

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

**Hyatt Place Dewey Beach  
Dewey Beach, Delaware  
Hybrid Meeting**

**October 28, 2025**

**Approved May 5, 2026**

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**Move to establish male-only harvest specifications for 2026 and 2027 based on the ARM Framework with 500,000 males and no female harvest of Delaware Bay-origin crabs. In addition, the 2:1 offset will be added to MD’s and VA’s allocations due to no female harvest** (Page 4). Motion by John Clark; second by Dave Borden. Motion amended.  
  
**Motion to Amend**  
**Move to amend to add 2028** (Page 6). Motion by Matt Gates; second by Dan McKiernan. Motion fails (Page 8).  
  
**Main Motion**  
**Move to establish male-only harvest specifications for 2025 and 2027 based on the ARM Framework with 500,000 males and no female harvest of Delaware Bay-origin crabs. In addition, the 2-1 offset will be added to MD’s and VA’s allocation due to no female harvest.** Motion passes (Page 8).
4. **Move to approve the FMP Review and state compliance reports for the 2024 fishing year, and *de minimis* status for SC, GA, and FL** (Page 13). Motion by Emerson Hasbrouck; second by Joe Grist. Motion passes by unanimous consent (Page 13).
5. **Move to approve the changes to the Advisory Panel membership as recommended in the Work Group memo dated October 10, 2025** (Page 15). Motion by Carrie Kennedy; second by Nicole Costa. Motion approved by unanimous consent (Page 15).
6. **Move to adjourn** by consent (Page 15).

**ATTENDANCE**

**Board Members**

Dan McKiernan, MA (AA)	Craig Pugh, DE, proxy for Rep. Carson (LA)
Sarah Peake, MA, proxy for Rep. Peake (LA)	Carrie Kennedy, MD, proxy for L. Fegley (AA)
Raymond Kane, MA (GA)	Russel Dize, MD (LA)
Nicole Lengyel Costa, proxy for J. McNamee, RI (AA)	Joe Grist, VA, proxy for J. Green (AA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)	James Minor, VA (LA)
David Borden, RI (GA)	Chris Batsavage, NC, proxy for K. Rawls (AA)
Matthew Gates, CT (AA)	Rep. Brian Turner, NC (LA)
Bill Hyatt, CT (GA)	Ben Dyar, SC, proxy for B. Keppler (AA)
Jesse Horstein, NY, proxy for M. Gary (AA)	Malcolm Rhodes, SC (GA)
Scott Curatolo-Wagemann, NY, proxy for E.	Mel Bell, SC, proxy for Sen. Cromer (LA)
Hasbrouck, NY (GA)	Doug Haymans, GA (AA)
Joe Cimino, NJ (AA)	Spud Woodward, GA (GA)
Jeff Kaelin, NJ (GA)	Erika Burgess, FL, proxy for J. McCawley (AA)
Adam Nowalsky, NJ, proxy for Sen. Gopal (LA)	Gary Jennings, FL (GA)
John Clark, DE (AA)	Ron Owens, PRFC
Roy Miller, DE (GA)	Rick Jacobsen, US FWS

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

**Ex-Officio Members**

Ethan Simpson, Technical Committee Chair

Nicholas Couch, Law Enforcement Committee Rep.

**Staff**

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

The Horseshoe Crab Management Board of the Atlantic States Marine Fisheries Commission convened in the Ballroom East/West via hybrid meeting, in-person and webinar; Tuesday, October 28, 2025, and was called to order at 8:30 a.m. by Chair Eric Reid.

**CALL TO ORDER**

CHAIR ERIC REID: Good morning, everyone. I would like to call the Horseshoe Crab Board to order. Before we get rolling, Ms. Kerns, do you have an announcement for us this morning?

MS. TONI KERNS: Thank you, Mr. Reid. I just wanted to let the Commissioners and the audience know that today we are being filmed, as well as Rick Jacobson is online for U.S. Fish and Wildlife Service. I don't believe there is anybody else, and that is it.

CHAIR REID: Good morning, everyone again. My name is Eric Reid. I have the honor of sitting up here with Captain Couch, Ms. Starks and Dr. Nehemiah to get us through Horseshoe crabs this morning.

**APPROVAL OF AGENDA**

CHAIR REID: We've got some business items to do, some action items. First is approval of the agenda. Does anybody have any problems with the agenda? Seeing none; the agenda is approved by consent.

**APPROVAL OF PROCEEDINGS**

CHAIR REID: As far as the proceedings from May 2025, is there any edits, changes or are we good where we are? Seeing none; approved by consent. Next, public comment.

**PUBLIC COMMENT**

CHAIR REID: We don't have anybody signed up for public comment, but we always like to hear from our stakeholders in the public. Is there

any public comment this morning? Anybody online? Seeing none; okay.

Now, let's get to work. The first thing we're going to do is we're going to get a presentation from Dr. Nehemiah on the ARM model and then Ms. Starks is going to walk us through the Specs Package, and then once we get done with that, we have a few other action items. Ms. Nehemiah, whenever you're ready.

**SET DELAWARE BAY BAIT HARVEST SPECIFICATIONS**

DR. SAMARA NEHEMIAH: Good morning, everyone. For folks I haven't met around the table my name is Sammy Nehemiah. I am a new Stock Assessment Scientist for the Commission, so I'll be presenting the results of the ARM Framework since John Sweka cannot be here this week.

**REVIEW HORSESHOE CRAB AND RED KNOT ABUNDANCE ESTIMATES AND MODEL RESULTS FROM THE ADAPTIVE RESOURCE MANAGEMENT FRAMEWORK**

DR. NEHEMIAH: The Adaptive Resource Management Framework was revised and accepted by use for management by the Board in 2022. The Addendum VIII allowed for, I'll just back up and say, previously up until now Addendum VIII allowed for the ARM to be updated annually to set the recommendations for the Delaware Bay. Under the ARM Framework the maximum harvest that is allowed are 210,000 females and 500,000 males. Just a reminder of what the ARM recommended last year. The recommendation from the ARM were 175,000 females and 500,000 males. But the Board opted for 0 female harvest and a 2 to 1 offset. The objective statement of the ARM is to manage harvest of horseshoe crabs in the Delaware Bay to maximizes harvest.

