# PROCEEDINGS OF THE

# ATLANTIC STATES MARINE FISHERIES COMMISSION

# HORSESHOE CRAB MANAGEMENT BOARD

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

**May 3, 2023**
**Approved October 16, 2023**

**TABLE OF CONTENTS**

## INDEX OF MOTIONS

## ATTENDANCE

### Board Members

Dan McKiernan, MA (AA)
Raymond Kane, MA (GA)
Rep. Sarah Peake, MA (LA)
Jason McNamee, RI (AA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)
David Borden, RI (GA)
Justin Davis, CT (AA)
Rob LaFrance, CT, proxy for B. Hyatt (GA)
Jesse Hornstein, NY, proxy for B. Seggos (AA)
Emerson Hasbrouck, NY (GA)
Jeff Brust, NJ, proxy for J. Cimino (AA)
Adam Nowalsky, NJ, proxy for Sen. Gopal (LA)
John Clark, DE (AA)
Roy Miller, DE (GA)
Craig Pugh, DE, proxy for Rep. Carson (LA)
Mike Luisi, MD, proxy for L. Fegley (AA) (Acting)
Dave Sikorski, MD, proxy for Del. Stein (LA)
Russell Dize, MD (GA)
Shanna Madsen, VA, proxy for J. Green (AA)
Chris Batsavage, NC, proxy for K. Rawls (AA)
Mel Bell, SC (AA)
Malcolm Rhodes, SC (GA)
Chris McDonough, SC, proxy for Sen. Cromer (LA)
Spud Woodward, GA (GA)
Carolyn Belcher, GA, proxy for Rep. T. Rhodes (LA)
Erika Burgess, FL, proxy for J. McCawley (AA)
Gary Jennings, FL (GA)
Marty Gary, PRFC
Chris Wright, NMFS
Rick Jacobson, US FWS

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

### Ex-Officio Members

Brett Hoffmeister, Advisory Panel Chair
John Sweka, ARM Subcommittee Chair
Nicholas Couch, Law Enforcement Representative

### Staff

Robert Beal
Toni Kerns
Madeline Musante
Tina Berger
Tracey Bauer
Emilie Franke
Chris Jacobs
Jeff Kipp
Adam Lee
Caitlin Starks

### Guests

Max Appelman, NMFS
Pat Augustine, Coram, NY
Russell Babb, NJ DEP
Meredith Bartron, US FWS
Alan Bianchi, NC DENR
Nora Blair, Charles River Labs
Jeff Brunson, SC DNR
Melissa Chaplin, US FWS
Haley Clinton, NC DENR
Margaret Conroy, DE DFW
James Cooper
Deborah Cramer
Ben Dyar, SC DNR
Chiara Eisner, NPR
Jacob Espittia, FL FWC
Julie Evans
Catherine Fede, NYS DEC
Angela Giuliano, MD DNR
Shirley Goffigon, Fuji Film
Shari Heller
Berlynna Heres, FL FWC
Jay Hermsen, NOAA
Alexandria Hoffman, DE DFW
Brett Hoffmeister, AP Chair
Blaik Keppler, SC DNR
Wilson Laney
Christina Lecker, Fuji Film
Ben Levitan, Earth Justice
Samantha MacQuesten, NJ DEP
Nichola Meserve, MA DMF

**Guests (continued)**

Steve Meyers
Allison Murphy, NOAA
Deborah Murray, SELCVA
John Pappalarado, Cape Cod Fishermen
Michael Pierdinock
Tracy Pugh, MA DMR
Zoe Read, WHYY
Allen Reneau, Fuji Film
Paul Risi, City Univ, NY
Daniel Sasson, SC DNR
Chris Scott, NYS DEC
McLean Seward, NC DENR
Jennifer Slovinski, Fuji Film
Brian Sparrow, Fuji Film
David Stormer, DE DFW
Yoshihiro Takasuga, Fuji Film
Wendy Walsh, US FWS
Megan Ware, ME DMR
Craig Weedon, MD DNR
Kristoffer Whitney, RIT
Angel Willey, MD DNR
Jordan Zimmerman, DE DFW
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, a hybrid meeting, in-person and webinar; Wednesday, May 3, 2023, and was called to order at 1:10 p.m. by Chair John Clark.

**CALL TO ORDER**

CHAIR JOHN CLARK: Welcome everybody; I'll be chairing the meeting. I'm John Clark from the state of Delaware.

**APPROVAL OF AGENDA**

CHAIR CLARK: Let's get right into this. Our first item is Approval of the Agenda. Does anybody have any questions or concerns about the agenda, any additions? Seeing none; the agenda is approved by unanimous consent.

**APPROVAL OF PROCEEDINGS**

CHAIR CLARK: The second question is the Approval of the Proceedings from the November, 2022 meeting. Does anybody have any comments about the proceedings? Seeing none; those are approved by unanimous consent.

**PUBLIC COMMENT**

CHAIR CLARK: Now we move on to Item 3, which is Public Comment. Do we have anybody signed up for public comment? Okay, is there anybody in the room that would like to make a comment about an item that is not on the agenda? Seeing none; we will move on then. Excuse me, we have an online, and Ben Levitan would like to make a comment about an item that is not on the agenda.

CHAIR CLARK: Okay, you are free to speak, Mr. Levitan.

MR. BEN LEVITAN: This is Ben Levitan from Earth Justice, and I'm speaking on behalf of New Jersey Audubon and Defenders of Wildlife. In a letter that we submitted into the supplemental materials for this meeting, we conveyed our appreciation for the Board's decision last fall to acknowledge significant public concern about red knots, and maintain a zero female bait harvest for Delaware Bay origin horseshoe crabs.

We also ask the Board to resolve an obstacle to future public participation. Specifically, going forward the public won't know in a given year whether the Board intends to maintain the zero female bait harvest, or adopt the recommendation of the new ARM model, which is expected to consistently recommend a substantial female harvest.

We're asking the Board to resolve this uncertainty by committing to provide advanced notice if it will consider authorizing a bait harvest of female horseshoe crabs. For example, the Board could commit to notifying the public no later than its summer meeting if at the annual meeting in the fall, the Board will consider authorizing a female harvest for the following fishing year.

If the Board provides that notice, concerned members of the public can submit comments and demonstrate their continued opposition to a female harvest, and if the Board doesn't provide that notice, the public will have assurance that a female bait harvest is not a live issue for the next fishing year. Without this sort of process in place, the public may feel compelled to organize against a female harvest every year, which would just waste time and resources for both the public and the Commission. But with a process like the one I just described; the Board could safeguard public participation by enabling the public to make informed choices about when to engage in the Board's decision making. Thank you.

CHAIR CLARK: Thank you, Mr. Levitan, and I believe with one of our agenda items we will at least partially address your concerns there. That was it for public comment.

**CONSIDER THE WORK GROUP REPORT ON BIOMEDICAL BEST MANAGEMENT PRACTICES**

CHAIR CLARK: We will now move on to Agenda Item 4, which is to Consider the Work Group Report on

Biomedical Best Management Practices, and this is an action item. Take it away, Caitlin.

MS. CAITLIN STARKS: I'll just give a presentation on the Work Group's recommendations on the Biomedical Best Management Practices. To start off with some background. As a reminder, at the August, 2022 meeting the Board agreed to form a Work Group to review the Best Management Practices for handling biomedical catch, and suggest options for updating and implementing the BMPs.

This was based on a recommendation from the Plan Development Team that no action was needed related to the Biomedical Mortality Threshold that's in the FMP, but that the Board could continue to annually review estimated biomedical mortality levels, and also form a work group to address and improve upon the Biomedical Best Management Practices.

The Work Group members are listed on the slide here, and they included state and industry representatives, who are technical experts in horseshoe crab biology at biomedical blood collection processes. The Work Group was tasked with looking at the original BMPs, which were developed in 2011, and included recommendations for best management practices for each of the steps in the biomedical process, from the point of capture to the point of release.

