PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

HORSESHOE CRAB MANAGEMENT BOARD

The Harborside Hotel
Bar Harbor, Maine
October 26, 2016

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Board Members

Bill Adler, MA (GA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)
Dan McKiernan, MA, proxy for D. Pierce (AA)
Bob Ballou, RI, proxy for J. Coit (AA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)
David Borden, RI (GA)
Colleen Giannini, CT, proxy for D. Simpson (AA)
Rep. Melissa Ziobron, CT, proxy for Rep. Miner (LA)
James Gilmore, NY (AA)
Emerson Hasbrouck, NY (GA)
Brandon Muffley, NJ, proxy for D. Chanda (AA)
Tom Fote, NJ (GA)
Adam Nowalsky, NJ, proxy for Asm. Andrzejczak (LA)
Stewart Michels, DE, proxy for D. Saveikis (AA)
Craig Pugh, DE, proxy for Rep. Carson (LA)
Roy Miller, DE (GA)
Michael Luisi, MD, proxy for D. Blazer (AA)
Rachel Dean, MD (GA)
Ed O'Brien, MD, proxy for Del. Stein (LA)
Rob O'Reilly, VA, proxy for J. Bull (AA)
Catherine Davenport, VA (GA)
Michelle Duval, NC, proxy for B. Davis (AA)
David Bush, NC, proxy for Rep. Steinburg (LA)
Doug Brady, NC (GA)
Robert Boyles, Jr., SC (AA)
Malcolm Rhodes, SC (GA)
Sen. Ronnie Cromer, SC (LA)
Spud Woodward, GA (AA)
Nancy Addison, GA (GA)
Pat Geer, GA, proxy for Rep. Nimmer (LA)
James Estes, FL, proxy for J. McCawley (AA)
Mike Millard, USFWS
Chris Wright, NMFS
Martin Gary, PRFC

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

Ex-Officio Members

Steve Doctor, Technical Committee Chair
Doug Messeck, Law Enforcement Representative

Robert Beal
Toni Kerns
Kristin Anstead
Kirby Rootes-Murdy
Mike Schmidtke

Guests

The Horseshoe Crab Management Board of the Atlantic States Marine Fisheries Commission convened in the Stotesbury Grand Ballroom of the Bar Harbor Club, Harborside Hotel, Bar Harbor, Maine, October 26, 2016, and was called to order at 8:00 o'clock a.m. by Chairman James J. Gilmore.

CALL TO ORDER

CHAIRMAN JAMES J. GILMORE: Welcome to the Horseshoe Crab board meeting. I would like to call the meeting to order. If you have important conversations, please take them out in the back. My name is Jim Gilmore; I am the Administrative Commissioner for New York, and I will be chairing the Horseshoe Crab Board meeting today.

We have a few things to go through in the agenda; but first before we get into that, and I know they're not here, but a shout out to the Maine delegation and the ASMFC staff for one of the best dinners I think I've ever had. I slept like a baby last night. I just hope they're going to repeat it again tonight, because I think it was really very popular.

Also, I would like to introduce Mike Schmidtke; he's a new ASMFC staff that is going to be working on horseshoe crabs and joining the team today. Welcome, Mike.

APPROVAL OF AGENDA

CHAIRMAN GILMORE: First order of business is approval of the agenda. Everyone has it in their briefing documents. Are there any changes to the agenda? Seeing none; we'll adopt those as in the briefing book.

APPROVAL OF PROCEEDINGS

CHAIRMAN GILMORE: The second order of business is the August, 2016 proceedings. Are there any changes to those proceedings? Seeing none; we will adopt those. Before each meeting we have public comment on issues not on the agenda. I did not have anybody sign up for making a comment, but is there anybody in the audience right now that would make a public comment on issues not on the agenda?

ARM SUBCOMMITTEE REPORT

CHAIRMAN GILMORE: Okay seeing none; we'll move right into our first order of business; which is the ARM Subcommittee report, and Kristen is going to give us a presentation on that.

MS. KRISTEN ANSTEAD: Good morning. This morning I'm going to update you on the activity of the ARM Subcommittee and the harvest recommendations for 2017 in the Bay. First I'll just remind you of the objective statement for the ARM model, which is to maximize the harvest of horseshoe crab while maintaining a population that can sustain the migrating birds, specifically the red knots.

This morning I would like to talk briefly about the red knot and horseshoe crab population thresholds in the ARM model. The abundance estimates for this year, the five harvest packages as they currently exist, and the recommendation for fishing for 2017. There are a couple thresholds in the ARM model that I think are important to review, one is female horseshoe crabs. That was set at 80 percent carrying capacity; and that turns out to be 11.2 million female crabs. For red knots it's 81,900 birds, and additionally you have to maintain an operational sex ratio of two males to one female, so that is on the spawning beaches; that is not out in the ocean. These two thresholds are important because this is how we understand when and how we get female harvest in the Bay, because that continues to sort of be an issue. I wanted to review these so that you understand when female harvest could be possible.

This is an either/or situation. If the birds hit their threshold, then there is the possibly for female harvest. Because regardless of how many female horseshoe crabs are there, they are sustaining the bird population. Conversely, if the crabs hit their threshold, even if the birds do not there is the possibility for female harvest; because there are enough horseshoe crabs to sustain the population where we want it to be.

Additionally, if that sex ratio falls below two-to-one, there would be no male harvest, but that hasn't happened, and it doesn't get close to that;

but just a reminder that that is also a threshold that exists in the model. This is the red knot abundance for the last few years. The blue line is the mark-resight estimations of the abundance of the red knots in the Delaware Bay.

The red line is the threshold, so you can see how close or far we have been from it. Those are the 95 percent confidence intervals around their estimations. Fewer birds stopped in the Bay in 2016 than the previous year, but the estimates were very similar to 2014. The estimates were 47,300 birds, and that is below the bird threshold.

For the horseshoe crabs, we use the Virginia Tech Trawl Survey to make estimates of the population for horseshoe crabs. As you know, that doesn't run every year, so in lieu of the Virginia Tech Trawl Survey estimates, we have a composite index. It has been developed from a few surveys in the Bay.

The black lines up there are the Virginia Tech Trawl Survey estimates, and the top graph is for males and the bottom for females. You can see in the years that we have the trawl that they match pretty closely. When we don't have the trawl survey, which we did not have last year, we use the composite index.

The survey is underway this year, so next year we'll be able to use those results for the horseshoe crab abundance; as well as continue to tune the composite index with another year of data. The 2015 estimate for female horseshoe crabs was 8.1 million; that is also under the 11.2 threshold. But there was a slight uptick of crabs this year. That is a good sign.

These are the five harvest packages as they currently stand, from full moratorium to both male and female harvest. For the last several years, the ARM model has recommended Package 3; which is the 500,000 male only harvest. The way the ARM model works is we put this abundance in the season, and it goes through all possible states of the population; the juvenile abundances, birds, males, females and recommends a harvest package based on what would be best for both of those populations.

This is just a summary of the numbers we already went over, the male and the female horseshoe crab numbers for this year, as well as the bird estimates. Both are below threshold, and the harvest package recommendation is the same as it has been for the last several years, which is Harvest Package 3; the 500,000 male only harvest. I just want to talk briefly about some of the upcoming challenges the ARM Subcommittee has been discussing. As you know, we went under this short term review and we made several recommendations about how the ARM model could be fine-tuned. One of those was the incorporation of the biomedical data, which does prove to be the largest challenge moving forward. I'll just remind you that biomedical currently is not accounted for in the ARM.