But also, to maintain the system integrity, provide adequate stopover habitat for migrating shore birds, and ensure that the abundance of horseshoe crabs is not limiting the red knot stopover population or slowing recovery. Annual harvest

specifications require a couple different population estimates, so first it required a red knot population estimate from a mark-resight analysis, which is conducted by Jim Lyons at USGS.

It also requires horseshoe crab population estimates that are for both males and female crabs from the Catch Multiple Survey Analysis or CMSA. Some of the data inputs that go into the CMSA are two different fishery independent surveys so it had the Delaware, and I'll also talk about the data that we use for this. I have the Delaware Adult Trawl, which we used through 2024, a New Jersey Ocean Trawl that we have through 2024.

It has two indices from the Virginia Tech Trawl, which are sampled through 2023, but we lagged these surveys forward to match some of the timing of the other surveys. It also includes discard estimates, state landings and biomedical mortality through 2023. Here on this slide, you can see estimates from the red knot population estimates from the mark-resight analysis.

These estimates are in the black and the confidence intervals are in the gray shaded lines. You can see a slight increase over the last couple years. The 2024 estimate were just over 46,000 red knots and then increased slightly in 2025 to 54,000 red knots. I'll note that in the ARM we use population estimates for two years prior.

In order to get recommendations for 2026 we're using the 2024 terminal year of red knot, but we wanted to show 2025 here for your reference. We can also see on this slide estimates of female harvest that are used in the CMSA. We have the bait landings and the white bars, which have decreased ever since 2012, but there is still some in 2023 and 2024 from Virginia, which some Virginia crabs are assumed to be from the Delaware Bay origin.

You can see the discards in black, and these are pretty variable from year to year, but in the last few years have been a pretty small component. Then the coastwide biomedical data is shown in the gray bars. We're showing coastwide because Delaware Bay is confidential and has been increasing over time.

Here we see the same process for the male harvest. In 2024 the bait landings declined slightly, but again discards in black are pretty variable, but a small component in the last three years. Then again, coastwide biomedical mortality has increased over the past years. Here are the indices of abundance that we use and put in the CMSA model.

Here are our indices of abundance for female horseshoe crab. We have the two Virginia Tech indices in black, so the Virginia Tech newly mature index in the dashed black line, the Virginia Tech mature index in the solid black line, and I'll point out that the axis for that is on the right-hand side. The Delaware Adult Trawl Adult Survey is in the solid gray line and the New Jersey Ocean Trawl is in the gray dashed line. You'll note that the New Jersey survey and the Virginia Tech newly mature index have a slight decline from 2023-2024. The Delaware had a slight increase. You'll note that Virginia Tech newly mature had a really strong increase from 2023 to 2024.

I'll also note that the Virginia Tech newly mature index for the females was corrected based off of recreation from last year's ARM, and I'll go into kind of that in the next few slides. Now we can look at the seine surveys for the male indices of abundance. Again, the Virginia Tech newly mature survey and the New Jersey index show that climb of 2023.

The increase from the Virginia Tech mature trawl, again on the axis on the right-hand side shows a really strong increase compared to the female index. As a reminder, there was a correction made for the female Virginia Tech newly mature index, and so I'll go over these a little bit quickly, since it was already agreed upon last year. But I'll just remind folks what we did this year.

The Virginia Tech Trawl recorded zero female newly mature horseshoe crabs in 2022, and because the way the CMSA is set up, it has a hard time interpreting zeros in the indices, and so after further inspection it was noted that their low abundance of the newly mature females from 2020 to 2024.

There were two different hypotheses that went along with why that could be, but it was decided that maybe the likely cause was potentially misidentifying some of these female crabs in two other life stages. After talking with folks from Virginia Tech, it was assumed that the samplers were likely misclassifying newly mature females as immature females.

Because there was an increase in just the number of crabs during their sampling event, it made processing their samples difficult, and it was likely that they just weren't processing a representative subsample and weren't probing as many female crabs for eggs. In order to correct for this, it was hypothesized that males in a year  $t$  should have a positive correlation, a positive relationship with female newly mature crabs in year  $t + 1$ , because they are from the same cohort.

The different and newly mature females in year  $t + 1$  should be similar but lower than males in year  $t$  just due to natural mortality. They are experiencing the same natural mortality. When we plotted that relationship with the newly mature males on the X axis and the newly mature females in the Y axis, you see that relationship here.

A significant looking at positive living relationship where the slope is less than 1, suggesting that the natural mortality is the deciding factor. We corrected for the Virginia Tech female newly mature index with this kind of relationship, assuming they have relationship with newly mature males.

The good news is that the Virginia Tech crew corrected for this misidentification, and so the

report for what would be our 2025 year does show that new immature female crab back up to more reasonable levels, so we should not have to make this correction after this year. Now we can look at the results of the CMSA on the population estimates of the horseshoe crab. On this slide we're seeing female horseshoe crab abundance with zero biomedical data in the blue line and coastwide biomedical data in the red lines. Then those gray shaded areas are the 95% confidence intervals.

These results are very similar so they look like they are right on top of each other, but they aren't exactly the same. You'll note that in 2024 there was a slight decline in horseshoe crab abundance, just slightly under 20 million female crabs. But it was pretty stable in the last two years, and I'll note that the confidence interval on that are pretty wide. Then similarly we can look at the estimates of male horseshoe crab abundance in the Delaware Bay, and in 2024 saw more of a decline from 2023.

But overall, the population really has been increasing in the last few years. As a reminder, harvest recommendation is based on the results of the CMSA, so those horseshoe crab predation estimates and the mark-resight models for red knots. Per Addendum VIII, harvest is rounding down to the nearest 25,000 crabs, and so the ARM for 2026 recommended a harvest of 500,000 males and 175,000 females. I'll pass it off to Caitlin for this.