These BMPs are recommended but are not required by the Commission's FMP. The FMP does include some requirements that relate to biomedical collections, including the states. States are required to issue a special permit or other specific authorization for harvest for biomedical purposes, and that horseshoe crabs taken for biomedical purposes must be returned to the same state or federal waters from which they were collected.

Then additionally, the FMP requires states to report the number of biomedical horseshoes crab collected, the number bled, the number of observed mortalities, and the number of horseshoe crabs that are released alive on an annual basis. This 2023 Work Group met five times this winter and spring, and they reviewed the BMPs from 2011. The product of these meetings, which was included in your Board materials, is an updated draft BMP document.

This updated version includes additional context and background information on the biomedical industry and fishery, the purpose of the BMPs, the relevant FMP requirements and a modified list of BMPs that were recommended by the Work Group, as well as additional research recommendations. The Work Group also recommended changes to the flow chart that shows the steps in the biomedical process. On this screen is the old chart from the 2011 document, and then this is the modified chart that is recommended by the Work Group. The changes here are getting at trying to more accurately describe the process, and include the process of in-water holding of horseshoe crab between the point of capture and being transported to the facility, which was not previously recognized in the BMPs from 2011. Just to walk through this. We start at the point of collection of the horseshoe crab, and then there is the possibility that they might be held in water for a short period of time before being transported to the facility, where their blood would be collected.

At the facility they are held and inspected for bleeding, so there are some crabs that are accepted, and they would get their blood collected, and then other crabs that are rejected for reasons such as looking damaged or unhealthy would go back into holding until they can be released. All of the crabs that are bled also go into holding, and then all of the crabs together are released alive to the state or federal waters where they were collected.

All right, I'm not going to go through the recommended changes that the Work Group proposed to the BMPs themselves. I want to start by saying that the recommended changes were mostly to reorganize and streamline the BMP document. The main changes that are in the document are that the overarching BMPs that apply across the process were moved up to the top, since these are pretty important for general handling practices.

Similarly, some of the BMPs were recognized or moved to different sections, to better align with the biomedical process. As mentioned, the Work Group also added a section related to in-water holding BMPs. In general, though most of the 2011 BMPs were maintained in this document, sometimes two BMPs that were covering similar issues were combined to reduce redundancy. There were some cases where edits were made to reduce specific details like temperature ranges, in order to make the BMPs more applicable across the states or regions.

This means there is not as much detail in these BMPs as some folks might have been looking for, but the Work Group agreed that because of the range of different environmental conditions and regulations across the states, it would be difficult to specify some of these aspects in the BMPs, because what is best in one state may not be best in another state.

In the next set of slides, I'm going to go over each section of the BMPs, and highlight some of the more major changes. The first section of BMPs covers the overarching practices that apply to the whole process. In the first bullet, language was added about avoiding anoxic conditions, which was not previously addressed.

Then in the next bullet, which is avoid prolonged exposure of gills to fresh water. This was moved into this section from a different section, to make it clear that this should be avoided at all points in the process. The last two highlighted bullets were also moved up to this section from other sections.

The first of those was modified from the previous version. The 2011 version read, return to the water as soon as possible. If not being returned to the area of capture, ensure that conditions, salinity, water temperature et cetera are similar to those found at the harvest site, and the revision, which is highlighted here states, return horseshoe crabs taken for biomedical purposes to the same state or federal waters from which they were collected. This change was intended to be consistent with the language in the FMP requirement. One bullet was removed from this section, because the Work Group thought it was redundant, which was generate written procedures for all handlers of horseshoe crabs, covering all steps in the process from collection to release. There is another bullet in this section about written agreements, with outlying practices and expectations.

The next section covers the collection of biomedical horseshoe crabs. The first change is in the first bullet, which now reads, minimize tow times for targeted horseshoe crab trawl tows. The Work Group recommended removing specific tow times, which were previously defined as 20 to 30 minutes, because the Work Group felt that there was not sufficient data or information to substantiate this number.

In the second bullet on proper care and handling of horseshoe crabs while sorting and placing into bins, the Work Group recommended changes to highlight certain practices to minimize injury to crabs, so we have, avoid dropping/tossing horseshoe crabs, et cetera. Then in the fourth bullet on night collections, language was added to say, when permitted by state regulation.

This recognizes that some states do not allow collection of horseshoe crab at night. More details were added to the next bullet about not collecting or returning soft shelled or undersized horseshoe crabs, in addition to those that appear unhealthy. The last bullet was moved from a later section to this one, because the Work Group wanted to recognize that crabs that have been marked as being bled already in the last year, should be returned as soon as possible, rather than be collected and brought into a biomedical facility at all.

This whole section on in-water holding is a new addition that the Work Group recommended. In their discussions the Work Group recognized that this practice does not occur everywhere, and that there are not yet a lot of technical studies to provide guidance that could be included in the BMPs. But they did want to add the section, and provide some general guidance.

The recommendations here are to include minimized holding time, avoid overcrowding, monitor water

conditions, temperature dissolved oxygen salinity, and minimize exposure to stressful conditions, as well as follow state guidelines on holding conditions where applicable. In the transport to facility section there was a minor change to add that transport containers should also be protected from heat as well as sunlight.

Then there were a few BMPs from the 2011 Work Group that the Work Group recommended be removed from this section. The first of those was a BMP that said, to maintain temperature between approximately ambient water temperature at the time of collection and 10 degrees Fahrenheit below ambient water temperature.

The Work Group discussed this at length, and they ultimately decided that the range of normal temperatures and environmental conditions and the range of states that have biomedical collections are variable, and they wanted to have BMPs that could apply across the board. They couldn't determine a temperature range that would be the same for all areas. They also recommended removing the BMP to maintain good ventilation while stacked in bins. This is because the Work Group thought there could be room for confusion with this BMP, because on one hand the horseshoe crabs need oxygen, but on the other, too much airflow could dry out the gills, and that would negatively affect respiration. To address this issue, the Work Group added language to the overarching section about avoiding anoxic conditions. In the Holding at Facility/Blood Collection section, the changes were pretty minor.

The word ideally was added to the first bullet. That recognizes that sometimes unforeseen circumstances can cause the holding time to exceed 24 hours, but the goal is to always hold the crabs for less time. Then in the third to last bullet, the Work Group suggested this edit so that it now reads, cease blood collection once blood flow rate slows, instead of the previous wording, which was bleed until the rate slows down, so that excessive bleeding is prevented.

This change was really intended to make it clear that blood collection should stop immediately at the point that the blood flow slows down. Then these are the last two sections of the BMPs. Under post blood collection holding in our last bullet, the Work Group recommended changing it from keeping crabs in the dark to keeping them in low light areas.

This is because they didn't want to give the impression that the best practice is to keep them in complete darkness. A few of the BMPs that were in this section were also moved up to the overarching section. Then lastly, there were no changes recommended for the Return to Sea section. In addition to the BMPs that were recommended, the Work Group came up with a list of research recommendations that they believe would enhance our understanding of the impacts of the biomedical process on horseshoe crabs.

They recommended studying survival rates over time, when kept in water holding ponds or pens. They recommended studying the impacts of biomedical collection processes on spawning of horseshoe crabs, comparing mortality rates across different collection methods, and estimating horseshoe crab discard mortality associated with trawling collection.

They also recommended summarizing the findings of current literature on horseshoe crab mortality associated with blood collection, and comparing those across experiments that more closely reflect the BMPs versus those that do not reflect the BMPs. They also recommend quantifying mortality rates of horseshoe crabs post blood collection, applying the BMPs in other standard biomedical industry practices, and studying conditions that minimize movement and injury of horseshoe crabs during biomedical processes such as light and density.