The reason we feel like it should be, is because it accounts for 8 to 12 percent of the coastwide mortality; and we have put forward the preferred option and a minority opinion that we've already presented to you. But I will just briefly remind you, so that when Kirby talks about the Addendum, you'll remember what we were talking about.

The preferred option was to adjust the harvest packages to account for what the biomedical is already harvesting. These are made up numbers. On the left are the harvest packages is we've already talked about, and on the right is just an example of what that could look like. What we would do is take a three-to-five-year average of what the biomedical harvest in the bay and remove that from the current harvest packages.

This is not a quota for biomedical. We're not putting a cap on them or limiting them; we're just purely accounting for on average the mortality we're attributing to them. That number might be revised every six years or so. We don't want to violate any data confidentiality, so we'll be using averages; adjusting it not every year but continuing to tune that number to reflect what is occurring in the Bay.

That was the preferred option as put forth by the ARM Subcommittee. The minority opinion or

option was to incorporate it into the population dynamics model, using that 15 percent mortality, putting it in the kind of workings of the model rather than applying it to the harvest packages. The harvest packages would remain unchanged.

Exploring this option is time consuming, because the model goes through multiple iterations under different states of the population; and so it is a cumbersome process, and I will just show you briefly why that is. This is as simple as I could make the population dynamics model. You can see, you have the juvenile horseshoe crabs, and they can remain juvenile horseshoe crabs to the next year; or they can go on to the pre-breeding stage, or they can skip pre-breeding and go straight to being an adult male or an adult female or they can die.

Those are multiple steps just for the juveniles. For the pre-breeders, they can also remain a pre-breeder the next year or they can mature and become a breeding male or female; additionally, they can die. Then the adult males and females have the survivorship where they can remain in that stage. They are also feeding back to the juveniles, as well as being harvested.

When the ARM model is kind of balancing all these different states, the most simplistic way to think about it is that the horseshoe crabs available next year are the number of juveniles that go straight to adults, plus the pre-breeders that go straight to adults, plus the adults that survive minus the harvest.

What we would be suggesting in this minority opinion is sort of adding on to that red step, the amount that dies or gets harvested. We would be accounting for it in this stage. It would reduce the survivorship of those males or females in the adult stage and kind of be part of the harvest there rather than adjusting the actual harvest packages. While that sounds simple in theory, it is a time consuming step to kind of explore the sensitivity of the results to incorporating the biomedical. That is the population dynamics model. With that, I can take any questions about the ARM activities.

CHAIRMAN GILMORE: Great presentation. Questions for Kristen? Rob O'Reilly.

MR. ROB O'REILLY: I have two questions and they're old questions. The 15 percent mortality for the biomedical process, I think, last meeting we heard from one of the companies that it's much less. We've heard from others in the Technical Committee that it's more. I guess I'm just wondering, some of the sensitivity analyses that are going to be conducted.

Is it anticipated that that will also include varying that mortality rate a little bit? The reason I ask, I mean, we have a lot of discard mortality rates for fisheries where depending on the area, the time of year, and everything else, it might be just sort of pertinent to that particular study. But here we have a situation where the biomedical companies definitely have a handle on how much mortality there is. I don't know why there is such a mystery about it.

The second question, if I may, it will be a quick one. Kristi, you mentioned a six-year update. I'm just wondering, without violating any data confidentiality, in the last six years what has been the average change in the biomedical use of horseshoe crabs? I guess what I'm wondering really, is six years really something that is just thought about right now as an estimate and can be modified later on if there is information on a composite basis that the biomedical process is taking more horseshoe crabs.

MS. ANSTEAD: First, I'll answer your question about the 15 percent. We're going to do a benchmark stock assessment in 2018, so at that point we will have a great opportunity to reevaluate some of the studies, look back at the literature, and work with biomedical to reevaluate that number. That is definitely something that's going to happen, and when that happens for the benchmark, the ARM will also adapt whatever they find to be the most appropriate number for the Delaware Bay region.

Also, when we do the benchmark, we're hoping to be able to do that on the regional basis; so if there is a study specific to the southeast, we can apply that biomedical mortality to that region as well as

reevaluate that for the Delaware Bay. It may not have to be a flat percentage. If there is data specific to each region, we'll be able to use that at that time. As for the second question, I think Kirby is going to speak to that.

But yes, the six is just an example, the six-year average. Biomedical is pretty consistent, and so I think what we would look at is how often – I mean, we should reevaluate it every so often – but do we do that on a pre-chosen number of do we do that when there is some indication that it is changed? Then we would have to revise it in the ARM model, but I think Kirby has something to add.

MR. KIRBY ROOTES-MURDY: Yes, I was just going to offer, Rob, that in the supplemental materials we included the FMP review, and it lays out biomedical collection and bleeding over, I believe it's the last five to seven years or so. You can see trends there. But to what Kristen was mentioning, it has largely stayed pretty constant, in terms of the number of crabs that have been collected. The overall mortality coastwide has changed slightly year-to-year, but that trend hasn't moved either way significantly in recent years.

MR. BRANDON MUFFLEY: Just a question on the harvest information that goes into the ARM model. Does it assume, or do we provide, that it's just a 500,000 male harvest or we actually used harvest numbers from the prior year?

MS. ANSTEAD: We did talk about that recently, and it just assumes that that is what is being harvested. It has been discussed that maybe that is not the most appropriate thing to do, but that could be something else to look at as we revise the model. But right now, it assumes that harvest packages are what are being harvested in the Bay. I know that is not exactly true every year.

MR. ROBERT BALLOU: Kristen, excellent presentation, but if you could just turn back to the core issue and expound a bit on why the workload would increase so significantly by including the biomedical mortality; in addition to the bait harvest mortality. It just seems like a different number, a larger number as it were. Why does that make it such a – you talked about sensitivities, could you just expand on that a little bit?

MS. ANSTEAD: To explore kind of the sensitivity of both of these option, would this push us to moratorium? Would it most likely keep staying at 500,000? Changing the harvest packages is a little simpler to kind of explore. You just change that one number; and then when the model goes through this optimization routine, where it looks at all these possible states of the model based on all the years of data; along with all those probabilities of moving to another stage; or staying in the stage; or the survivorship at each of those stages; or the fecundity in that year or the male/female ratio, it doesn't need to go through all of those with a different mortality rate. Both of them would take time.

But doing the population dynamics one is just much more cumbersome. That's the lengthy process of the model, whether or not we change it. When Conor McGowan goes through the ARM model each year, it's that routine that is the time consuming routine. That is why adding mortality there would make that exploratory process a little longer.

CHAIRMAN GILMORE: Other questions? I actually have one, which I won't put Kristen on the spot, because it is more of an ornithology question, so maybe Mike will help out. I was impressed by, when I was reading the reports, of the difficulty in sampling red knots. I guess, when I looked at it, and what is equally important is not only the horseshoe crab harvest, but the 89,000 number for the population that is fed into the model for the red knots.

Right now, I think 40 something thousand was the population estimate that is put into that. But how confident are we, because when I looked at the report on the sampling for that, it seems to be a real interesting way -- it is almost like a data poor species from a fisheries perspective. I mean, is there a lot of error with that or can you just expand on that a little bit?

MR. MIKE MILLARD: I would remind you, I am not an ornithologist. I think Jim Lyons' estimates from the mark-recapture does have error bars around it. I feel a lot more confident about those estimates than the old aerial surveys that the state of New Jersey was conducting. I don't have those numbers in front of me with the error bars, but I think it is about as good as we can do right now for a species like that. I feel pretty good about it myself.