#### **SET SPECIFICATIONS FOR THE 2026 FISHING YEAR OR FOR UP TO THREE YEARS**

MS. CAITLIN STARKS: Thank you, Dr. Nehemiah. This year under Addendum IX, the Board has the option to set specifications for up to three years for male-only harvest using the ARM recommendation. The purpose of Addendum IX again, was to allow the Board to maintain male only harvest while considering changes to the Reward, Utility and Harvest Policy functions of the ARM, which was a recommendation from the July 2024 Stakeholder Workshop, and we'll talk about that next on the agenda.

The options on the table for today are first, to adopt male and female harvest limits as recommended by the ARM Framework, or second, to adopt male only specifications for one to three years. If the Board chooses to establish male only specifications for multiple years, that would mean next year the ARM would not have to be run and there would be no action required to maintain the specifications for another year.

But the Board would still review the horseshoe crab and red knot survey data, and have the ability to set more conservative specifications without running the ARM framework next year. These are the state allocations for male and female horseshoe crab bait harvest, based on the ARM output for the 2026 fishing year.

The Delaware Bay origin harvest quotas are on the left, and the total quotas are on the right, and those include the non-Delaware Bay origin crabs for Maryland and Virginia. Then in the bottom table are the state quotas with male-only harvest of 500,000 crabs and the two-to-one offset for Maryland and Virginia given no female harvest.

Today the Board, again it's considering setting specifications for the bait harvest for the Delaware Bay states, giving the ARM framework outputs and the possibility of multiyear specifications under Addendum IX.

CHAIR REID: Thank you doctor, thank you Ms. Starks. Any questions from the Board? Anybody online? Anybody in the public? Okay, seeing none; what is the pleasure of the Board here? Mr. Clark.

MR. JOHN CLARK: Thank you, Mr. Chair, thank you for the presentations. I would like to make a motion. I believe the motion is available to be put up. I'll wait until it's up there so I can read it. Okay. **I move to establish male-only harvest specifications for 2026 and 2027 based on the ARM framework, with 500,000 male and no female harvest of Delaware Bay origin crabs.**

**In addition, the 2-1 offset will be added to Maryland and Virginia's allocations due to no female harvest.** If I can get a second, I will give the rationale.

CHAIR REID: Is there a second for this motion? Mr. Borden. Mr. Clark.

MR. CLARK: As has already been mentioned, one of the reasons that we are looking at these multi-year specifications is because we wanted to get more input from the entire gamut of stakeholders for horseshoe crabs. I believe that going with two-year specifications is the right balance here. Two years will give time for the new stakeholder input to the ARM that we will be discussing after this item, to be fully incorporated into the new utility functions for the ARM.

Understanding that has been one of the complaints about the ARM, which of course is peer reviewed, excellent science that we've been using to set these estimates. I figured, like I said, a good balance here. We have the estimates recommended by the ARM each year. Each year they have been recommending that we can take a small number of females in addition to the males.

We have not been doing so because of these concerns that have been raised. This will give ample time for those concerns to be incorporated into the model, and hopefully at the end of two years when the ARM is run again, we will be having results that come out that will be much more accepted by the entire range of stakeholders of horseshoe crab. That's my explanation.

CHAIR REID: Mr. Borden, any additional rationale.

MR. DAVID V.D. BORDEN: My only question, it's a question to John, the two years versus three years. If I understand it there is no downside in three years. In other words, let's say we do everything that John wants to get done in a two-year timeframe that we want to reconsider the numbers at the end of two years. There is nothing that prohibits us from doing that, and I would ask the

staff to correct me, Caitlin or the staff to correct me if that is an erroneous interpretation.

CHAIR REID: You have two questions. Do you want John Clark or do you want Ms. Starks to respond?

MR. BORDEN: Well, I would like the staff to just make sure that that is correct and then I would like John to respond.

CHAIR REID: Ms. Starks.

MS. STARKS: Your limitation is that if the ARM is not run then you cannot establish female harvest in a year during a multiyear specification period that has already been set. You can establish more conservative male-only harvest. But if the Board tells us in advance, we do want to run ARM this year, we can do that. There is nothing preventing that from happening. There needs to be a new ARM run in order to change from a male only harvest specification to a female and male specification.

CHAIR REID: Mr. Clark.

MR. CLARK: Yes, to respond to David's question there. The reason I, as I said I went with two years. I think it's a good balance. As we know, if we go back to when the new ARM model was peer reviewed and accepted for management use, I believe that was 2022, 2023. Both the old ARM model and the new ARM model estimated that a small amount of female harvest could be allowed. The Board did not allow female harvest.

We heard from the certain stakeholders, particularly on the red knot conservation side that were very alarmed by the thought of any female harvest. We took those concerns into account, and we have not allowed female harvest. But at the same time, we do have a number of our people involved in the horseshoe crab fishery that of course would like to be able to harvest a small number of females again.

They have sacrificed for many years to allow the population of horseshoe crabs to rebuild to this point where some harvest could be allowed without having any impact on the red knot migrating population. I figure this will be the best way to allow the stakeholders that have concerns about this to have their concerns heard through the actual ARM process.

At the end of that if the ARM continues to recommend the small amount of female harvest, perhaps at that point that may be accepted. It may not be, but in any event two years should be ample time to allow this whole process to work out, and that was my rationale.

CHAIR REID: Discussion on the motion. Mr. Cimino.

MR. JOE CIMINO: Thank you to staff for the presentation. I'm not opposed to the motion, I am going to support it for the reasons, I agree with John, I think we have set something in motion here. We are going to be having further discussions on exactly what the ARM means and the utility functions. But with my support, as the seconder of the motion pointed out, that doesn't necessarily mean that we're moving into female harvest in two years, it's a reconsideration at that time. That's why I am happy to support.

CHAIR REID: Any further discussion? Ms. Costa.

MS. NICOLE LENGYELL COSTA: I just have a clarifying question for staff. I know it's the next agenda item, but is the two years, you know until we revisit 2028 specifications. Is that enough time to go through the stakeholder planning process and then we run the ARM?