During their meetings there were a few other issues that the Work Group discussed, which didn't really fit into this BMP document, but the Work Group thought they were worth raising to the Board. First, the Work Group recommends that the management board task the Technical Committee with reevaluating the calculation or the coastwide biomedical mortality estimates that are presented in Commission documents.

The Work Group discussed the possibility that with our current calculation process, which adds the observed mortalities to a 15 percent estimated mortality of bled crabs. This could result in double counting of some horseshoe crab mortalities, so they would like to see this looked into, to clarify that. The Work Group also recommends the Commission's FMP be modified to use language that accurately reflect the practices used by the biomedical industry. One example here is the use of the word collection rather than harvest in the context of biomedical, because of the requirement that those crabs be released alive. Another example is the use of the word shipping in the FMP versus transport, which the Work Group thought could be misleading about the distance or time it takes to move crabs.

Then lastly, the Work Group discussed that while there are five biomedical operations along the Atlantic Coast that are licensed by the U.S. and Drug Administration, there are some other operations along the coast that are not licensed by the FDA, but are still permitted by the states to collect blood from horseshoe crabs for other purposes such as health or medical research.

They just thought it would be good to get a better understanding of these operations, so the Work Group recommends that each state provide a report back to the Board on those activities and the permitting and reporting requirements associated with them. Thanks for hanging in there through a lot of information. This is my last slide. Today, the action before the Board is to consider approving the recommended changes to the BMPs that were proposed by the Work Group. With that I can take any questions.

CHAIR CLARK: Thank you very much, Caitlin. Before we get to questions, in my cake-addled state, I rudely did not introduce that presentation. An excellent presentation was given by Caitlin Starks, who is the FMP Coordinator for Horseshoe Crab, and I'm also joined by Kristen Anstead, who as you know is our expert on all things ARM related or modeling for Horseshoe Crab. Sorry about that, too much cake. Now, on to questions. Who has questions about this? First, I have Rob LaFrance. Go ahead, Rob.

MR. ROBERT LAFRANCE: Thank you, Caitlin, for a great presentation. I guess my question now is, what is the next step? In other words, do we take this document, and does it go for public review like we would with other amendments or addenda, or is this it?

MS. STARKS: Thanks for that question. I think that is a little bit up to the Board. The 2011 BMP document did not go out for public review. It was simply this process where a Work Group was formed, they recommended BMPs, brought those back to the Board. The Board approved that list of BMPs, and it was posted on the Commission's website. Again, these are recommendations that the Commission is posting, but it is not something that is required by our FMP. If there is an intent for that to be different, then I would need guidance from that.

MR. LAFRANCE: From my own point of view, just in response to that, I would love to see this actually, because there was a fair number of people commenting on this, you know slightly differential. I think there was a lot of information provided about future research. My sense is, both of those things would be worth another go around, if you will, with some of the public who are interested, very interested in the species.

I think you're making headway, but I think there are some still, I would describe them as perhaps slightly not quite coordinated elements of what was written by this Horseshoe Coalition letter, as well as what was put together by the Working Group. My sense is it would be helpful, I think, from both people's understanding of the horseshoe crab issue, to do a little bit more outreach to the public, and perhaps spend a little time allowing people to comment on all elements of what you put together, which I think has been some really good work. Thank you.

CHAIR CLARK: Next, we have Chris Wright online.

MR. CHRIS WRIGHT: Yes, I have a couple of questions. In the one slide you added, or the group added on the word observe. Who is going to be doing the observation? Is that going to be the state

law enforcement folks? That was not clarified in the edit.

MS. STARKS: Yes, thanks for that question. The Work Group did discuss that it made sense to them that it should be up to the states to decide who was doing these types of audits or observations, since they have different processes within facilities and state's regulations. They did not clarify who would be responsible for those.

MR. WRIGHT: Okay, and then the second question, that helps me, the second question was that a lot of times they tag the bled crabs, but as far as my recollection is. But for those rejected crabs, do they also tag those so we can get the mortality rate on those that are actually released?

MS. STARKS: I do not believe so.

MR. WRIGHT: They're just tagging those bled crabs.

MS. STARKS: That is my understanding.

MR. WRIGHT: I'm just wondering, because I know they were talking about recommendations regarding, you know mortality rates for those released crabs, but if we tag a proportion of those, we might be able to get some information if we tag those also, if they are already in the facility. Anyway, those are my two questions. Thank you.

CHAIR CLARK: The next question is from Dan McKiernan. Dan will pass. Any other questions? I see Justin and then Jeff. Go ahead, Justin.

DR. JUSTIN DAVIS: I guess I'll return back to Rob's earlier comment about public comment. I think I agree with Rob that there might be some benefit in sending this out for public comment. I can't see any harm in that, given that we're not up against, as I understand it, some sort of deadline to complete this.

We're probably not likely to take a look at it again anytime soon, since it's been quite a while since we updated these. But I do think, if you are interested in hearing opinions about that around the table, then we would have to think about, what do we do with that public comment? What would be the next step?

Would that public comment go back to the Working Group? And then they would have to decide if they want to make any changes to the document in response to that comment. I think that would have to be worked through. But I guess I'm just interested in hearing opinions around the table, and expect to hear something from Toni here on that.

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

MS. TONI KERNS: Just quickly in follow up, Justin, just as the Board comments on that to understand the intention. These currently are recommendations; they are not requirements of the FMP. Typically, we don't go out for public comment on things that are recommendations. Would it be the intention of the Board to ask the states to make this a requirement in some way, shape or form?

I don't know if that would be in order to get the permit this would be a requirement of the companies or not. Just as you are commenting on that, to try to have a better understanding, because what are we asking of the public on these recommendations?

CHAIR CLARK: Thanks, Toni, thank you, Justin, and next we have Jeff Brust and then Ray Kane.

MR. JEFFREY BRUST: I guess before I get to my question, I just wanted to respond to Justin. I don't really see any issue taking it to public comment, other than how you finished with, what would we do with that? To Toni's point, they are just recommendations. I appreciate that clarification, because that was going to be one of my questions.

What would we do with that public comment? I would hope that we can keep these as recommendations. I agree with a lot of the things that are in this document. I think there is enough variability across the coast and across the different collection facilities, that there is a one-size-fits-all that makes these requirements.

I would hope that we could give each facility the flexibility to work within these recommendations to use what fits their operation most appropriately. Notwithstanding that certain states can take any one of these recommendations and make them regulatory in their own state. But I don't think we're ready to make these essentially compliance criteria for all operations equally at the same time. I guess that's my response to your question.

I guess I just had one other question, maybe to Caitlin or to Kristen. There is a bullet in there that said, review current literature on biomedical collection practices, especially those that are following the BMPs to reevaluate the mortality rate. Is there any new research, or are we just going back to the studies that have already been reviewed back in what, one and a half, two decades ago? I would be just curious to know if there is anything new, or we've just got the same list that we've had for a while now. Thank you.

MS. STARKS: I believe there is one newer study that was not used, but this is something that we would be looking at through the Horseshoe Crab Assessment Update process. Regardless of what happens coming out of this meeting, it is something that would be looked at throughout that process as well.

As you remember in the 2019 benchmark, they reevaluated that estimated mortality number by doing a metadata review of all the research that is out there. But I think the thing to focus on for what the Work Group is recommending is really honing in on the experiments that followed the BMP versus those that did not. Because I think right now the 15 percent, there is a perception that this is based on all of the studies and not necessarily just those that follow the practices that are actually used.

CHAIR CLARK: Did you have follow-up, Jeff?

MR. BRUST: I thought about it, but no, I think I'm good.

CHAIR CLARK: Next, we have Ray Kane.

MR. RAYMOND W. KANE: I've never studied the physiology of a horseshoe crab, but it has come to my attention by both captains of otter trawlers and deep pickers. Is there a better way, a more appropriate way of marking a horseshoe crab that has had blood drawn, as opposed to painting a stripe on it? Because according to these harvesters that paint fades rapidly. I was wondering if there was a more appropriate way of marking the crab.