CHAIRMAN GILMORE: Great, thanks, Mike. Bill Adler.

MR. WILLIAM A. ADLER: I remember when they were talking about red knots and where they are and where they're not that there was some concern that they were still around. But they weren't landing or coming to the place where we always thought they would be coming. I didn't know if any of that information has been added into the red knot population estimates; that there were other places where these things were landing. I think you remember all that. But I don't know if any of that got into the statistics as to the population size of the red knot. I don't know if they did anything on that.

MS. ANSTEAD: We talked about that a little bit at the TC meeting, because there were some concerns about how much the population had bounced around in the last three years. From 2014, and then it went up pretty high in 2015 and came back down. Many felt that that – well, fluctuation is natural – but that big of a leap couldn't be attributed to births and deaths alone.

We did talk a little bit about how maybe they didn't stop in the Bay at the same proportions that year as they usually do, or they stayed a different amount of time. That is definitely part of the estimation process, but it is not necessarily accounted for in the ARM, other than when we get that mark-resight abundance. Fluctuations can be explained by those things that you're talking about.

MR. MILLARD: Thanks for that report, Kristen. I have an observation, I think, followed by a question. In talking to some folks on the ARM Committee about the behavior of the model, I think there was a discussion in your meeting that because of the optimization routine and the way the model works, and because of the thresholds that you explained to us nicely at the beginning of your presentation, it is either going to want to go full open, wide open; once the females take value, harvest as many as you can until they no longer have value, according to that threshold; and then go to zero.

To drop into an analogy, it is like if you're in a car, it is either going to be in fifth gear, top speed or in neutral. It is never going to want to cruise along in third gear; is what I'm hearing. Now, I don't know if they've explored that rigorously with the model, but I guess that is my question to you. You mentioned it's time consuming, but I think the board, at least at the last meeting said, well, we would like to see more about how that behaves. Are they, in fact, going to undertake that analysis?

MS. ANSTEAD: Yes, I would say that's accurate that the model prefers Package 1, 3 and 5, which is moratorium, the highest male only harvest and then the highest male and female harvest; that those two other options aren't chosen as much. Exploring that, I think, was part of the long term review we suggested.

Maybe about a year ago we put forth what items could be accomplished on a short term review process, and what could be accomplished on a longer term. At that time we were tasked with doing the short term review. If we had the opportunity to do a long term review, certainly exploring what harvest packages might be more appropriate, or why those two aren't chosen would be part of that; as well as moving the ARM model into a different software program that would be more accessible for staff. Right now it is not run by us; it is run somewhere else. Those were two longer term goals, but yes, that is certainly a concern and a hope for moving forward.

UPDATE ON DRAFT ADDENDUM VIII

CHAIRMAN GILMORE: Okay, I think I'm going to move along and Kirby is now going to give us an update on Draft Addendum 8.

MR. ROOTES-MURDY: Kristen, I think, teed this up pretty nicely for me. I'm going to walk through kind of how we got to where we are today; the August, 2016 board meeting; trying to develop the Draft Addendum VIII coming out of that; some of the ARM Subcommittee comments we received; next steps, questions and considering board action today.

At the August, 2016 board meeting, as you all should remember, the ARM Subcommittee and TCs presented their recommendations on how to include biomedical mortality into the ARM framework. There were two options, as Kristen lay out. The preferred option reduced the bait harvest and accounted for biomedical mortality.

The second option, which we were calling a minority option, added biomedical mortality into the population dynamics model. Taking that into consideration, the board initiated an addendum to include biomedical mortality as well as bait harvest packages that allow for female harvest, and that was specifically outlined in Appendix C of one of the meeting materials we offered up for the August meeting.

In coming back to the addendum after the board meeting, staff sat down; we tried to think through logistically how this addendum could play out. One thought at first was an initial decision tree on how to deal with biomedical mortality. It is important to understand that from that you then would have to move down to figure out what harvest package would be the next option for someone to select.

We kind of coined it as a "choose your own adventure" in this way. When you do this, there is the possibility to have significant variation, depending on what biomedical mortality option is chosen initially. In this slide we have a breakdown of what the current harvest packages are, as Kristen presented, and then with that preferred option how they are slightly adjusted.

You start off with biomedical mortality, you have that decision point, whether to include it or not. It is pretty straightforward, no, you move to status quo. If yes, there are two options that are laid out, the preferred and the minority. The next step in that would be after you've chosen which of the options you would want to use to account for biomedical mortality; you would select a harvest package.

Again, we were guided to select, or at least include in the addendum, the options that were laid out in Appendix C. As I tried to explain, we have those two decision points in the decision tree; how to account for biomedical mortality, and then moving down to your harvest packages. When you start to look at this with the variations, you come up with multiple versions of harvest packages. The status quo would already get you at possibly two separate versions of the same sets of harvest packages. You add in Appendix C, you have four additional sets of harvest packages to look at. When you then times that by two, we would be looking at somewhere in the ballpark of 18 possible options that would be included in the addendum. From a staff standpoint, we expressed some concern that this may be possibly too many for the public to consider and provide adequate comments on.

As Kristen laid out in her presentation, I believe the harvest packages have been evaluated and were evaluated by the ARM Subcommittee going into that August meeting, as part of the initial task way back, about a year ago; when the ARM Subcommittee was asked to look at how to get at female harvest in the bait industry.

The ARM Subcommittee looked at that and found that while there may be an interest in adding more options that have female harvest, unless you are above that threshold that Kristen laid out, you're not going to increase the likelihood of getting female harvest. So long as you're below that threshold, you can add as many harvest packages as you would like to have options for female harvest, but you won't get there.

With that in mind, this could possibly further confuse public comment for the draft addendum process in that we may be going out to the public

with these 18 options, and asking them to provide us comment, when in actuality if they chose one of those options we couldn't necessarily tell them for sure that all the options that included female harvest would actually be selected in a given year.

With this information, we brought it back to some members of the board to further explain how to get guidance on how to move forward with this addendum. With this information, some of the board members asked us to look at whether it would be possible to do sensitivity analyses to get at how, say including biomedical mortality would have changed harvest package selections in previous years.

One of these ideas that were put forward was doing sensitivity analysis around the two versions of how to include biomedical mortality; going back between five to ten years, running the model with then these biomedical options in there. Again, the model inputs would be using the abundance index from the Virginia Tech Trawl Survey or the Composite Index and putting that in.

We would be keeping pretty much everything constant; it would just be seeing how the model would react with this new variation in it. In bringing this to the ARM Subcommittee in September, they expressed some concerns about the decision making process in this, and it being largely results driven versus making decisions that made the most sense, based on the information we have on the population and biological characteristic at each stage in the model.

As Kristen laid out, we have also talked with them about the sensitivity analysis work, and they expressed some concern that it would take some time. Anecdotally, the ARM Subcommittee members also offered that they thought that the approximate 34,000 mortality that may be coming out of the Delaware Bay, this is again a guestimate, not an actual number, would be a negligible amount.

It wouldn't necessarily change the optimized harvest package. The reason why is because the magnitude of the biomedical mortality there would be very small, compared to the magnitude of the abundance that we're using to set the harvest packages and specifications annually. You were just shown the graphs of what the male and female abundance estimates are in the Delaware Bay region, and so the magnitude between that abundance estimate and what these changes are in the mortality, they deem to be possibly negligible.

A separate note, harvesting female crabs, this is related to trying to put in more options that would possibly select female, so long as you're below the threshold. If you start to violate the rules of the ARM framework, you may be able to get at female harvest today. But it will actually push your timetable to getting at an optimized option for female harvest that is the model actually selecting it.