MS. STARKS: Thanks for the question. I think as we all know it is pretty variable how long it can take to complete a process like this. Yes, in an ideal world it would be enough time. I think there are definitely, you know this is an issue that does require a lot of discussion.

Depending on the types of changes that would be considered and how much discussion the Board

wants to have about those, and the public input that you all want to receive about it as well. It could take longer than that. I would say two years is most likely sufficient, but it's really not, I can't say for sure.

CHAIR REID: All set? Any other questions from the Board? Mr. Clark.

MR. CLARK: Not a question, but just along that line. I would just say, I think two years also helps give us a deadline to hopefully get through the stakeholder process, get everything set and revisit this. Sometimes it is good to have a date certain, where you want to get some results.

CHAIR REID: Mr. Gates.

MR. MATTHEW GATES: Another question sort of along these same lines. What are the consequences of if we don't get the stakeholder work done in the two years? Where does that leave us for that third year then?

MS. STARKS: Under Addendum IX you have the possibility of setting multiyear specifications for males only for a total of six years. If we were not through the stakeholder process and the Board wanted to set another multiyear set of specifications for males only, you would be able to do that for up to another, up through 2031. It wouldn't really affect your ability to set specifications is what I am trying to say.

CHAIR REID: Ms. Kerns.

MS. KERNS: You would run the ARM again to set your specifications, that would be what would happen, and if you set more than two years here and we finished the process in two years, the only difference would be you would need a two-thirds majority vote to undo your specification that you set.

CHAIR REID: Thank you, back to the Board. Any further discussion on the motion? Mr. Gates.

MR. GATES: Yes, I think with that explanation. I think I would be more comfortable with a three-year period. I think I would, for discussion purposes at least, I would like to make a **motion to amend to add for three years.**

MR. REID: Your motion to amend would read: **For 2026 through 2028.** That is the change. Is there a second to Mr. Gates motion? Mr. McKiernan, you second that motion? Mr. Gates.

MR. GATES: I think it is more or less the same justification as for the two-year specifications, but this gives us that third year to complete the work without having to run that ARM, possibly run the ARM again with sort of the status quo conditions.

CHAIR REID: Thank you. Mr. McKiernan.

MR. DANIEL MCKIERNAN: I would anticipate hearing from John Clark about the appropriateness of this, but that's all.

CHAIR REID: Mr. Clark.

MR. CLARK: Yes, thanks, and Dan, you anticipated correctly. Yes, I certainly understand we gave ourselves the options to set these specifications for three years. But as I pointed out, you know we now in, what is this year four already of having the new ARM. As you recall, even under the old arm we were at a point where the estimates were saying that they had recommended a small amount of female harvest, even under the old ARM.

I think the ARM, as the population estimates show from both horseshoe crabs and red knots, that the ARM has been successful. It has done just what it said it would do. I think as I said earlier, that two years is a good balance. I didn't want to imply that stakeholders had not had input into the old ARM or the new ARM.

I think the whole process has been very transparent, has gotten a lot of input from stakeholders across the spectrum for horseshoe crabs. At this point, as I said, I think it sends the wrong signal to our traditional harvest community

that as a Board we're just kind of kicking this issue, you know we're just going to get another three years.

I mean we have; I would say a legitimate reason here to give it a couple years more of male-only to get this stakeholder input into this process. But I think that having that date certain is helpful, both to concentrate the attention of the Board and to let our entire public know that we're just revisiting this until we can get this additional input.

CHAIR REID: Ms. Starks.

MS. STARKS: I think the Chair just wanted me to clarify that just for everyone's knowledge. In a situation, if you were to set three years of 500,000 males today. If the stakeholder process were completed and we had the ability to run the ARM with the new changes that are hypothetically adopted in this scenario before the three years are over, and the Board wanted to use the results of that new ARM.

You could ask us to run the ARM in Year 2, or whatever point you want us to run the ARM with the new changes. Then you could use that to change the specifications before the three-year period is over. I just wanted to clarify that.

CHAIR REID: We have a motion and a motion to amend. Let's talk about them both so we can get that out of the way. Ms. Costa.

MS. COSTA: I just wanted to clarify. If we do revisit the specifications before the three years is up you need a two-thirds majority vote. But we can still do it.

CHAIR REID: Okay, thank you. Anybody else but Mr. Clark want to have a say here? Ms. Kennedy, go ahead.

MS. CARRIE KENNEDY: I prefer the three-year specifications, just because I think it give us more flexibility. While I am hopeful and optimistic that we can do it in two, and I would

like that to be our goal. I think it behooves us to have three years and not have to run the model before then just to extend it.

CHAIR REID: Thank you, Ms. Vice-Chair, appreciate it. Anybody else? Mr. Cimino.

MR. CIMINO: If you don't mind one more bite at the apple, Mr. Chair. I struggle with this. New Jersey has a moratorium in place, I expect that to stay in place. There is a lot at stake for some of the species. But I still support the main motion, because I feel like this is a discussion on what we consider.

You know we had this conversation when the ARM was approved. The best available science is out there and it's saying that there is some safe harvest level. I don't want to walk away from that discussion in best available science. I'm not saying that in a couple years I'm going to be willing to support female harvest. But I think that continued discussion is important.

CHAIR REID: Anybody else? Mr. Clark.

MR. CLARK: Thank you for your indulgence in letting me speak again. I mean after hearing Caitlin's explanation, both motions pretty much will have the same impact. As mentioned, if there was three years, yes you could revisit in two years with a two-thirds majority. But I still think the original motion, the signal it's sending out is that we want to get this process done in two years.

As we all know, a job will tend to take as long as it's allocated to it, just like a contract will cost as much as is allocated to it. I think that giving ourselves the two years is sending the right signal to the entire spectrum of the stakeholders interested in this is that we're taking this seriously. We want to get more input.

The ARM model has been peer reviewed; it's been shown to be one of the first and best ecological models. It's taking into account both the harvest of horseshoe crabs and its potential impact on the

migrating shore birds. I really think we need to go with the original motion of two years.