MS. STARKS: I don't think I have an answer for the most appropriate way to mark. I know that the facilities do use different methods, and the methods that they use are because they think that they are working well. I'm not sure I can answer that question for you.

CHAIR CLARK: Next, we have Roy Miller, and then Chris McDonough.

MR. ROY W. MILLER: This question is for either you, Mr. Chair, or for Caitlin. Can you refresh my memory what happens, or what you are allowed to do with a crab that succumbs as a result of the bleeding process? Can it be entered into the bait market, or are these bait market and bled crabs kept entirely separately at all times?

MS. STARKS: Thanks for the question, Roy. I can answer that. To be as clear as possible, there are crabs that are collected under a bait permit, and there are crabs that are collected under a biomedical permit. The biomedically collected crabs under a biomedical permit, may not be entered into the bait market, even if they die during the process.

The bait crabs, there are a few instances where states allow those crabs to first be bled by the biomedical facilities, in order to kind of kill two birds with one stone, in effect, and then go back to the bait market. But those crabs are always counted against the bait quota, and they are always assumed to have the 100 percent mortality rate applied to them that would apply to a bait crab.

MR. MILLER: Do you know what happens to the crabs that succumb, what their eventual distribution is?

MS. STARKS: I do not. I assume that they are put back into the environment, but I am not sure.

CHAIR CLARK: Next up we have Chris McDonough.

MR. CHRIS McDONOUGH: Yes, Caitlin, I'm just curious. On the new section in the recommendations, the in-water holding. You guys have under monitoring water conditions, you guys aren't really recommending any minimum environmental standards, and I'm assuming that is covered under the last bullet, follow state guidelines on holding conditions, because then it would depend on the location and the state.

MS. STARKS: Yes, that is correct. There are differences in the in-water conditions that these crabs are being held in. Just generally from my understanding through these Work Group discussions, there are some cases where they are held in a harbor, and some cases where they're held in a coastal bay. Those are two very different environments, and the Work Group did not have numbers to put on these things like temperature dissolved oxygen for that reason.

CHAIR CLARK: Are there any other questions? Rob Lafrance.

MR. LAFRANCE: I just wanted to follow up on Roy Miller's question having to do with those crabs that are taken in the bait market, versus those crabs that are actually utilized for biomedical purposes. When I was reading the material, I did not get a sense of what the volume of that is. I am very interested to know what percentage overall is actually being done that way. I mean there was discussion of like the 15 percent versus 100 percent. But if you could help me understand that better that would be a big help from my perspective.

MS. STARKS: Yes, I can try to clarify. A portion of the bait crabs, the total bait crabs that are taken on an annual basis, and this is again only occurring I think in one state or two. Those states have quotas for those bait crabs, and if they choose to allow some of those crabs to go to the biomedical facility first, they still are counted under their bait quota. Does that clarify it?

MR. LAFRANCE: It does, and this may be a silly question, but I want to understand. Those bait crabs, when they are going to the facility. Do they have to be treated under the same processes that would be otherwise required for those crabs that will be returned to the ocean or not?

MS. STARKS: Again, these are not requirements in the BMPs in the first place, so I would say no they are not required to be treated in a certain way. But the Work Group did discuss that these BMPs are targeted at the crabs that are intended to be released alive. If there are facilities that are doing dual use, which is bleeding of bait crabs before they go back to the bait market, then I think it is up to them how to handle those. But my understanding is that they typically follow the same processes that they use for the biomedical crabs.

MR. LAFRANCE: Thank you, that is very helpful. My concern is, if they are not, how would you know the difference when they are at the facility, right? You bring one in, it came that it's going to be tagged ultimately to be used as bait, and another one that is going to be returned to the ocean. How do you know if you are actually looking at that whether they were actually complying with that, so it's a concern?

MS. STARKS: If I could just follow up on that. My understanding is that the crabs that are brought in from the bait market are batched together, and they are not intermingled with the biomedical crabs.

MR. LAFRANCE: But that's not included in the BMPs, correct?

MS. STARKS: Accurate, yes.

MR. LAFRANCE: Again, that is one small issue that I would like to see, why I would like to be able to go out to the public on some of these smaller things, recognizing that BMPs are not requirements. But they will be looked at, I believe, as documents that the Atlantic States Marine Fisheries Commission has looked at, and will be looked to as best management

practices across the industry. That is why I would like to see them reviewed publicly.

CHAIR CLARK: Thank you, and I see we have a question from Craig Pugh.

MR. CRAIG PUGH: Yes, and Mr. Lafrance's comments. These BMPs seem to be quite micro managerial as the fishery conducts itself, as far as I can point to one example right now. The tow times of the dredge are generally dictated by depths and bottom structure, you know dictating the time. If you're going to regulate that and put it into like a regulatory program that would be certainly hard to enforce.

I think if you're going to look at this, we have to take a much, much deeper and harder look at these managerial micromanaging points that they've explained in here. I would take issue with some of those, maybe because I'm not so sure that most people in this room are aware of that type of fishing and what it takes to get that part of it done.

MR. LAFRANCE: If I might respond, Mr. Chair.

CHAIR CLARK: Go right ahead, Rob.

MR. LAFRANCE: Thank you for those comments, I wouldn't disagree. I guess part of what I'm trying to say is, I'm not just looking for one side to make comment. I would also be interested to hear from the industry on what their concerns may be or not be, in terms of I understand there were representatives there. But sometimes representatives don't represent the entire industry. Again, I'm looking at this more from a transparency perspective for what the Board does on a document that ultimately will be looked at as the Board's work thing.

CHAIR CLARK: Are there any other questions? I'm not seeing any hands. Anybody remotely? Chris Wright, you have another question?

MR. WRIGHT: No, sorry. I didn't put my hand down from prior.

CHAIR CLARK: All right then, we've had a discussion here, a good amount of questions. Our next step on this, this is an action item, so because these are just recommendations, are we moving to approve them or accept them, or what's the deal here?

MS. STARKS: Yes, so I think that the Board could choose to approve the modifications that were made by the Work Group or recommended by the Work Group. If that is the route that the Board were to go today, we would post that new document online in place of the old one. If there is a desire to do something different, other than approve these, then I would need some kind of guidance. Thanks.

CHAIR CLARK: Bob.

EXECUTIVE DIRECTOR ROBERT E. BEAL: Just a question or comment. If the Board approves these recommendations as Caitlin commented, they remain that. They are still recommendations. They are not binding on the states or on the industry, they are just recommended best management practices by the Atlantic States Marine Fisheries Commission, and we'll publish them on our website and those sorts of things. I just want to be clear; they don't become binding if the Board approves them today.

CHAIR CLARK: Just to clarify also, because I know Rob brought up the question of public hearings about it or doing some sort of outreach about this. Is approving it and putting it on the website, would that preclude doing any further outreach on this? Go right ahead, Bob.

EXECUTIVE DIRECTOR BEAL: Well, you know we don't really have a mechanism to do public hearings on a suite of recommendations, recommended best management practices. You know I'm not sure where the Board is on this, but if we wanted to open up a whatever, 30-day public comment opportunity or something like that, that could be done. But again, back to maybe Justin's question of then what. What are you going to do with that feedback that you get? You could do that, I'm just not sure where we go with that.

CHAIR CLARK: Thanks, Bob. Just to maybe summarize. The Board can either approve, these will be posted as the recommendations put on the website, maybe a press release done about it, or if as you mentioned there. If the Board preferred to have like a 30-day comment period, or something to that effect, the Board could move to do something like that at this point, or that would work. We have a couple options here. Does anybody want to put forward a motion? Dan McKiernan.

**MR. DANIEL McKIERNAN: Yes, I would move that we accept the draft document as final, and publish it on the ASMFC website.**

CHAIR CLARK: Do we have a second? I see Mel Bell. Okay, we have a seconded motion. Once it's on the board if anybody would like to make a comment, speak to it. Of course, after you, Dan.