It will take a longer time to get to that; because, again, it is under the impression that it is still at a depleted state. We followed up with the ARM Subcommittee's members regarding specifically how long the timetable would be between getting these analyses done and presenting them to the board. The first one, as Kristen lay out, wouldn't take a tremendous amount of time; because of the lack of iterations that the model would have to go through.

The second one, after a little bit more conversation, we learned would possibly be able to be completed by summer of next year, 2017. For the reasons that have been laid out already that it would be time consuming, given the multiple iterations and the software availability and experienced limitations in trying to run it.

Some additional considerations for the board are that with this addendum having been initiated in August, and the benchmark stock assessment set to be started in 2017, and completed in 2018, there is a lot of work that the ARM Subcommittee will hopefully be contributing to the Technical Committee and Stock Assessment Subcommittees and completing the 2018 assessment.

There is potentially new information that would be coming out of that assessment to help inform this process. In having an addendum that would be at its earliest completed by mid or maybe even a year from now in 2017, the earliest it would be implementing harvest packages for would be 2018; therefore, we would be possibly going through the same process again once we had the results of the benchmark stock assessment.

There may be the possibility that it would be a redundant effort. Next steps, as staff we're looking for guidance from the board on whether to proceed in continuing development of this addendum, and also to consider possibly addressing this addendum after the 2018 benchmark stock assessment has been completed. With that, I'll take any questions.

MR. MICHAEL LUISI: I may be able to save you and the other commissioners around the table here a little time and quit with questions. I've got some thoughts, and I appreciate on the agenda that this presentation by Kirby was labeled as challenges with developing this addendum. I would argue that this is more than a challenge.

Challenges are things we can overcome, and there is more of a roadblock here as far as what we currently have as a framework for managing horseshoe crabs with the red knot, and trying to make adjustments as Mike alluded to kind of this third gear, rather than either neutral or in fifth gear.

For any of you who know me well, I can be a little stubborn when I get something in my mind. I just want to thank Kirby and Kristen for putting up with me the last few months, as we've communicated back and forth a number of times about how we could try to proceed with this addendum in accomplishing the goals that this board approved, as far as moving forward. The way that I see it now and where we currently stand is that we're going to set measures for 2017.

By the time an addendum would be finalized, we would be right at the base of a benchmark stock assessment. Given the comments that have already been made by staff, I think that it is probably in our best interest right now to hold off on any further development of this addendum until the benchmark is completed.

It sounds to me like the benchmark is the way we can maybe address some of the roadblocks, some of the walls that are within the model right now in moving forward. When you're ready, Mr. Chairman, I do have a motion I would like to make.

CHAIRMAN GILMORE: Okay, Mike, just let me see if there are other comments, along with where you're going and opposed to that and if we don't have that, I think we'll put your motion up. Any other questions or comments for Kirby or what Mike just said? Okay Mike, go ahead, give us your motion.

MR. LUISI: I move to postpone development of Draft Addendum VIII until after the 2018 Benchmark Stock Assessment has been completed.

CHAIRMAN GILMORE: Okay, second by Roy Miller. Is there discussion on the motion? Rob O'Reilly.

MR. O'REILLY: The only comment I have, is I saw on one of the slides an indication that there is some experience needed and some software that needs to be mastered, perhaps, as part of this process. Even though I support the motion, it would seem that that also allows time for accomplishment of learning that software, the new software that might be needed and also getting the experience that is also needed. I wanted to make that comment.

CHARIMAN GILMORE: Any other questions? Brandon Muffley.

MR. MUFFLEY: I support the motion, as well. I guess my question is, do we think we will continue to work on some of these items that we talked about regarding the ARM model. Will we run sort of these sensitivity analyses with the two different biomedical methodologies and evaluating the actual harvest versus the assumed harvest of 500,000 crabs?

Will we continue to evaluate the model as we go forward, since we're going to kind of delay? I just want us to kind of be ready, once that stock assessment goes, that we've maybe kind of answered some of these questions within the ARM model that were ready to move forward.

MR. ROOTES-MURDY: That is definitely an option and a possibility for the ARM Subcommittee. I think it just needs to be clear coming out of this meeting that that is a request of the board that that analysis be carried forward. If this motion passes that it is kind of moving on two different time tables then. But if that is the pleasure of the board, then just making sure that's clearly tasked to them would be great.

MR. MUFFLEY: Do you think we need a motion then? I think that is the way we need to go. I support delaying and getting everything right and wait for the assessment. I think that's key. But I don't want to lose time on the work that we need to do on the ARM model.

CHAIRMAN GILMORE: I don't think we need a motion on it, Brandon, I think that's really well documented that is where we're going to go. I think we're okay on it. Mike, do you have a comment?

MR. MILLARD: I, too, support the motion, and I thank Mike for making it. My sense is after the benchmark, we can revisit the ARM in a sense that we were looking at these harvest packages, but those aren't the knobs that we want to tune with. We want to go back out to the threshold maybe and the value functions. Those would be the tuning knobs that the ARM would consider, I think, if I'm understanding correctly; after the benchmark assessment.

CHAIRMAN GILMORE: Yes, I agree Mike, I think that is correct. Any other discussion? Mike Luisi.

MR. LUISI: Just one more thing to add, not regarding the model but regarding the biomedical industry. In conversations that I've had with Kirby and Kristen, I think there may be things that we can do as states to help better understand the mortality associated with the biomedical companies. All the details aren't in my head right now, but Kirby, you and I have spoken about it, about what we might be able to do to capture the information that would help us all understand a little more clearly, the mortality associated with the biomedical industry.

Maybe that could be factored in at a later date, rather than incorporating that mortality now. After the benchmark we might have a better understanding. I don't know if there is anything that you might be able to send out to the states, as far as a request for how we better those data, but I just ask maybe you could speak to that a little bit.

MR. ROOTES-MURDY: Sure thing. Hopefully, all the board members are aware, last week, prior to this meeting, Jim sent out an e-mail laying basically as a reminder that those states that have biomedical facilities that are bleeding crabs currently, are required to submit information on that; the number of males and the number of females that have been bled, because we have a process and a procedure for applying mortality to that.

As laid out in Jim's e-mail, we haven't necessarily been getting the best information on that recently. I'll be hitting on that point a little bit during my presentation for the FMP review. But just as a setup to that, it will be important for those states to keep in mind to give a better sense of what the mortality is at each stage from the collection through to those crabs that are bled and released; as well as those crabs that have been not used for bleeding, but discarded, as that can sometimes be a large category. That will help, not just for compliance components, but also for the upcoming benchmark stock assessment when we're going to be looking at how to best understand this data at a regional level.

CHAIRMAN GILMORE: Let me just go to the audience quickly; any public comment on the motion? Okay seeing none; back to the board. Any last discussion, before we vote? Okay, seeing none; is there any objection to this motion? Okay,

so I guess we are going to vote. Call on Melissa on that.

MS. MELISSA ZIOBRON: I don't feel like I've sowed my oats here long enough to make a comment, this is only my second meeting. But in reading the letter from the Limuli Laboratories, my confusion really rests in the fact that it sounds like that there is reporting data available.

I don't have the information of how that is relayed to whether it is the states or to this organization, but as a legislator I have seen firsthand putting off hard decisions, and I am very concerned, after attending the August meeting, hearing this. Once again, here we are postponing these kinds of tough decisions, and for that reason I oppose it.