CHAIR REID: Anybody in the public, anybody that would like to address the motions that are on the board? Yes, sir, please state your name and any affiliations you may have or have had in the past, and perhaps your recipe for cookies would be fine as well.

MR. PATRICK AUGUSTINE: Yes, I'm Pat Augustine, former member of this illustrious body for 16 years, and here we are kicking the can down the road, discussing something that was so clearly stated as being the right decision, and motion by Mr. Clark and Mr. Borden, and just wasting a bunch of time drawing away. I would make a motion to either table the substitute motion or amend the motion or table it forever, and pass judgment on the original motion.

CHAIR REID: Thank you, Mr. Augustine. Anybody else in the audience? Anybody online? Seeing none; back to the Board. Is there any further discussion on either of these motions before we go down the road of the vote? Okay, so first we're going to address the motion to amend. Is there any need to caucus? Okay, I believe there are two sides to this motion, so we will take a vote. Raise your hands. **All those in favor, please raise your hands, and keep them up so Ms. Kerns can count.**

**MS. KERNS: Rhode Island, Connecticut, North Carolina and U.S. Fish and Wildlife Service.**

**CHAIR REID: Put your hands down. All those opposed, raise your hands, please.**

**MS. KERNS: Massachusetts, New York, New Jersey, Florida, Georgia, South Carolina, Maryland, PRFC, Virginia and Delaware. I apologize, it's very hard to see faces at the other end of the table.**

**CHAIR REID: Any abstentions, any null votes? Motion fails 4 to 10 by my count.**

CHAIR REID: Now the underlying motion is now the main motion. Any further discussion? Seeing none; is there any need to caucus? Seeing none, **is there any opposition to the motion on the board? Seeing none; is there any null or abstentions? Seeing none; the motion passes by unanimous consent.**

Ms. Starks that's it for this item.

CHAIR REID: Okay, thank you very much. Let's move on to our next presentation, Ms. Starks two or three or four. She's only got another half a dozen to go after this, so Ms. Starks, Stakeholder Engagement.

**UPDATE ON STAKEHOLDER ENGAGEMENT  
PROCESS PLANNING FOR EVALUATING ADAPTIVE  
RESOURCE MANAGEMENT FRAMEWORK REWARD,  
UTILITY, AND HARVEST POLICY FUNCTIONS**

MS. STARKS: I just want to provide some updates on the stakeholder engagement process that we mentioned today. To start off with a quick review of the background. In July 2024 we held a Stakeholder Workshop and convened a small group of stakeholders representing the environmental NGO, fishing, biomedical, bird and horseshoe crab scientists and management and folks with an interest in this issue to discuss the Adaptive Resource Management Framework and objectives for the Delaware Bay Region state fishery.

One of the key consensus recommendations from that workshop was to refine the ARM Framework's reward and utility functions with stakeholder input. Now as a reminder, the Utility Reward and Harvest policy functions or URH functions as we're abbreviating them are equations in the ARM Framework that are reflective of the values of the stakeholders.

The Board tasked the ARM Subcommittee with discussing these functions and recommending a process for getting stakeholder input on them to

inform possible changes. The ARM Subcommittee recommended a multistep process with engagement of various stakeholder groups, led by a third-party facilitator or facilitators with expertise in structured decision making. In May, 2025 the Board support pursuing this approach. After the May meeting the Commission put out a request for proposals for facilitators with the specific expertise of early today needed for this process, and we have contracted with Compass Resource Management. We did a press release a month or two ago requesting applications for participants in this process, and invitations were recently sent out to a group of stakeholders to participate in the full process and an in-person workshop.

We've also had already several planning meetings with the Compass Team to develop an overarching plan and schedule and content for stakeholder meeting. The process that we've outlined includes several steps, and the first in that is over the next few weeks Compass will be scheduling small group calls with each stakeholder group.

For the purposes of this process, the participant groups are the bait fishery, dealers, biomedical, shorebird conservation, horseshoe crab conservation and ecosystem conservation. However, we do recognize there is a lot of overlap in these groups, so we're hoping to dig into that during this process.

The purpose of these calls is for Compass to provide information to the participants about what the process is going to look like and expectations, and also to enhance their understanding of the different perspectives of each of these stakeholder groups ahead of the workshop. The next step will be a series of educational meetings or webinars, webinars, they will be virtual, in November or December.

These will be to establish the scope of the workshop discussions and goals, and increase the participants understanding of the Utility,

Reward and Harvest Policy Functions of the ARM Framework, and to review differences between the original and the revised ARM Framework, and generally allow for an open discussion between the technical experts and stakeholders to allow for more understanding of this entire system.

These webinars will also be opened to all stakeholders, not just the selected workshop participants, to broaden understanding outside of just this group. Then Step 3 will be the in-person stakeholder workshop, and we're aiming to schedule this for January. Federal shutdown has kind of complicated our planning process; we do have a lot of federal partners involved. But we're hoping to keep this on track for January.

This will be the core of the process where the selected active participants who represent these various groups within the Delaware Bay bait fishery will come together and participate in a structured process to illicit information about their values related to horseshoe crab management. The Compass Team is highly experienced in this type of process, so they will be running the show to make sure the ARM Subcommittee gets the information they need to inform any potential changes to the URH Function.

After that workshop the ARM Subcommittee and the Delaware Bay Ecosystem TC will have to meet to review all the information gathered at the stakeholder workshop, and translate that into possible changes to those functions to better align with current stakeholder values. The ARM Subcommittee will perform the technical work to develop alternative functions, review these with the Delaware Bay Ecosystem TC, and the two committees will make recommendations to the Board on how to move forward.

Then finally, the Board will meet most likely in May 2026 at the spring meeting, to review updated ARM runs and proposed alternative functions, developed based on the stakeholder input. If there is a desire to pursue those changes at that time, it would need to initiate an addendum to consider adopting the

changes to the URH Functions. With that I can take any questions.

CHAIR REID: Any questions? Mr. Clark.

MR. CLARK: Thank you, Caitlin. I just wanted to check, is Compass the same group that did the workshop last year?