MR. McKIERNAN: I can speak to it, it's a pretty simple motion. Just to assure everyone that we have in Massachusetts, I'll speak for my own agency, you know a close oversite and a close working relationship with the companies involved with this. We have permit conditions on their permits that we place that are largely based on this, but in some cases are more restrictive. We will continue to work these issues, not only with the processing firms or the biomedical firms, but also with the harvesters, because there has been a shift in the harvesting makeup, or the makeup of the harvest is where more and more of our crabs are being harvested by otter trawlers, you know more than three miles from shore in some pretty productive areas. We are evolving our management strategies to accommodate that. This is a good document. You know the team put their heads together. We do recognize that there are differences among the companies, but in the locations relative to temperature and the like in salinity. I'm comfortable with the document, but it doesn't mean that we're not going more restrictive on some of the conditions.

CHAIR CLARK: Thanks, Dan. Mel, as the seconder, did you have any comments you would like to add?

MR. BELL: No, other than I think you had a good group of folks here, in terms of their experience level and they were the folks that gave this a lot of thought and input, so you got some good recommendations. I will say as Dan mentioned, we do permit this fishery, and we already have things in place that are more restrictive or more detailed than some of these. I think I'm satisfied with them.

CHAIR CLARK: Thanks, Mel, anybody have any comments? I see Rob Lafrance. Go right ahead, Rob.

MR. LAFRANCE: I was very satisfied with a notion of a 30-day comment period, allowing for people to comment. I'm not looking for digestion of that. I mean my sense is if people have a concern, they could write it in and we would record it. I don't know whether that needs to be added to this, but if it were something that was just left open, where staff could review and just send to this Board any comments that came in from the public.

I do not believe that we're going to get into the minutia of trying to deal with it. But I do think it would be helpful for all of us to understand if there are concerns. I guess I'm looking to what Bob had recommended, and wondering if we can just ask that be posted on the web, and if people want to comment they are given 30 days. I'm not looking for anything else.

MS. KERNS: Rob, I guess a question back would be, if we do post them for comment but you are approving them today, what are we doing with those comments?

MR. LAFRANCE: I think that is for the next go around, right? I mean at some point in time people are going to say they either liked them or they didn't like them and why they did or they didn't. But you're adopting them today based upon the work of the Working Group. I guess all I'm saying is, it's almost like taking an exception to a decision. You are able to put on the record why it is you didn't like it.

MS. STARKS: If I could just respond to that quickly. I think that the Work Group, first of all, did discuss that these BMPs are meant to evolve over time. The

original Work Group that put them together in 2011 wrote that into the document, and this Work Group maintains that and does expect that there could be future changes to the BMPs. If we're posting it online and folks want to send in comments, we will definitely record those and keep them in our records, and send them to the Board. Next time the Board wants to revise or review these BMPs, it would just need to initiate a new process.

MR. LAFRANCE: Well, that satisfies me, so thank you.

CHAIR CLARK: Any further discussion of the motion? Seeing none; is there any need for the Board to caucus on this motion? Yes, okay why don't we take two minutes to caucus. Okay, before we call the question, we did have another comment from Chris Wright, and Chris, you are reminded to please mute yourself after you make your comment, thanks.

MR. WRIGHT: I have a question just clarifying on the motion. Is this just on the BMP document, or are we going to discuss the recommendations later that the group had?

CHAIR CLARK: This is just on the BMP document.

MR. WRIGHT: All right, are we going to have a discussion on the recommendations then?

CHAIR CLARK: Are you referring to the next agenda item? Sure, we could discuss those after we take the vote.

MR. WRIGHT: All right, thank you.

**CHAIR CLARK: Okay, we've had time to caucus. I guess before we do a vote, is there any opposition to the motion? Okay, seeing none; I think we can have the motion approved by consent.** Before we move on from the subject then, as Chris just brought up. He wanted to speak to the recommendations, right? Okay, I guess at this point then, since Chris, you brought it up. Would you like to make a comment?

MR. WRIGHT: Yes, I would like to just have a little discussion on the recommendations. The one recommendation that I was interested in, and we might be able to take action on now is the other non-FDA organizations that are part of the industry that are still bleeding, but we're not tracking those. I'm a little bit confused. Are we just not tracking those in the state reporting? If not, I think we might be able to get that resolved today, because in my mind we should be tracking those folks also.

MS. STARKS: I can try to respond. The conversation that happened at the Work Group level was that some of the Work Group members believe that there are other operations that are not one of the five FDA licensed biomedical facilities that do collect and bleed horseshoe crabs.

It is unclear what those facilities are and what their permitting requirements are, and that's why this came up. I do think we would need input from the states to understand if there are crabs that are being collected and bled that are not being reported by the Commission, we would need to understand that.

MR. WRIGHT: Great, and so can we at least ask the states to either report on that informally or put them in their state reports? I don't know which way the process is for that. But I would like to get an idea about that too, because I didn't know that there were other operations that were bleeding crabs, and I don't know if they are under state permit or what have you. I've been on the Horseshoe Crab Board for quite a while, and that's the first I've heard of it.

MS. STARKS: I think talking with Toni, it seems like it would be a good idea to send a questionnaire out to the Board by e-mail after this meeting, to try to get at some of these questions.

MR. WRIGHT: Yes, that sounds fair.

CHAIR CLARK: Thanks, Chris, any further comment about the recommendations? I'm not seeing any hands.

MS. STARKS: I guess I want to ask for guidance on this first recommendation about tasking the Technical Committee with reevaluating the mortality estimates. Is it something the Board would like the

TC to work on more immediately? If so, we can have that conversation.

CHAIR CLARK: Yes, Shanna.

MS. SHANNA MADSEN: Maybe this is just a clarification. I thought that when Jeff asked his question regarding this, it was clear that the biomedical mortality would be looked at when you do the stock assessment update, which is coming up.

MS. STARKS: Thank you. These are two separate issues. I know it's a little nuanced, but there is the 15 percent estimate of bled crabs that are assumed to die. That is what we are referring to with the stock assessment, where they would review all the literature related to that. Then this question is more specifically about when we calculate the number of total biomedical mortality in our Commission documents, are we double counting any mortalities? Right now, when I get reports to me from the states, that includes the number of mortalities. They have a column usually of observed mortalities, where the crabs are at some point, but from collection to release observed to die. Then we also have a 15 percent applied to any crabs that are bled. The question is getting at whether there is any double counting there.

CHAIR CLARK: Do you need further input on that, Caitlin, or Shanna, do you have a follow up?

MS. MADSEN: Well, I think Caitlin's question now I understand, is when we might want to do that. Is there something that we can roll into the stock assessment update? Like, is it necessary that we tackle that right now? I feel like we're tasking you guys with a lot of stuff, and we're talking about potentially tasking with you more things at our next decision point. I'm trying to figure out what works best.

MS. STARKS: I do believe that this is something that the Stock Assessment Subcommittee could tackle. When we do the stock assessment, we will want to validate the data on biomedical mortalities, and so I think this would fall into that.

CHAIR CLARK: That makes sense. Okay, so a new task has been added then. Okay, now is that the end of the discussion of this item, or is there anything else that anybody wants to bring up about the BMP? Oh, Mr. Beal.

EXECUTIVE DIRECT BEAL: Just back to the 30-day comment period. I'm not clear if that was a consensus of the Board. Rob brought it up. Are we doing that or not? You know if the Board wants to do it, we can do it. If there is consensus that we don't need to revisit these or have additional public comment right now. We could do it; you know obviously public comment at a later date before we update BMPs the next time. It just wasn't clear on the record of whether we're doing it now or not.

CHAIR CLARK: Well, that makes two of us, Bob. Let's see, I've got a couple of hands here. Mike Luisi and then Jeff Brust.