CHAIRMAN GILMORE: Any other discussion before we vote? Okay, does anybody need to caucus? Two minutes for a caucus. Okay, we're ready to take the vote. Move to postpone development of Draft Addendum VII until after the 2018 Horseshoe Crab Benchmark Stock Assessment has been completed.

A motion by Mr. Luisi and seconded by Mr. Miller. All those in favor of the motion, please raise your hand. Fifteen in favor, all opposed. No opposed, any null votes; any abstentions? Motion passes 15-0-0-0. Thanks, we're ahead of schedule.

HORSESHOE CRAB
TECHNICAL COMMITTEE REPORT

Okay, next we're going to go into Technical Committee reports; and Steve Doctor has got a whole lot of great stuff to tell us.

MR. STEVE DOCTOR: Okay, we're going to look at a couple things here. We had a pretty productive Technical Committee meeting about a month ago. I'm going to try to go through some of the conclusions we came to. First, I'm going to go over the ARM framework and the recommendation for the optimal harvest, and then we're going to look at some horseshoe crab surveys.

We're going to do the shorebird survey; we're going to talk about alternative bait trials and then we're going to talk about the United States Fish and Wildlife Service response to the ESA listing. We were given Harvest Package 3, which is the 500 male only harvest. It was based on the composite index and red knot mark-resight population estimates that are the best available science at this point; and the Technical Committee was unanimous in recommending the ARM package at Package 3.

Now, we're going to go into some surveys here. The Delaware Bay Trawl Survey is one of the indexes that are going to the ARM model. Thanks to Jeff Brust, who is the Excel master of the coast, we have like male and female broken out, some nice graphs here from them. I'm going to go through these pretty quickly. They're basically showing pretty much the same trend.

This is the New Jersey Ocean Trawl Survey. When I say they are showing the same trend, they are all pretty much stable, is what I would say. Some of them are starting to show a little bit of increase in the tail end of the survey. This is the Ocean Trawl Survey, and it is also in the Composite Index; the Composite Index is made up of three surveys.

Then this is Delaware Bay Spawning Survey. The one survey that has a little bit of a significant trend is the Beach Delaware Bay Spawning Survey. It has a significant trend and a decline in females, but when we go further, you'll see that when you put them all together it doesn't show up. The next one is the Delaware Survey. I think Stew Michels has his hands in these maybe, John Clark too. These surveys are a 16 and a 30 foot trawl survey in Delaware Bay. This is the Maryland Offshore Trawl Survey. This is my survey, so I'll spend the most time on this one. You'll see that this is taken on commercial boats that go offshore and they're collecting horseshoe crabs for bait and biomedical. You'll see it goes along here real good until about 2008. I wish that was an increase in horseshoe crabs, but what they discovered is that you catch more horseshoe crabs at night, so they went to doing the survey at night.

Also, the Virginia Tech Trawl Survey discovered this, so it's been a learning experience going through this horseshoe crab stuff. You'll see this

one index up here is really high. That year we were averaging 60 horseshoe crabs per minute. While in the 2008, you'll see a jump, it is still an upward trend. I really don't think that this index is going to go much higher, because you really can't cram more than 5,000 horseshoe crabs into the net in 40 minutes.

We'll probably plateau off there. But it did show an increase for a while. I've given you a bunch of surveys. What I would kind of like to do now is try to tie it all together for you. I've been involved with this since 1998. We started with horseshoe crabs and eels in '98. I met some great guys, Stew Michels and John Clark and Mike Millard.

We have been working on this ever since. Back then Stew and John, we used to go across the street to a gas station to get our lobster rolls, so we've evolved a little bit since then. What I would like to show you here is there is a paper by Sweka, Smith, and Millard that was done in 2007. What it did was a forward projection of the female abundance, using this model that they had. It is a stage-based model projection.

What you have down here on the X axis is years. What I want to show you here is that they started at like 3,000 females, but they didn't really know where it was. The population came up to like 6,000. The reason I'm showing you this, the stock seems to be acting like what the projections said it would do.

If you go to it, where we're at right now like 6 million 800 animals is like Year 37 of the projections. That isn't as important as what the projection does from there. To get to the threshold, this is actually where carrying capacity comes from, too. That's why I started looking at this, because the 80 percent carrying capacity is the threshold for female harvest.

It is going to be about 44 years before we get to those 11,000 animals, a carrying capacity where female harvest is going to be allowed. While we look forward to the index every year, where the male crabs are, where the females crabs are. I kind of want to temper your expectations that we're going to walk in here one day and we're going to have female harvest.

I mean it looks like about 2060 is where it's going to happen. The reason I have faith in this is I overlaid the projection to the estimates of abundance of female crabs from the composite index and also the Virginia Tech Survey. As a fisheries biologist, you live for stuff like this; where you can get a correlation that is that strong like that. It just matches beautifully. What this tells me is, I kind of almost believe the estimate of female abundance and where it's going. It's kind of interesting.

The reason I'm bringing this up is like I said, I don't want you to walk in here and think that we're going to go to Package 4 next year. It's probably going to be like 2060. That is why I wanted to let you know. Also, with the red knots, I talked with Jim Lyons who is the Fish and Wildlife -- he's a really excellent ornithologist with the Fish and Wildlife Service. I said, well, Jim, how are the other shore birds doing, because like red knots, we're trying to do this for red knots? But red knots you might want to think of more like a poster child for shorebirds; because there are like 15 different kinds of shorebirds.

There are plovers, Sanderlings, all up in Delaware Bay. While those horseshoe crab abundance eggs are affecting the red knots, they are affecting all of the shore birds. I said Jim, how are the shorebird populations doing up and down the coast? He says, "They're all declining, and he says and the ones that are declining the fastest are the ones that travel the furthest."

Well, do you know a bird that goes further than from Tierra del Fuego to Hudson Bay? I mean, that bird goes a long way, and there are a lot of things affecting that bird along that route. To see this population, which I think Jim Lyons answer is excellent, go from 40,000 to 80,000 birds, does anybody want to take some bets with me? I don't think it's going to happen next year.

I just wanted to give you that information. The shorebird stopover and winter population estimates are low but stable. The horseshoe crab

estimates are low but stable. In the long term, where are we? Well, we've got this Package 5, and it is not really a bad thing. The market is kind of like stabled out.

Maryland had a really hard time. We've had the same harvest package for four years now. But the market kind of found itself. It worked itself out. The worst thing then a bad harvest is changing your harvest package. We left the harvest alone for four years. The market has kind of adapted to it, and I think we can kind of feel good that we're trying to do what we can for the red knots and the other shorebirds.

They might not come back. You know we might be here in 2060 or some of our offspring might be here in 2060. But we are doing what we can, and the market seems to have like found itself. I just wanted to give you that message on the population. Then I'm going to move on to alternative bait discussion.

We were going to go ahead and try some alternative bait from one supplier, and we sat together as a Technical Committee and we decided, you know, we can't get this product sometimes. We're not sure if it works. What we decided to do is step back a little bit and do a survey of what bait practices actually are right now, what the cost of the baits are, and then move forward from there.

There is a recommendation from the Technical Committee that all states evaluate the feasibility of conducting a survey to get bait bag ingredients and report back survey results by the beginning of 2017. That is where the Technical Committee is moving forward on that. The next thing is the red knot listing. I've got to be careful with my language here.

The service has kind of changed the way that they do threatened and endangered species. They are doing a species status assessment, and they're looking at critical habitat proposals for the red knot. It doesn't really affect us, because as long as the ARM model is in place, they are not considering the harvest of horseshoe crabs as incidental take. That is something that I just wanted to let the board know that we're progressing on; I mean the Fish and Wildlife Service is progressing on, and it looks like we're in the green to make things short. The one last thing that I would like to add is that the ASMFC has brought on a guy buy the name of Mike Schmidtke; he is over here.