MS. STARKS: No, it is not. Last year's workshop was conducted by Christina Weaver and she is based in Virginia. Compass is actually a firm based out of the West Coast and Canada, Vancouver area. It is a new party that is new to this process, and I think that will bring some fresh eyes into the mix.

CHAIR REID: Any other questions from the Board? Go ahead, John.

MR. CLARK: Just a follow up question. The process you said should be ready for the Board to review by this next May. Just to follow up on the motion that we just approved, this should give the Board time to review what they've done and hopefully decide on specifications. You know, be ready, because we're not even talking about setting different specifications until 2028. This actually gives, I would say, a lot of time for the Board to consider this.

MS. STARKS: Yes, just to follow up. I think there is still more uncertainty around the time it would take to complete the addendum process, because if the Board initiates an addendum in May, the earliest it could be completed would be for October, which is when you all set specifications typically. You know given the complexity of these value-based functions; I think it might take more time than that to complete the addendum process.

CHAIR REID: Anybody else on the Board with a question? Anybody in the public? Anybody online? Okay, Ms. Starks, thank you very much. Let's move on to Ms. Starks. We're going to Consider Action.

### **CONSIDER APPROVAL OF FISHERY MANAGEMENT PLAN REVIEW AND STATE COMPLIANCE FOR THE 2024 FISHING YEAR**

MS. STARKS: All right, thank you, Mr. Chair. Next up is the FMP Review for the 2024 Fishing Year. I'm going to go over the status of the FMP, the fishery management plan, the status of the stock, the status of the fishery and the PRTs review of the state compliance with the FMP provision, and finally the recommendation.

This is a quick summary of the management for horseshoe crab at the Commission, our FMP was approved in 1998, it has been modified by 8 addenda, actually sorry, 9 most recently, is Addendum IX in 2025, which allows for the multiyear male only specs, and then before that in 2022 you all adopted Addendum VIII, which implements the new ARM revision. For stock status, horseshoe crab stock status is based on the 2019 Benchmark Assessment and the 2024 update to that assessment. The stock status is determined using the results of the ARIMA analysis in the assessment and its based on the number of surveys in each region or coastwide that are currently below the index level in 1998, and 1998 is the reference point because this represents the point in time when horseshoe crabs became actively managed by ASMFC, so status relative to that 1998 point gets an indication of the effective management on populations.

A 2024 update to the assessment indicates that the stock status of the northeast region remains neutral. The New York Region status continues to be poor, with three out of four surveys being below the 1998 reference point. Then the Delaware Bay and coastwise status have improved from neutral to good since the 2019 benchmark, and the southeast status has remained good as well.

The assessment also produced abundance estimates for the Delaware Bay population using the CMSA that Dr. Nehemiah went over, but that is not used for stock status. This figure is showing the annual values of reported horseshoe crab bait landings in orange, biomedical collections in light

blue, and the estimated biomedical mortality in dark blue.

The values are in millions of crabs. Bait landings since about 2003 have fluctuated around the same level, and in the last eight years or so there has been an increasing trend in biomedical collection that's the light blue bars, and so mortality is updated with that. The total reported harvest in 2023 was 550,909 crabs, and that includes confidential landings.

This is a 25% decrease from the 2023 landings and 34.6 of the Commission's overall coastwide quota for horseshoe crab. The states of Massachusetts, New York, Virginia, Delaware and Maryland make up 99.9% of the total for 2024, with Massachusetts and New York harvesting the highest numbers.

States with greater than 5% of the coastwide landings are required to report sex-specific data for at least a portion of their bait harvest. For 2024 those states were Massachusetts, New York, Delaware, Maryland and Virginia. Within these states excluding Massachusetts, because their data were not yet available, 77% of the reported bait landings were male, 21% were female, and 2% were unclassified in 2024.

For biomedical in 2024 the number of crabs collected for the sole purpose of LAL collection in the biomedical industry was 1,073,329 crabs, and this is a 3% decrease from 2023. The estimated biomedical mortality was 184,693, and this is 15% of the total crabs that are bled, plus the observed mortality reported by each state.

The biomedical mortality represents about 25% of the total directed mortality, so that is state harvest plus biomedical mortality, which was about 735,000 crabs in 2024. Compared to 2023 there was a 20% decrease in the overall mortality, including bait harvest and biomedical mortality in 2024. Here you can see how those two pieces compared to each other, with this graph showing the overall mortality.

The orange area is the bait harvest mortality and the blue area is the estimated biomedical mortality. The PRT, Plan Review Team, had a few notes to highlight from the Compliance Report Reviews. All states appear to be in compliance with the FMP measures. The only issue was that Massachusetts was not able to submit a compliance report by the deadline. Changes in state regulations include that Connecticut prohibited hand harvest of horseshoe crab and eggs as of October 2023, and New York had implemented additional lunar closure in May and June to protect spawning crabs.

For de minimis status, states can qualify if their combined average landings for the last two years are less than 1% of the coastwide bait landings for that two-year period and South Carolina, Georgia and Florida have requested and meet the de minimis criteria. Then the recommendations from the PRT are to continue to prioritize long term funding for the Virginia Tech Trawl Survey, as that is critical for our current management program.

They also recommend working towards getting annual estimates of horseshoe crab discard removals from other fisheries. That wraps up the FMP Reviews and the Board action for consideration is to approve the FMP Review for the 2024 fishing year, state compliance reports and de minimis requests.

CHAIR REID: Okay, any questions from the Board? Mr. Hasbrouck.

MR. EMERSON C. HASBROUCK: I have two questions. On the slide for bait harvest that you had up earlier, if you could go back to that, please. Total 2024 coastwide harvest was 550,908 crabs. Then there is a bullet at the bottom that says Mass data not provided. Does that mean the Massachusetts data was not provided and is not included in that 550,000 or just of percent male and female were not provided? That's my first question.

MS. STARKS: I believe it's just the percent male and female, but I can check very quickly and make sure.

MR. HASBROUCK: Then my second question had to do with the funding for the survey. It's in place for 2026, where is that funding currently coming through?