MR. MICHAEL LUISI: I'll just say that in my experience, I think that is more frustrating for an individual who wants to make comment to something like this, to make that comment with no expectation that the Board is going to consider making any changes at this time, as kind of what was discussed with Caitlin's idea about when this is revisited again, perhaps we could fold in some of the information we hear from the public.

I think that even if you don't open a public comment period for 30 days, you're going to get comment based on the actions that were taken as a result of the press release that goes out, that states that the Board approved these best management practices. If you're engaged in this discussion, you are going to go online.

You are going to read the BMPs, and someone is going to get an e-mail about it, probably Caitlin and John, as well as all the shark collection permits that you'll be getting soon. But that is just my take. I think you are going to hear what you're going to hear. I don't know that 30-day comment period with no action on top of that is necessary at this time. Thanks, John.

CHAIR CLARK: Jeff and then Rob Lafrance.

MR. BRUST: I think I agree completely with what Mike just said. I don't understand why we need to put a time certain on the review period. We're going to get comments. We get comments on all our other completed actions as well. It will be on the web; people can comment on it.

At some point, yes, I think that those comments should come back to the Board. You know it's been 10 years since we looked at these the last time, 12 years, maybe. Perhaps if we get a substantial number of comments, the Board hears about that and reconsider when the next update comes. But again, I don't see any need to put a time certain review period on this.

CHAIR CLARK: Thanks, Jeff, and Caitlin, you have a response.

MS. STARKS: Yes, I just kind of want to add on to something that Jeff said. Our typical process with receiving comments, outside of a specific comment period, is that if those comments come into our comment's inbox or to staff directly, we save those and we put them in the materials for the next Board meeting. Those comments would come back to you in the following meeting after they're received, and we can certainly compile them all and save them in our records for the next time the BMPs come up as well.

CHAIR CLARK: Rob, you had a comment?

MR. LAFRANCE: Yes, I did not know that was the process, so in many ways I guess I was trying to maybe simplify it, so you would only keep those for 30 days. But I mean again, to the extent that there are comments, and I think the comments are not only on the BMPs, but they are on some of your other research recommendations. I think we will get comments, and as a member of the Board I would love to see them. Since they are going to be in the next materials, I am satisfied by that as well.

CHAIR CLARK: Mel Bell, you had a comment?

MR. BELL: Yes, I was just going to say, I mean Rob is right, we'll get comments and we will see the comments, and Mike is absolutely right. My fear is having a process set up where you are actually asking for comments on something that you've already made a decision on. That wouldn't sit well with me if I was commenting. I think we've got it set up properly.

CHAIR CLARK: Was the idea that we would have that in the press release would say, if you have comments send them to the comment box? No? I'm full of good ideas. The comments will come in regardless, got it.

Are there any further comments on this subject? All right, seeing none; we are going to move on to Item Number 5, which is to Review Potential Processes and Resources Required for Evaluating Management Objectives for the Delaware Bay Bait Fishery. Caitlin, you have another presentation on this.

## REVIEW POTENTIAL PROCESSES AND RESOURCES REQUIRED FOR EVALUATING MANAGEMENT OBJECTIVES FOR THE DELAWARE BAY BAIT FISHERY

MS. STARKS: Yes, you have to listen to me again. All right, so I am going to go through this pretty briefly. This is in your materials. There was a memo on this. This is just to summarize what's in that memo, to provide the Board with some ideas for thinking about evaluation of the management objectives for the Delaware Bay Horseshoe Crab bait fishery. In November, 2022, the Board adopted the revised ARM Framework with Addendum VIII, and it set specifications for 2023 for Delaware Bay bait harvest.

That was set at 475,000 males and 0 females. At this time the Board discussed forming a Work Group to evaluate the current goals and objectives for the management of the Delaware Bay horseshoe crab fishery. That is why we're bringing this back today. What we did as staff was come up with a couple of options for ways that the Board could go about evaluating these management objectives.

I'm just going to run through those really quick. The first one is a stakeholder survey, the second is a

Board/Work Group process, and the third is a more in-depth process that would look like an Ecosystem Management Objectives Work Shop, similar to the one that was done for menhaden. The stakeholder survey idea concept is that this would be our lower end of resource requirement intensity. For personnel we would be looking at ASMFC staff, along with 5 or 6 Board members to develop the survey.

We expect this would take about 4 to 6 months to put the survey together, send it out to a specific set of stakeholders, and receive those responses, and then analyze them and bring the results back to the Board. Major budget items, this is not expected to cost much, unless we want to do an in-person Work Group meeting, so that is the main thing there. Then the next suggestion is a Board/Work Group process, and this would be a more medium level resource requirement. Our personnel needs would be again, ASMFC staff, and then we would look for Board members to serve on the Work Group, as well as some Advisory Panel members and Technical Committee and stakeholder representatives to advise the Work Group, not necessarily to participate on it, but to actually bring some information to that group to help them.

We are imagining this process taking from 6 to 9 months, in which we would set up that Work Group, form the Work Group. Have a couple of meetings with the Work Group, and maybe either at or between those meetings have some consultations with the stakeholders that I mentioned, to try to help develop recommendations for potential management objectives, or changes to the management objectives for the Delaware Bay.

That group would then be responsible for producing a report that would include those recommendations and information, and bring that back to the Board. For this we would plan on having in-person Work Group meetings, in order to have a more effective conversation. That would be the major budget item.

Then the last suggestion is this type of Ecosystem Management Objectives Workshop. This is expected to be a pretty big lift, and some higher resource requirements, in terms of staff and money. For personnel we would need ASMFC staff as well as Board members and Advisory Panel members and some technical and stakeholder representatives to attend the workshop or workshops, as well as either a Workshop Chair or a hired facilitator to run that.

For this we would expect a longer timeline somewhere from 9 to 12 months. That takes a lot of planning to put something together like this. On the front end we would need more time to set up that workshop, and then the workshop would occur and we would use that to develop a report that would come back to the Board with some potential recommendations for management objectives or changes to those. As you could guess, our major budget items here would be actually having that in-person workshop with stakeholders and a facilitator.

The next steps for the Board today are to discuss what your intentions are with evaluating the Delaware Bay Management Objectives. I think it would be helpful to hear today what questions you are specifically hoping to answer through any of these processes, and maybe once we have some discussion on that we can consider if you would like to move forward with one of these or multiple of these processes today or put this on hold for now and come back to it later. With that I can take any questions.

CHAIR CLARK: Thank you, Caitlin, and as the Board remembers, the impetus for this item was the brilliant new ARM Model, which we approved in Addendum VIII. Of course, it did show that female horseshoe crabs could be harvested again, and in fact even the old ARM Model would have allowed that. The Board at the time, because of the huge amount of public consternation about that, decided male-only harvest.

We decided to move ahead with this item, to see what we want to do in the future, because of course if there is no desire for female harvest that is a whole different way to manage those species. With that, why don't we get some discussion going. The first hand I saw up was Mike, and then I've got Shanna.

MR. LUISI: I guess this is a question for either you or maybe Caitlin, perhaps even Bob or Toni. You know the way I saw the three options laid out; they were focused on resources. I just wonder if you have all given some thought about the cost benefit, the tradeoff between spending more and getting more, or spending less and having it drawn out over a longer period of time with more steps and layers, as to which one is, at the end of the day, going to be something that is most useful. What is the better bang for the buck, you know as far as taking next steps?

CHAIR CLARK: Do you want to respond to that, Toni?

MS. KERNS: I'll try, I guess. One of the things that I've been thinking about is for the Delaware states. One of the things that we talked about, I think two meetings ago, was you guys going home and talking to your fishermen, to find out if they want to harvest females or not. If the answer is no, then do we need to even do any of these things, and the Delaware Bay states could make a recommendation to the Board that you don't want to harvest females anymore.

