm sorry, on a state basis. You know as states we're managing these activities. The potential take for that industry is not infinite, and so I guess it would be good to have some kind of a conversation about that by the PDT.

CHAIR CLARK: I'm seeing shaking heads over here, Dan. I think that gets into confidentiality issues, and that's why it's not broken out that way. But is that something that can or should be looked into further, or are we kind of stuck on that?

MS. STARKS: I think that was part of what the Technical Committee discussed through this process, was that while we have the biomedical information from each of the states, and can look at it regionally. We don't have population estimates for each region, so there is no way to compare what is an acceptable level of biomedical mortality or any type of mortality, including bait for those regions, because we don't have population estimates.

CHAIR CLARK: Any follow up, Dan?

MR. McKIERNAN: Yes, well frankly we have a trend in Massachusetts that is very positive. We have an annual bait harvest that is published. We're pretty confident that the levels of mortality at this time, attributable to bait harvest and whatever is going on with the confidential biomedical harvest, is probably rather appropriate. I just don't want to be handcuffed to actually having a management strategy going forward.

I'll work with this internally. It's not necessarily for discussion today, but this does represent a blind spot for horseshoe crab management for us state managers to not even be able to assure the public that we got this. That the number of crabs being killed at a local level within a state is appropriate. I'm confident that it is, but I'm just in the future I would like to maybe make some headway on that.

CHAIR CLARK: Are there any other comments? Conor.

MR. CONOR McMANUS: I guess I would just make a comment on the second recommendation. I would support that a workgroup be developed to review the best practices. It's been a while, I believe, since there has been a formal technical amendment or review of the document. I appreciate the feedback of the AP and the TC and the PDT to date on it. I think it just provides us an opportunity to reassess the practices more holistically.

CHAIR CLARK: Thanks, Conor, I see Emerson's hand.

MR. HASBROUCK: Yes, I agree with Conor. Do we need a motion to that effect or is just consensus fine?

CHAIR CLARK: We can do it by consensus. Does the Board agree that we should put together a working group on this? I'm not seeing any opposition, so yes, we can do that. In terms of what Dan was asking, is there enough information there that something can be pursued, or are we just kind of at an impasse on that whole issue?

MS. STARKS: I think I could get more information from Dan, maybe on what he's looking for after the meeting, or now. In terms of the workgroup, I am hearing that we want to look at the BMPs. I just want to clarify. Is there any interest in thinking about this mortality issue any further, or is the Board comfortable with keeping the threshold as it is? I just want to make sure we don't need to be doing any additional work beyond looking at the BMPs.

CHAIR CLARK: We have Emerson.

MR. HASBROUCK: I'm fine with leaving things the way they are relative to the threshold. As long as we incorporate in the annual FMP review the language that Dan suggested. I think that puts us in good shape.

CHAIR CLARK: Any other comments? Dan.

MR. McKIERNAN: Yes, and I'm comfortable leaving it just to the best management practices at this

time. I will kind of deal with my local level issues locally.

CHAIR CLARK: Thanks, Dan. Okay, any further comments on this or are we ready to move on from this topic?

**REVIEW AND POPULATE THE
ADVISORY PANEL MEMBERSHIP**

CHAIR CLARK: Okay, not seeing any we're going to move on to our next item, which is Review and Populate the Advisory Panel Membership, and that is Tina.

MS. TINA L. BERGER: Thank you, Mr. Chairman. I offer for your consideration and approval David Meservey, an inshore commercial otter trawler from Massachusetts.

CHAIR CLARK: We also had two more from Delaware.

MS. BERGER: Okay, forgive me, but I was not aware of those nominations. But if you have them in your packet then you know better than I.

CHAIR CLARK: Okay, Tina. I think they were in the supplemental, and they are in the motion, so we are fine on that, **and we have a motion by Dan McKiernan, seconded by Emerson Hasbrouck there.** Is there any opposition to this motion?

MS. KERNS: Mr. Chairman, can you read the motion, please?

CHAIR CLARK: Oh, certainly. **Move to approve Horseshoe Crab Advisory Panel nominations for David Meservey from Massachusetts, Jordan Giuttari and Matt Sarver from Delaware.** Motion by Mr. McKiernan, seconded by Mr. Hasbrouck. **Any opposition to the motion? Seeing none; the motion is approved by consent.**

ELECT A VICE-CHAIR

CHAIR CLARK: Now we are on to our penultimate item, which is Elect a Vice-Chair. Do we have a nomination? Joe Cimino.

MR. CIMINO: I know how good it feels to have a Vice-Chair waiting in the wings. **I move to elect Dr. Justin Davis from Connecticut as Vice-Chair of the Horseshoe Crab Management Board.**

CHAIR CLARK: We have a second by Jim Gilmore. I would say everybody is in approval of this nomination. Congratulations, Justin, and thank you.

ADJOURNMENT

CHAIR CLARK: Okay that brings us to our last item, which is Other Business. In the interest of time maybe we do have a discussion maybe we could have in the future about the amount of misinformation that has been out there over this. But given that we are already running late, shall we just adjourn the meeting at this point? Okay, no objections to that, so the Horseshoe Crab Board is adjourned. Thank you.

(Whereupon the meeting adjourned at 12:00 p.m. on Wednesday, August 3, 2022)