He's going to be our new coordinator for horseshoe crabs, and the guy is a stock assessment guru. He is really good. With Kristen on it, I'm really happy that ASMFC has stepped up and brought these really good stock assessment people to help with our 2018 exercise. With that, I conclude my report. If there are any questions, Mr. Chairman.

CHAIRMAN GILMORE: Thanks, Steve that was enlightening. Let's see, it is the 75th Anniversary so at the 118th Anniversary, we'll be having female harvest, Mike. How does that sit? Go ahead, Mike.

MR. LUISI: Steve, we ought to meet in my office when we get back in three days.

CHAIRMAN GILMORE: Questions for Steve. Bob Ballou.

MR. BALLOU: That was an awesome presentation. If you don't mind, I would like to circle back to the alternative bait portion of your presentation. It makes good sense to me that the survey work would be a logical next step before moving forward with additional trials. You want to get a good handle on what the needs are of the fishermen that rely upon bait.

Yet, I am not sure -- I think there was some bullet there, where it was sort of like the Rhode Island prospectus was discussed, and I don't know what phrase you used, but it didn't seem like it necessarily carried forward. For me, the prospectus, and it was frankly inspired by Toni Kerns, was all about trying to set some objectives; in terms of why we would even pursue alternative bait.

I think, as I remember, it was something along the lines of well there has to be some sort of

conservation benefit. The bait has to prove that it's using less horseshoe crab than just using horseshoe crabs. The efficacy needs to be there. The cost needs to be reasonable and hopefully comparable, and the logistics and the handling need to be there.

Those seemed to be the factors that would drive us forward in our efforts to explore the use of alternative bait. Does the TC still identify with those issues, or is there some other perspective now that I'm missing, in terms of where the TC is on this issue? I just felt like those were key concepts to put forward, so that we knew what we were trying to do and what we were looking to evaluate. If it didn't meet those standards, if alternative bait wasn't as effective, wasn't as affordable and certainly didn't lead to a conservation benefit, i.e. use less horseshoe crabs than otherwise. No point in pursuing it. But I thought that was the whole point; to explore those issues. Are those issues still relevant?

MR. DOCTOR: Those issues are absolutely relevant, and it is because of those issues that we went forward with the action that we did.

MR. ROY W. MILLER: Steve, can you bring us up to speed on what alternative bait trials have been conducted, thus far? Were there any ongoing this year or is everything still in the planning stage in that regard; using the alternative baits, artificial baits, whatever you want to call them?

MR. DOCTOR: There was a study done last year, and I believe it was Rhode Island that did it. Was it Rhode Island that did the study last year?

MR. BALLOU: And Connecticut, I believe.

MR. DOCTOR: And Connecticut. It was a bait by one vendor, and there were a lot of problems getting the bait, number one, handling the bait, using the bait; and it seemed to have some efficacy. There is a report available of it. It also used female horseshoe crab in the bait, which was kind of disconcerting for a lot of people, and also they were not specific on how much female horseshoe crab they were using, and the cost of the bait was a question.

The more we looked into it, the more questions we had. What we tried to do as a Technical Committee is identify what questions we have. One of the main questions we had was, what baits are people using, how much of it are they using, and what is the cost of it? We needed to know that information before we would be able to compare it to artificial bait.

CHAIRMAN GILMORE: Go ahead, Roy.

MR. MILLER: If I may just follow up on that. Was that bait that was tried in Rhode Island and Connecticut, was that the bait that University of Delaware worked on that contained roughly a tenth of a horseshoe crab that was marketed by LaMonica Foods, or was it something else?

MR. ROOTES-MURDY: I'm going to help Steve out on this just a little bit, because I was closer to it in the spring. Staff was instructed coming out of, I believe, the February meeting, to try to undertake this cost comparison between the bait that was used in those trials in Connecticut and Rhode Island, which was LaMonica Fine Foods product; and determine if it was the most cost effective alternative to what fishermen are doing currently, in terms of their mix or suite of ingredients they're using in the bait bags and pots.

What we found during those trials was that while the ratio for the pucks was anywhere between a tenth to a quarter of a crab, because it wasn't as effective in staying together, many times they would have to double up on the dosage. That could increase it up to anywhere between a quarter to a half, and in some instances even more.

What Steve was just mentioning is another concern that the TC had, which is the composition wasn't always clear how much of the females and males were in it. The idea was that you would need more males to be equivalent to females, in terms of it as an attractant. But we didn't have that breakdown for what each puck had, because that information wasn't available to us.

Additionally, we also didn't know where these crabs were coming from on the coast. When speaking with LaMonica Fine Foods about this, they go from purchasing this from dealers up and down the coast. If we're concerned or if the board is concerned, excuse me, about the populations in other parts of the coast that these crabs may be coming from, the conservation savings or benefits from it may be compromised in that way.

CHAIRMAN GILMORE: Other questions for Steve? Unless there is any more advice, I think the TC and staff are pretty well ready to go on the addendum. Unless there is anything else that we want to add to that, I think they'll be ready to move forward and then reporting back in the May, 2017 meeting. Is everybody good with that?

2017 DELAWARE BAY HORSESHOE CRAB SPECIFICATIONS

CHAIRMAN GILMORE: Okay. I think we'll move along now then to Item Number 6, which is the 2017 Delaware Bay Horseshoe Crab Specs, and Kirby is going to give us a presentation on that first.

MR. ROOTES-MURDY: This should be very straightforward, given the presentations we just walked through this morning so far. The 2017 harvest specifications for the Delaware Bay Region, there is the ARM recommendation for Harvest Package 3. It is the same as what's been in place the previous three years. Both the ARM Subcommittee and the Technical Committees together recommended this package be selected.

Just in terms of a breakdown of what that means, they are 500,000 male-only crabs, and the state quotas under that 500,000 male-only crabs is broken down as the following:

Delaware and New Jersey are proportioned 162,136; also understanding that New Jersey's bait fishery has been closed in recent years. Maryland's Delaware Bay origin quota would be 141,112 and Virginia's is 34,615 east of the COLREGS line for male-only harvest. With that, if there are any questions, I'm happy to take them, but this is for board consideration and action.

CHAIRMAN GILMORE: Questions for Kirby. Seeing none; we're going to need a motion to move forward on this. Go ahead, Mike.

MR. LUISI: I don't know if you guys prepared one already, but I guess what you're looking for is a motion, would be to move to select Harvest Package 3 for the 2017 Horseshoe Crab commercial fishery.

CHAIRMAN GILMORE: Perfect, Mike, second, Stew Michels; discussion on the motion. Emerson Hasbrouck.

MR. EMERSON HASBROUCK: Does that motion need to say for Delaware Bay?

CHAIRMAN GILMORE: **Yes, I think it does, is that okay Mike, friendly addition, some wordsmithing yes, for Delaware Bay.** Good point, Emerson.

MR. LUISI: I think we're going to be using this motion until 2060, so we should perfect it now.

CHAIRMAN GILMORE: That's a very good point. Other discussion on the motion, questions on the motion? This is a final action. Actually, we go to the audience first, are there any comments on the motion from the audience? Seeing none; back to the board. It is a final motion so we're going to need to do a roll call vote, unless there is no objection to the motion.