We could do an addendum to do so, and then provide the ARM Model to address that new direction. That is how we have also thought about it, but this is what the Board had asked us to provide, so there is that thought back to you, in terms of, I guess that would be less work maybe on both ends. Not that the outcome would be similar, but similar end point.

MR. LUISI: All right, thank you.

CHAIR CLARK: Shanna.

MS. MADSEN: Thank you Caitlin and Toni for working to put these options together. I know it's a pain to have to come back and have workgroups suggested to you, so I really appreciate it. The thing I kind of wanted to start off saying is, I was a part of the original EMO Workshop. I was staffing it at that time. I don't think that we're at that point just yet.

To Toni's point, I think that the very first thing that we need to consider doing is asking that tough question, because that question is really what forms the objective statement that we have for the ARM right now. The thing that I think that I would most likely want to recommend, and I don't know if we're going to do this by motion or just by Board consent, but I would like to see us start with Option 1, which is putting together a survey to ask that very direct question.

Do our constituents want us to harvest female horseshoe crabs? If the answer is no, then I think that really helps us outline what that objective statement is. I think it might still lead us to potentially going to Option 2, because we still really as a Board need to define what our objective statement is, to help you define as the Stock Assessment Subcommittee, the ARM Workgroup.

What exactly we're asking you for, because I remember being stuck in that back and forth of being a scientist, not exactly knowing what my managers wanted. I want to make sure that we're giving you the best and most clear information possible. From my standpoint, I think that we start with Option 1, put together some very pointed questions to our stakeholders, from the Delaware Bay states, and ask exactly what they are looking for. Then we come back and reevaluate, and see what our next steps are.

But I just did want to make clear that I do not think that we are at the level of Option 3 just yet, and I do not want to put my foot on that gas pedal right now, especially given the conversation that we've just had at our last meeting, with Dr. Drew looking at that stock assessment schedule, looking at how busy all of our staff are. Let's start simple, get some answers to questions, and move forward from there. Don't overcomplicate it yet.

CHAIR CLARK: Thanks, Shanna, good suggestion. I see Rick Jacobson.

MR. RICK JACOBSON: I want to thank the Chair and the staff of ASMFC for bringing forward these three options for the Board to consider. It is exactly the kind of thing we were looking for when we first put this charge together last fall, so again, thank you very

much for that. I agree too with the previous speakers that we do have a fundamental question that we need to ask ourselves first. What is the public appetite for the harvest of female horseshoe crabs from Delaware Bay?

It is a critical question, and if the answer to that question is no, it greatly simplifies all of our work moving forward, and it will define what our next steps are. The second part is, however, if we take the alternate path, and the public does in fact support the harvest of horseshoe crabs, that we will need to explore the broader array of how public sentiment needs to be factored into the ARM. Whether it's Option 1 or it's some combination of Option 2, with a survey as called for in Option 1, I'm not altogether clear. But I don't think we're at the point of Option 3 at this point.

CHAIR CLARK: Do we have any other comments? Rob Lafrance.

MR. LAFRANCE: Yes, we've had some discussions around the table about this outside and prior to today's meeting. I think I speak with Bill Hyatt, who is my Governor's Appointee, and one of the things he wants to make certain is whatever we're doing we're doing it with ecological basis. I think in his preliminary evaluation of this, he thought the Ecosystem Management approach was a good one.

But in my conversations with other folks around the table about this, the notion that we understand whether or not we're going to move forward with a female harvest or not, is a key and important question. I think once we come to some semblance of that, I just don't want to see us not think about Option 3, in the event that we get there.

In other words, even if we have females off the table, what does that mean, I mean in terms of an ecological perspective? But in parsing it out, moving from one maybe to some semblance of two makes sense? From what I've heard thus far from a technical perspective, we're probably not ready for 3, but I don't think we can forget about 3.

CHAIR CLARK: I don't believe that starting with Option 1 would preclude us moving to either of the second or third option, and Caitlin and Kristen are both nodding in agreement to that. At this point, is there anybody else who would like to make a comment? Craig Pugh.

MR. PUGH: I'm in a bit of precarious situation here. I've become one of the old new guys in our commercial fishery in Delaware, so I still remember the collection and usage of female horseshoe crab. However, just during the closure of that we have a lot younger group of commercial fishermen now that don't really realize what benefit that is.

Do we use that as a benefit here is a question that kind of conflicts me, because I grew up with the usage of that. But knowing that most of my younger generation is not aware of that experience, and have become accustomed to what we have today, the female horseshoe crab appetite, I believe has waned off in our commercial industry.

That's as honest and as truthful as I can be. I would like, however, to somehow hold on to the ability or the language to some extent, in case things were to change. Do we have that option? The sustainability and feasibility of those fisheries if become available, do we continue with that option? In some fashion I would like to see that.

But I can tell you that the overall arching that even though our commercial fishery is such a small, miniscule part of our population, would not hold water in our legislature, damn sure. More than likely, even if we allowed it here today, it would probably more than likely, legislation would be passed to eliminate that option. But how do we do this? That is my question. Maybe that is the staffs? Can we still withhold some of this, even though knowing that the appetite at this point in time is not there?

CHAIR CLARK: Caitlin, did you have a response to that?

MS. STARKS: Yes, just in general, if the Board were to go down a path that the appetite is not there, you

do not want to harvest females at this time, so you were to initiate an addendum and approve that addendum that says we're only going to harvest males. The Board could always do another addendum in the future if that appetite came back.

There is always the opportunity to modify a management program in that way. Then the situation that you're in right now seems to be that you have the option to harvest females, but there is not an appetite there, so you have used the specifications process to only harvest males in the Delaware Bay. Those are kind of two different alternatives, but both have the same answer, which is not harvesting females and potentially being able to harvest them in the future.

CHAIR CLARK: Do we have any other commentors online? We do not. Based on what we've discussed here, the view of the Board seems to be to move ahead with Option 1, trying to survey if the stakeholders. I agree with Craig. You know I know in our state that even though the ARM would allow female harvest, the Board of course did not allow female harvest. We are moving ahead with just a male-only harvest. But even just the possibility of female harvest has really brought out a lot of opposition to any horseshoe crab harvest. It's definitely going to be a fraught issue, but I think the survey would be a good place to start. Do we need a motion on that, or is the Board comfortable with just moving ahead with the survey by assent? Oh, Toni.

MS. KERNS: Not a motion, I just want to make it clear that it's not our intention to send this survey to the world. We intend to hit the major stakeholders. We would like the states to make sure that their industry members are a part of that survey, and we can work with you, the four Delaware Advisory states, to make sure either we get those e-mail addresses or you guys facilitate that. But I just want to make it clear that it is not the entire public that we are sending this out to.

MR. PUGH: That lengthy process would be, I think of some benefit to those stakeholders that we have. It would, I guess sort of it may dampen hopes, but it's information I think that could be extended out, and should kind of lower the seas. I would appreciate that and welcome that.

CHAIR CLARK: Justin Davis.

DR. DAVIS: Just to follow up on Toni's comments. Would it include a broad variety of stakeholders? I mean, how is it going to work though if you send it to somebody and they send it to somebody? I mean, you can set it up somehow so it can't be distributed broader than who you distribute it to?

MS. KERNS: It will be a single-source survey, where you can't share the link.

CHAIR CLARK: Sure thing, Justin, follow up.

DR. DAVIS: Who is going to make the determination about who it gets sent to?

MS. STARKS: The Work Group. This process, Process Number 1, does still involve a Work Group of the Board being formed to develop the survey and to discuss the participants in the survey.

MS. KERNS: Just follow up, Justin, we're not trying to exclude the public, but we have just done a management document where we received 34,000 comments, and we heard from the general public on their intentions. We still want to make sure we're capturing all the stakeholders here, but we're also not looking for that many comments to have to summarize in order to provide feedback to this Board.

CHAIR CLARK: Roy Miller.