EXECUTIVE DIRECTOR ROBERT E. BEAL: The funding for the Virginia Tech Trawl Survey comes through an appropriation line in the Federal budget, and it comes openly from the Science Center, the Northeast Fisheries Science Center. It's been consistent for close to a decade now, quite a while. Once funding is in the Federal budget for that long it is relatively easy to keep it going. It is a lot easier than getting new funding, so I think we're in a pretty good space there with consistent funding.

MR. HASBROUCK: Well, in the past it's been easy to keep it going, who knows what we're going to see going forward, right. But hopefully it stays in the budget. Thank you.

CHAIR REID: Mr. Miller then Mr. Clark.

MR. ROY W. MILLER: If I may follow up, Bob. Is that the funding something we need to work on at the Legislative Committee level, or not?

EXECUTIVE DIRECTOR BEAL: That is one of our funding priorities every year when we go to Capitol Hill with our funding priorities. We are working on that. Alexander and I reiterate that anytime we meet with appropriations staff, or anyone else that can help us out. Obviously, it is important. Emerson sort of eluded to it, the funding cycle that we're in right now probably has less certainty than some of the previous ones.

As it goes forward, we'll see what the President's budget looks like, you know is going to propose for next year and we can react to that. Individual states going to their individual offices does carry a lot of weight. We'll keep you all informed on how this is progressing and we can set up some meetings for folks around the table if they want us to.

CHAIR REID: Mr. Clark.

MR. CLARK: Thank you for the presentation, Caitlin. I just wanted to point out that at least for Delaware, I mean there has been a dissonance right here between what was actually landed last year, only 35% of the quota as opposed to what the population estimates show. I know for Delaware it was not for lack of horseshoe crabs; it was because of the market.

I think, Craig, you probably saw the same thing happen where the price. We only harvest male horseshoe crabs in Delaware; the price was low. I know one of our dealers told us that he was kind of limiting the number that you could get sold in any given time. Just wanted to point out, it was not because the crabs weren't there.

CHAIR REID: MR. CIMINO.

MR. CIMINO: Just going back to some of the comments on the Virginia Tech Trawl Survey. There have been enough kudos to Bob and Alexander. I know we're dealing with the government shutdown and we're uncertain on the budget. But from the drafts that we've seen from both House and Senate, Virginia Tech Trawl Survey is in there.

I think that is that tremendous effort that we've never let our foot off that pedal, and to Roy's question, I don't think we ever should. Whether or not year after year it helps. The fact is it is always something that we have to make a priority for us, and we'll talk about that later in the week as well. But I was very happy to see that in all the draft budgets so far.

CHAIR REID: It certainly doesn't hurt, and if any of you have the desire to go up to the Hill or find out who you have to contact to support that survey, Mr. Law would be more than happy to help you. Anybody else? Go ahead, sir. I can't see your name; you don't have a name tag. I'm blind, so it doesn't matter. Please state your affiliation and your name before you get going.

MR. STUART POTTER: I'm from Delaware, my name is Stuart Potter. I see you say last year 184,000 crabs were killed through the biomedical industry. I just want to know why is that not considered a harvest and come off of each state's quota.

MS. STARKS: The FMP manages the bait quota and the biomedical collection separately. It is accounted for. Those mortalities that occur from the biomedical industry are accounted for in our population model for the Delaware Bay bait specifications that we just discussed. But we do not have a quota for biomedical, so that is why it's not taken of the bait quota.

CHAIR REID: Are you all set, Sir?

MR. POTTER: Maybe it should come off the Bay quota.

CHAIR REID: Okay, thank you. Anyone else in the audience? Anybody online? Okay, I'm looking for a motion to approve. Mr. Hasbrouck.

MR. HASBROUCK: I'll make that motion. Staff has it prepared.

CHAIR REID: Go ahead, Emerson.

MR. HASBROUCK: **Move to approve the FMP Review and state compliance reports for the 2024 fishing year, and de minimis status for South Carolina, Georgia and Florida.**

CHAIR REID: Thank you, is there a second to the motion? Mr. Grist are you seconding the motion? I don't think we need any rationale. Is there any discussion? **Is there any opposition? Seeing none; the motion passes by consent.** Thank you very much. Just one more piece of business.

We have some recommendations from the PRT. I don't think we have to have a motion. If there is any discussion on those recommendations we can have it now, and if there is no opposition I

would be happy to have nodding heads to approve that. Okay, it's approved. Our last item of business is, if you remember that last meeting, we held off on repopulating our AP to get the public another chance to get in the game.

What we did was we formed a working group to go through all the applications, and I want to thank Ms. Berger and Ms. Starks and the working group. There were a lot of qualified people, but the working group certainly, never mind, I'll let her talk.

### **REVIEW AND POPULATE ADVISORY PANEL MEMBERSHIP**

MS. STARKS: I didn't want to have to make you go through all of that when I have it on the slide. I'll go over the summary of what that work group worked on. Again, this came out of the July 2024 Stakeholder Workshop, which then evaluated the ARM Framework and thought about objectives. One of the recommendations they made was also to evaluate the Horseshoe Crab Advisory Panel to determine if it had adequate representation across stakeholder groups.

Earlier this year the Board reviewed the AP membership and agreed it would be beneficial to consider reshaping the panel to have a more even distribution of advisors from each region or more equitable distribution. Additionally, it decided to conduct an open solicitation process for additional nontraditional stakeholder seats.

### **BOARD WORK GROUP REPORT ON ADVISORY PANEL COMPOSITION**

MS. STARKS: The Board formed a workgroup to look at all of this and that workgroup consisted of several Commissioners. They reviewed new nominations and developed recommendations on appropriate distribution of advisors by region and user group, which that workgroup met over the summer. They reviewed a total of 14 nominations that were submitted for nontraditional stakeholders and 3 nominations for commercial fishery appointments. Regarding the overall distribution, these are the workgroup recommendations by

region. For the northeast they recommended 3 advisors, including 1 individual from the commercial fishery, 1 from biomedical industry and 1 nontraditional stakeholder.