Let's start there. Is there any objection to the motion? Great, seeing none; we will approve the motion without objection. Okay, let me just read it just so we're really clear. Move to select Harvest Package 3 for 2017 Horseshoe crab harvest in Delaware Bay. A motion by Mr. Luisi, seconded by Mr. Michels, and that motion is adopted unanimously. We're on to other business right now. We actually have essentially some discussion on the advisory panel. Oh I'm sorry, I missed one. We're going to do the FMP review, and Kirby you're going to do that.

HORSESHOE CRAB FMP REVIEW

MR. ROOTES-MURDY: All right, if you guys will just bear with me a little bit longer on this. We're going to go through the Horseshoe Crab FMP Review fairly quickly. First, I want to show you, this is a chart we have been using in previous years to lay out how bait and biomedical harvest and collection have gone in recent years.

I just want to note that we've moved away from this graph, and later on in the PowerPoint I'm going to show you the new one that we've reusing for our outreach information; just to get at more accuracy from feedback we got from the Advisory Panel members on it. The 2015 bait fishery total coastwide harvest was approximately 583,000 crabs.

A majority of those crabs came from the states of Delaware, New York and Massachusetts. They combine for about 70 percent of the coastwide harvest. Overall though, it is a decrease in what the harvest levels were relative to 2014. Delaware through Virginia, as well as Georgia through Florida all decreased landings from 2014.

It is important, I guess, to note that the total coastwide landings are approximately 36 percent of the total coastwide quota. In terms of the number of crabs that are being harvested, relative to 1998 it has been a significant decrease and even relative to last year, it is also a decline. When moving on to talking about biomedical collection and bleeding, the reported number of crabs that were brought to biomedical facilities was about 559,000 crabs.

This is a 3 percent decrease from the previous five-year average. Crabs used as bait and those that were bled was about 56,000 crabs, which is a 2 percent decrease from the past five-year average, and biomedical only mortality estimate is approximately 70,223. If you need more information on how that's broken down, why we're looking at biomedical only bled crabs, it's in part because those that are used for the bait fishery are also then given back and attributed as having completely died, no assumed post release mortality for those.

This is the new graph that we have on our website, and I just wanted to make sure the board was aware of it. It lays out what the commercial landings are, what the number of crabs that have been collected is, and then the additional bar is the estimated biomedical mortality. We had been given at least some advice and approached about needing to change the graphics we were having on the website, because people were concerned that it was misleading.

With some feedback from advisory panel members we did make this change. In going through the FMP review, it was noted by some of the PRT members that there is an interest in reporting out on some of the synthetic alternative LAL testing that's going on. We didn't have time to address that this year, due to some of the time constraints. But moving forward, this is something that the PRT would like to have included.

There is also concern on the number of crabs that are unidentified by sex from biomedical bleeding. I mentioned this earlier on in today's meeting about trying to get at this information better across the coast as noted. Those states that have a biomedical facility, and are bleeding crabs in their state, need to report out that those numbers, males and females that have been bled.

But what sometimes gets lost in translation is there are crabs that get to the facility and then are removed and not bled, and we get a total number for that. But we don't often get what that breakdown is by males and females. While we might be getting the number going in of the males and females, if we're subtracting a number that isn't attributing it to sex specific, then it starts to confuse how many of those males and females were actually bled, and what the mortality should be applied to those. It is important to note that the board did task the Stock Assessment Subcommittee with addressing biomedical mortality in the next stock assessment.

The sooner the states are able to better collect this information, and at least provide guidance on how to maybe apportion the sex ratio, if they aren't

able to get at a specific number by males and females; it will help that process along significantly. The PRT recommends continuing to seek funding for the Virginia Tech Trawl Survey.

I will note, additionally, that during the Technical Committee's meeting there was discussion about, in the absence of the Virginia Tech Trawl Survey being able to be continued in future years if funding is not available, that the states of Delaware and New Jersey could possibly augment their current surveys to get at some of the biological sampling that we utilized through the Virginia Tech Trawl Survey.

State representatives from those states have indicated that that is a possibility and could be adjusted for future surveys; it just needs to be specified earlier on in the process. The PRT also considered a quota transfer from Virginia to North Carolina. This is a request that has come now two years in a row, and there were some concerns expressed by the PRT, just in terms of it being an occurrence that has happened more than once in recent years and whether that means the quota should be revisited for those states.

But because of the size of the quota transfer, which was approximately 900 crabs, it didn't raise significant concerns to the PRT about implications or impacts to that regional population. The PRT found, in summary, all the state management measures to be consistent with the FMP. It is important to note again that the District of Colombia did not submit a compliance report.

They still remain a member of this board, and so the PRT was not able to determine if they were in compliance with the FMP requirements. With that, an additional note, I walked you through how to best improve reporting numbers of males and females at bleeding facilities. The PRT finds all states in compliance with the FMP specifications.

In looking at requests for de minimis, the Potomac River Fisheries Commission, South Carolina, Georgia and Florida have all requested de minimis and qualify for 2017. New Jersey also qualifies, but did not request it. The PRT finds these states have met the requirements for de minimis. With that, I'll take any questions at this point.

CHAIRMAN GILMORE: Just to note the most important part of that slide was LAL, it means Limulus Amoeboctye Lysate, which may help you at Jeopardy some day. Rob O'Reilly.

MR. O'REILLY: Not a question, but Kirby, I heard you say the transfer from Virginia to North Carolina, it is Georgia to North Carolina.

MR. ROOTES-MURDY: Correct. The quota transfer and this was included, I believe, in your board meeting materials. It was a quota transfer from Georgia to North Carolina.

MR. MUFFLEY: Kirby, I just want to make sure I have it right. The bigger issue in regard to the sex information at the biomedical facility is sort of all of those crabs being collected and brought to the biomedical facility versus those crabs that are actually bled. You're getting more information by sex of crabs that are actually bled versus all of those that come to the facility. Is that the piece that we're missing more so? Is the total number of crabs coming to the facility versus what's actually being bled?

MR. ROOTES-MURDY: I think, just to clarify, what we get many times from the states is a breakdown that you have X number of crabs have been brought to the facility, males and females. From the point in which they're brought to the facility to then when they're bled, there is a determination that some of those crabs aren't fit to be bled.

Those crabs are then removed; there hasn't been sex information attributed to them. Then they said X number of crabs is then bled, and we don't necessarily know after the other ones have been removed what that sex ratio is for bled crabs; and that is where we start to have some confusion on the total number of males and females that have been bled.

For more clarity, if the states can work with the facilities to get better information on the numbers of males and females that, once they are brought

to the facility are determined not fit to be bled, that information will help us with getting at post release mortality for those bled crabs by sex.

MR. MILLARD: Thanks for the presentation, Kirby. Regarding the graphic on the biomedical collection, I can see the footnote says this pertains to crabs that are brought to the bleeding facility. That 15 percent mortality is applied to those crabs that are brought into the facility, maybe a question for Steve, who is more on the ground.

I haven't been on one of these biomedical collection trawls, but I have it in my head that there is a fair amount of onboard culling that goes, because the biomeds don't want crabs that are damaged or puncture. They want pretty much pristine condition crabs brought into their facility. Again, it is in my head that there is a fair amount of mortality that is not being accounted for then in that process, because of the onboard culling that doesn't go into the facility. Can you comment on that?

MR. DOCTOR: I can start from the Maryland perspective. We have a chain of custody form that follows the crabs from the point of collection all the way to release again. On that form they actually list the number of crabs that are rejected because of death or injury; and we report that to ASMFC when we report the total number bled by male and female. It is reported.

MR. MILLARD: This terminology on here about crabs brought to the facility is really a little broader than that? Crabs that come up in the trawl is what the 15 percent is being accounted for, is what I think I just heard.