MR. MILLER: Craig and I were just discussing who constitutes a stakeholder in this particular case. Does a non-harvester like an Audubon Society member, could they be considered a stakeholder?

MS. STARKS: Yes, I think the general stakeholder groups that we discussed are the fishery, the commercial fishery for bait harvest, the biomedical fishery as well that occurs in the Delaware Bay, and then environmental groups that are also involved with the Delaware Bay ecosystem, and have been

involved through the process of the development of the ARM. Those are, I think, our three main general stakeholder groups.

CHAIR CLARK: We actually have ecotourism for horseshoe crab spawning now, so something else to think of. Dan.

MR. McKIERNAN: Good luck with this. I have two recommendations, one is I think you need to broaden the stakeholder consideration from the commercial side, and not just talk to harvesters, because then you might not talk to dealers, you might talk about the users of bait. If you don't have a horseshoe crab fishery in Delaware Bay, that puts more pressure on states that do. I just want that to be understood.

Even if you don't put people from Massachusetts on that list. But I would recommend, when you do this survey you hire a facilitator, and maybe bring some of the principals together, and see if people can stop talking past one another. I think there needs to be some mediation to get some common ground.

CHAIR CLARK: Thanks Dan, and Rick you had a comment?

MR. JACOBSON: Am I correct in assuming that the array of people that will be surveyed under Option 1 will be equally broad, if not more broad, than those who would be engaged under Option 2, and that that group would be as broad or more broad than those who would be engaged in Option 3?

I ask that question, because if we're thinking the array of stakeholders that would be engaged is at its broadest at Option 1, and a subsequent action, depending on what we learn from Option 1, may lead us to further engagement through Option 2 or Option 3, then we will not have missed anyone in that first step. That is Item 1.

Since we were so clear last fall about our intent to engage the public in how we might look at the ARM Model that was adopted, and perhaps even change some of the criteria elements within the model to reflect that. It seems to me we do need to take some formal action here, as a follow up to last fall's direction to the staff, but perhaps I'm wrong.

CHAIR CLARK: Rick, you're suggesting that we need a motion. We've heard that we could do this by assent, but I don't think it hurts to have a motion. We can just go ahead and do it as a motion. Would somebody like to make that motion? Go right ahead, Shanna.

**MS. MADSEN: I'm going to do this one off the cuff here. I guess I would move to pursue Option 1 from the memo dated April 17, 2023, with the intent to capture a wide range of stakeholders in a survey formulated by a workgroup of Board members.** I think it was just Board members, right Caitlin? Okay, good. Then, so that we're clear, because I want to make sure that I'm taking everyone's thoughts into account. This does not preclude the Board from later pursuing Options 2 or 3 following the survey.

CHAIR CLARK: That is a most impressive motion off the cuff there, Shanna, great. Do we have a second? Rick Jacobson is second. We'll wait until that motion is up there. Okay, is that looking like what you thought it would look like? Hey Ray, go ahead.

MR. KANE: Just a friendly to the maker and the seconder. With the intent to survey a wide range of stakeholders in a formulation by a workgroup of Board members, as opposed to the way it reads now.

CHAIR CLARK: Oh, instead of to capture, to survey, is that okay with you, Shanna?

MS. MADSEN: That's fine, and then at the end of this motion I did say, not to preclude the Board from later pursuing Options 2 or 3 in the memo, just to get that up there as well. We don't need it?

CHAIR CLARK: It's not necessary. We've got two surveys in there don't we? Everything is on the fly here. How about to include in the first place, instead of survey, in the first instance of survey change to include. How does that look? Okay, Rob Lafrance.

MR. LAFRANCE: I guess I just want to understand, I think some of the dialogue here for the Board was

that we weren't going to preclude Options 2 and 3. I just don't understand why we can't put that up. I mean, is it just left unsaid because of the record? I mean my sense is this may be the first step of future steps.

CHAIR CLARK: Yes, I'm leaving that to Bob.

EXECUTIVE DIRECTOR BEAL: It's obviously part of the record here, and the intent of the Board to move forward with that, depending on the results of the survey. It's fair game and it's not precluded, but it doesn't need to be necessarily in this motion.

MR. LAFRANCE: Fair enough, I just wanted to get that clarified on the record, thank you.

**CHAIR CLARK: Is there any further discussion of this motion? No seeing any, I don't believe there is a need to caucus. Is there any opposition to this motion? Seeing none; let's consider it approved by consent.** That ends this item.

**OTHER BUSINESS**

CHAIR CLARK: Oh yes, we just have Other Business**.** Is there any other business to come before this Board? Because we do have other business, but it's not Horseshoe Crab Board business. Chris Wright, go right ahead.

MR. WRIGHT: I have a question. Are we going to get the Board members for the Work Group now or later?

CHAIR CLARK: We're going to do that later, Chris.

MR. WRIGHT: Okay, thank you.

CHAIR CLARK: Malcolm, you have your hand up, Malcolm Rhodes. You can go right ahead.

**ALTERNATIVE TO LAL SPEAKER**

DR. MALCOLM RHODES: Mr. Chairman, I was trying to get in on the first discussion, and I really wanted to thank Caitlin and her Working Group for that job on the BMP. In these days we're getting into more and more multiple resistant organisms to test for sterility is vitally important.

It's much easier to not catch a disease than have to treat it, and especially as we're getting into more resistant ones. I applaud that and what this industry has done. The one thing I was wondering, if at some point, and it may be a year from now, if we could get some experts in to discuss the recombinant/synthetic LAL efficacy versus, you know the one derived from the horseshoe crabs. More and more we see this being thrown out, and the U.S. Pharmacopeia has not allowed that for a lot of products, and especially for vaccines, because our current LAL made from horseshoe crab is the gold standard. It's hard to find any up-to-date information that I feel is acceptable, and I think it would help the Board, you know at some point, just to put a marker in, to have someone address the Board on that one issue.

CHAIR CLARK: Thank you, Malcolm, is there any response to that?

MS. STARKS: I'm not sure I'm entirely clear on the question, so I just want to ask a follow up. Is it your intent to have an external presenter come and provide information? Is that what you're asking for?

DR. RHODES: Whether it's external or internal who could do it. We've had, it may have been a decade ago, it may have been longer. The Board was addressed by someone discussing LAL and the recombinant alternatives to it. Whenever we get letters, or when you're reading the newspaper press clippings, you know, you are kind of inundated.

Well, use the synthetic, use the synthetic. I think it would be good for us to know if it is as effective, and where we are of this substance versus the recombinant alternatives. I don't know if that would come from someone in the industry, if someone in one of our groups has the expertise to go through the literature and find appropriate peer reviewed studies. But just to inform us fully about LAL. (Recording faded out)

CHAIR CLARK: Okay, thanks, Malcolm, and I think Caitlin and Bob were just discussing this, and I believe the idea was to get outside, so get an outside expert on that and definitely have that at a future Board meeting. Thank you. I see Dan has got his hand up.

MR. McKIERNAN: Yes, just a point of clarification. There is a lot of competition in that line of work. Could it be someone from an impartial party like the FDA? You know National Institute for Health, NIH, something? I hate to see some up-and-coming biomedical firm come in here and say, oh yeah, it's perfect. Do away with the wild harvest, we don't want that. It's the position of the government that it hasn't been approved on that scale, so why not the FDA?

CHAIR CLARK: Makes sense to me. I think it's something to explore all these options in the future.

MR. McKIERNAN: I appreciate Malcolm's point; I want to thank him for making that.

CHAIR CLARK: Right, it's great, obviously a very germane topic to what we've been discussing here today.

**ADJOURNMENT**

CHAIR CLARK: Is there anything else, any other hands out there? Not seeing any; do we have a motion to adjourn? Mike Luisi, seconded by Ray Kane. We are adjourned.

(Whereupon the meeting adjourned at 2:40 p.m. on Wednesday, May 3, 2023)