For the Connecticut and New York region they recommended 2 advisors, including 1 commercial fishery and 1 nontraditional stakeholder. For the Delaware Bay they recommended a total of 13 advisors, recognizing the focus of this area for horseshoe crab. That includes 5 commercial fishery advisors, 3 biomedical and 5 nontraditional stakeholders.

For the southeast the recommendation is 2 advisors, including 1 biomedical and 1 nontraditional stakeholder. Generally, these recommendations aim to balance the relative interests of each region, and represent various gear types in the commercial fisheries, as well as diverse expertise among the nontraditional stakeholders, and also to make sure the overall size of the AP would result in more productive discussions within the group.

After a thorough review of all of the nominations that were submitted, the workgroup recommended appointing the following individuals to the AP by region, in addition to the current advisors sitting on the panel. For commercial fishery appointees, Edwin Chiofolo is representing the Connecticut/New York Region and he is from New York, a second-generation fisherman with 40 years of on the water experience.

Stuart Potter from Delaware is a fourth-generation fisherman that's been fishing for conch and hand harvesting horseshoe crabs since 1994. Pete Bender from Virginia is a long-time participant in the commercial fishery and harvests horseshoe crab using dredge and trawl gear. The nontraditional appointees include Helen Cheng from Massachusetts, who has a Master of Science in horseshoe crab population dynamics and behavior, and served on the

Massachusetts Division of Marine Fisheries  
Horseshoe Crab Science Committee.

Jennifer Budai, I'm sorry if I am mispronouncing any names, is a citizen scientist from Connecticut with over 10 years of experience observing horseshoe crab and shorebird interactions, as well as watching horseshoe crabs, and was endorsed by Representative Gresko that sits on the Commission.

Susan Linder from New Jersey is a wildlife biologist with the Wildlife Restoration Partnership in New Jersey and assists with shorebird and horseshoe crab research. Tim Dillingham is from New Jersey was a former Executive Director of the American Littoral Society. Glen Gauvry from Delaware is the President of the Ecological Research and Development Group, which is a nonprofit focused on horseshoe crab conservation.

Carly Touran from Maryland is an environmental scientist for the Maryland Coastal Bays Program that assists with monitoring efforts related to horseshoe crabs and shorebirds. Jane Brockman from Florida is a professor emeritus of Biology at the University of Florida, and has conducted academic research on horseshoe crabs for 35 years. This is a very qualified group of individuals recommending to be added and there is one recommendation for removal, just based on lack of activity on the panel, which is John Turner from New York. Then additionally, the workgroups recommendations include that AP meeting attendance should be reviewed regularly to determine if additional changes to the panel are needed, to make sure it is continuing to be active.

For the nontraditional advisory appointments, the recommendation is that they would serve a four-year term consistent with the traditional commercial advisor's seat. Then after four years the Board could consider renewing those appointments. Then to wrap up, the Board action for consideration is to approve the recommendations to changes to the Advisory Panel membership today.

CHAIR REID: Any questions from the Board?  
Seeing none; we need a motion to approve.  
Ms. Kennedy.

MS. KENNEDY: **Move to improve the changes to the Advisory Panel membership, as recommended in a workgroup memo dated October 10, 2025.**

CHAIR REID: Is there a second to this motion?  
Ms. Costa. Discussion, other than thank the working group for their effort. That is a discussion on my part. **Any opposition? Seeing none; the motion passes by consent**, and there are working group recommendations on how to move forward over time. Are there any issues with that recommendation? Can we accept that recommendation as well? Seems that we can. Is there any other business? Go ahead.

MS. STARKS: I just also wanted to express thanks for all of the applications that came in for Advisory Panel seats. There were a lot more applications than, well not a lot, but there was a large chunk of applications for this, so it was really encouraging to see the interest in the horseshoe crab management issues, and thanks to those who applied and were not approved today.

#### **OTHER BUSINESS**

CHAIR REID: Okay, that brings us to Other Business. There is some other business from New York. Is there anybody else that has any other business for Horseshoe Crabs today? Mr. Hornstein.

#### **NEW YORK UPDATE**

MR. JESSE HORNSTEIN: Just had a couple things I wanted to speak about and promise I'll keep it brief. First thing is related to the 2029 Benchmark Assessment. Really, really like to encourage the Horseshoe Crab Stock Assessment Subcommittee to prioritize the integration of all the best available science into that benchmark.

Datasets that begin after the 1990 reference year, including NEAMAP trawl data and statewide spawning surveys should be considered quantitatively alongside other longer-term surveys. These spawning surveys target adult horseshoe crabs, whereas most of the surveys that we utilize in the regional assessments catch horseshoe crabs as bycatch.

Mostly spawning surveys are fixed station, but so are many of the surveys that we use in these original assessments like New York's beach seine surveys. In the 1998 management plan, spawning survey data was recommended as the highest research priority for determining spawning stock biomass. Since then, many states have made significant investments in these surveys, including both financial, New York has spent over a million dollars on the survey since it started, and the staff time and citizen scientists as well to conduct these surveys. We just hope that all efforts can be made to incorporate that information into these regional assessments moving forward.

The other thing I want to just provide a quick update on is the bill that would ban horseshoe crab harvest in New York. Last year this bill was vetoed by Governor Hochul, and this year it was reintroduced and passed both legislative chambers again, and it's currently at the point where we're still waiting for the Governor to make a decision on it.

Just if the bill was to pass there would be regional implications for horseshoe crab bait markets and availability. For instance, New York's welk fishery would continue to not require horseshoe crabs as bait or have to look to other states to meet their needs. Impacts of this bill, you know would not only impact New York, but also reach broader regional impacts and across various fisheries as well. That's it, thank you.

#### **ADJOURNMENT**

CHAIR REID: Thank you, Mr. Hornstein for your comments and your updates. Is there any other

business? Motion to adjourn by everyone,  
opposed by no one. Thank you very much.

(Whereupon the meeting adjourned at 9:33a.m.  
on Tuesday, October 28, 2025)