MR. DOCTOR: Okay, so Kirby says that we're reporting mortality on the number that are bled, not the total number collected.

MR. MILLARD: My point is, that bears directly on this sort of ongoing back and forth we're having with the biomedical companies about, is it 15 percent or is it a lot less. I'm suggesting there is a large, I don't know how large, but there is a component that is not being accounted for that are coming up in the trawl damaged, going right back overboard. We don't know. That's a mortality segment that we're not accounting for.

MR. DOCTOR: I just want to reiterate that I do report the number that are injured and dead at the time of collection and also at the time of release, and also the rejected because of death at the biomedical. We're in the middle somewhere is the best way I can answer that.

CHAIRMAN GILMORE: I'm not sure what the other states do either, so it is a good point, Mike, it could be higher.

DR. MICHELLE DUVAL: I just wanted to -- if you read the materials you probably saw this, but just in regards to the PRTs concern about sort of an annual request from North Carolina to Georgia to transfer horseshoe crabs. I just wanted to note that we did actually shorten our harvest season for 2016 by a month to constrain harvest to within our quota, and so we issue a proclamation prior to the beginning of the year that establishes the seasons start date and end date.

We shorten that by a month and all of the harvest that was legally pursued during that open season was actually underneath the quota, it was actually illegal harvest that occurred after the season was closed that led to the overage; so enforcement action has been taken, and I think we feel pretty confident about next year. Thank you again to Spud and Pat for helping us out.

CHAIRMAN GILMORE: That was clear in the briefing materials. You guys are definitely managing it and putting a lot of effort into it. Any other questions? Colleen.

MS. COLLEEN CALLAHAN: Kirby, do we have an idea on the percentage of crabs that are brought to the facility and ultimately not bled?

MR. ROOTES-MURDY: Yes, we have that information. I will offer that, for the FMP Review, we have to aggregate this information right now on a coastwide level. We could drill down and try to provide that, if needed, through the benchmark

stock assessment, but right now we have to aggregate it at the coastwide level. I can go back and look at the FMP review a little bit more closely, and if you would like I can work at trying to get at that amount that are brought to the facility and not bled coastwide and report back to the board on that.

MS. CALLAHAN: I didn't mean to create more work. I was just trying to get a handle on how large a problem it is, since we're trying to apply mortality by sex; and that is a group that is unaccounted for.

CHAIRMAN GILMORE: Okay, any other questions? All right, we need a couple of motions here. We've actually got four things we want to cover. I think the first motion, if we combine it into one, which would be accepting the FMP review with the compliance reports and the de minimis as one motion would be efficient, and then we'll do the North Carolina/Georgia transfer as a separate one. Does anyone have a motion for the first three that they would like to offer?

MR. ROBERT H. BOYLES JR.: I would move that the board accept the 2016 FMP Review and approve the de minimis request from the Potomac River Fisheries Commission, Georgia, Florida, and South Carolina or whatever order is preferred.

CHAIRMAN GILMORE: Do we have a second to that motion? Bill Adler. Mike Luisi.

MR. LUISI: Would you want to add state compliance reports to that too; tackle all three?

CHAIRMAN GILMORE: Is that okay with you, Robert?

MR. BOYLES: Yes, sir.

CHAIRMAN GILMORE: Bill. Amy is going to get that up there. We want to add the state compliance reports. While we're fixing it, is there any discussion on the motion? Okay, I think we've got the motion up there, everybody can see it. Any discussion on the motion? Okay, let me read it into the record.

Move to accept the Horseshoe Crab 2016 FMP Review and State Compliance Reports and approve de minimis requests for the Potomac River Fisheries Commission, South Carolina, Georgia and Florida. Motion by Mr. Boyles and seconded by Mr. Adler. Is there any objection to the motion? Okay, seeing none; we will approve that adopted unanimously. Okay, we're going to need a second motion now for the transfer between North Carolina and Georgia. Michelle.

DR. DUVAL: I move that the board approve the request for transfer of quota from Georgia to North Carolina.

CHAIRMAN GILMORE: Do we have a second to that motion? Pat Geer. Discussion on the motion. Michelle, go ahead. Michelle, you have black gloves on, I can't see your hands.

DR. DUVAL: I'll put my shiny gloves on next time. Perhaps, we should just add the amount of the transfer, which is 1,250 crabs to the motion; just to be clear.

CHAIRMAN GILMORE: Okay, we'll put that up; 1,250 was the number? Okay. Further discussion on the motion? Let me read this before we take a vote. **Move that the board approve the request of transfer of quota, 1,250 crabs, from Georgia to North Carolina; a motion by Dr. Duval, seconded by Mr. Geer. Is there any objection to the motion? Seeing none; we will adopt that unanimously**. Bill Adler.

MR. ADLER: Just to the previous motion that passed about the de minimis and the compliance. Wasn't it to approve the FMP report, the de minimis status and the compliance things? Did it say all three in that motion?

CHAIRMAN GILMORE: Yes.

MR. ADLER: All right, thank you.

OTHER BUSINESS

CHAIRMAN GILMORE: Okay, we're on to other business now, we have one item, which is involved with the AP, and Kirby, do you want to take that?

MR. ROOTES-MURDY: One other thing that the Technical Committee did talk about when they met earlier this month was regarding the Shorebird Advisory Panel. There has been some discussion at times amongst staff on how best to engage this group, as they have not been very active in the last four years or so. Technical Committee members recommended that the Shorebird Advisory Panel should be reinvigorated, repopulated and engaged in the commission's process for reviewing any management actions and decisions. One of the unique challenges, just in terms of the dynamics we have with horseshoe crabs, is that the Shorebird Advisory Panel would be providing additional input into the process.

That would be separate from what the state agency and federal agency partners who have shorebird biologists on the ARM Subcommittee and the Delaware Bay Ecosystem Technical Committee. Staff did make this clear to the Technical Committees that it was not apparent what additional input would be needed from those groups.

But a suggested way of moving forward would be that the current Horseshoe Crab Advisory Panel be adjusted to accommodate two nontraditional stakeholder positions that would be occupied by shorebird, essentially AP members, or to represent the shorebird conservation interest groups, as needed, to accommodate the interest of the Technical Committees to have that representation in the process. This is a suggestion from staff moving forward. Tina Berger is up at the microphone, as well.

What we're looking for, moving forward from the states, would be collectively we would be adding two more positions to the Horseshoe Crab Advisory Panel that would be specific to shorebird conservation interest and possibly interest groups. I can take any questions on that at this point. There doesn't need to be nominations made at this meeting, but to follow up with staff on who you would recommend having join that; and again, it is two more positions for the entire coast not per state.

CHAIRMAN GILMORE: Any comments on that or questions for Kirby? It appears we're all good then with just expanding the AP by the two members, and then we'll come up with recommendations for the next meeting in February, and we'll vote on them at that point. Okay, seeing no more on that, is there any other business to come before the Horseshoe Crab Board? Oh Tina, go ahead.

MS. TINA BERGER: Just one more point. We will be sending out the AP list to folks, and if you could look at your membership, there seems to be less activity by the actual bait harvesters, so we would like their voice heard to balance AP input. If you could look at that for your next meeting, that would be great.

ADJOURNMENT

CHAIRMAN GILMORE: Thanks, Tina, great homework. Okay, any other items to come before the Horseshoe Crab Board? If not we will adjourn, thank you everyone.

(Whereupon the meeting adjourned at 9:34 o'clock a.m. on October 26, 2016)