

PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

HORSESHOE CRAB MANAGEMENT BOARD

Crowne Plaza Hotel - Old Town
Alexandria, Virginia
February 9, 2012

Approved May 3, 2012

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INDEX OF MOTIONS

1. **Approval of Agenda** by Consent (Page 1).
2. **Approval of Proceedings of November 9, 2011** by Consent (Page 1).
3. **Move to adopt Option 3, ARM implementation, with the following suboptions; Suboption 3A that is Lambda values based on genetics; Suboption 3B, weighting based on Addendum VI quotas; Suboption 3C, to implement a harvest cap for Maryland and Virginia based on Addendum VI quotas; Suboption 3D, implement a DBSA at the 10 percent level; Suboption 3E, that there be no allowance for the two-to-one male-to-female offset; Suboption 3F, include a consultation process with the TC and the APs to recommend to the board one of the two options for the contingency plan** (Page 17). Motion by Jack Travelstead; second by Pat Augustine.
4. **Move to amend the motion to change 3D to zero percent the Delaware Bay allowance** (Page 15). Motion by Peter Himchak; second by Jaime Geiger. Motion carried (Page 15).
5. **Move to amend the motion to allow under Suboption 3E a two-to-one male-to-female offset** (Page 15). Motion by Jack Travelstead; second by Pat Augustine. Motion carried (Page 16).

MAIN MOTION REWORDED (PAGE 16): **Motion to adopt Option 3, ARM implementation, with the following suboptions; Suboption 3A, Lambda values based on genetics; Suboption 3B, weighting based on Addendum VI quotas; Suboption 3C, implement a harvest cap for Maryland and Virginia based on Addendum VI quotas; Suboption 3D, implement a DBSA at zero percent; Suboption 3E, to allow a two-to-one male-to-female offset; Suboption 3F, include a consultation process with the TCs and APs to recommend to the board one of the two options for a contingency plan** (Page 16). Motion carried (Page 17).

6. **Move to approve the Addendum as modified** (Page 17). Motion by Bill Adler; second by Bill McElroy. Motion carried (Page 17).
7. **Motion to adjourn, by Consent** (Page 17).

ATTENDANCE

Board Members

Douglas Grout, NH (AA)	David Saveikis, DE (AA)
G. Ritchie White, NH (GA)	Stewart Michels, DE, Administrative Proxy (AA)
Dennis Abbott, NH, proxy for Rep. D. Watters (LA)	Roy Miller, DE (GA)
Paul Diodati, MA (AA)	Bernie Pankowski, DE, proxy for Sen. Venables (LA)
Bill Adler, MA (GA)	Tom O'Connell, MD (AA)
Jocelyn Cary, MA, proxy for Rep. Peake (LA)	Bill Goldsborough, MD (GA)
Mark Gibson, RI, proxy for R. Ballou (AA)	Russell Dize, MD, proxy for Sen. Colburn (LA)
William McElroy, RI (GA)	Jack Travelstead, VA, proxy for S. Bowman (AA)
Dave Simpson, CT (AA)	Catherine Davenport, VA (GA)
James Gilmore, NY (AA)	Robert Boyles, SC (LA)
Pat Augustine, NY (GA)	Patrick Geer, GA, proxy for S. Woodward (AA)
Brian Culhane, NY, proxy for Sen. Johnson (LA)	John Duren, GA (GA)
Peter Himchak, NJ, proxy for D. Chanda (AA)	Aaron Podey, FL, proxy for J. McCawley (AA)
Adam Nowalsky, NJ, proxy for Asm. Albano (LA)	Charles Lynch, NOAA
Tom Fote, NJ (GA)	Jaime Geiger, USFWS

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

Ex-Officio Members

James Cooper, Advisory Panel Chair	Jeff Brust, Delegate, Bay System Technical Committee Chair
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ASMFC Staff

Vince O'Shea	Mark Robson
Robert Beal	Kate Taylor
Danielle Chesky	

Guests

Rick Robins, ASMFC AP	Denise Wolf, LANZA
Greg DiDomenico, GSSA	Wilson Laney, USFWS
Steve Doctor, MD DNR	Jack McGovern, NOAA
Benjie Swan, Limuli Laboratories-Dias Creek	Rob O'Reilly, VMRC

The Horseshoe Crab Management Board of the Atlantic States Marine Fisheries Commission convened in the Presidential Ballroom of the Crowne Plaza Hotel, Alexandria, Virginia, February 9, 2012, and was called to order at 8:30 o'clock a.m. by Chairman Thomas O'Connell.

CALL TO ORDER

CHAIRMAN THOMAS O'CONNELL: Good morning, everybody. My name is Tom O'Connell, Chair of the Horseshoe Crab Management Board. I'd like to call today's Horseshoe Crab Management Board to order.

APPROVAL OF AGENDA

CHAIRMAN O'CONNELL: All of you should have received an agenda. The first order of business is approval of the agenda.

Is there any request to modify the agenda? I would like to make one modification under Agenda Item Number 4. Mr. Cooper, we're going to move him up and allow him to give a presentation first as he has a commitment later this morning. Is there any objection with making that modification? Seeing none, the agenda will stand approved.

APPROVAL OF PROCEEDINGS

CHAIRMAN O'CONNELL: The next item on the agenda is approval of our proceedings from the November 9, 2011, meeting. Are there any modifications to those proceedings? Seeing none, those proceedings will stand approved.

PUBLIC COMMENT

CHAIRMAN O'CONNELL: Moving on to public comment, is there anybody from the public that would like to comment? Mr. Robins.

MR. RICK ROBINS: Thank you, Mr. Chairman; and, members, good morning. Rick Robins as an advisor and on behalf of Bernie's Conchs and Chesapeake Bay Packing, both conch processors in Virginia. I just wanted to make a couple of points. I know today that you're not going to be voting on the actual parameters within the ARM Model, but rather you're voting on the details associated with the implementation of the model.

I would just point out that the way the model is structured it is set up so that it doesn't add any utility for female harvest until you hit about 80 percent of carrying capacity. That's a point that I would just

strongly encourage the board to be involved in reviewing at the appropriate point in time. In other words, a year from now whenever there is the first opportunity to review some of those parameters, I would suggest that the board be closely involved in reviewing some of those details.

Just to put that in the currency of some of our other managed fisheries, that would be like saying we can't harvest any menhaden until we've hit 80 percent of carrying capacity in the population. I remain supportive of the ARM approach and the conceptual framework that it provides, but again I would just suggest that be reviewed.

Right now the whelk fishery and the horseshoe crab fishery are essentially in a state of disequilibrium, and that's a new condition for the first time, really, I think in our history. Our company ran out of horseshoe crabs in the last week of December. I knew that was going to happen. You could project it based on what we were carrying for bait. We did look at some of the other options for baits.

We've been aggressively buying things like Jonah crabs, for example, to use alternative baits. They're not as effective as the horseshoe crab, but we've been trying to become more efficient. I think by running out it has forced the fleet certainly in Virginia where we operate to be more efficient and make I think significant strides in their efficient use of bait.

I think that's on the one hand a positive outcome. There is a negative outcome, too, though that I think none of us really anticipated; and that is now that some of the Asian species of horseshoe crabs are being imported to the fishery. They're coming in through New York and making their way into the fishery.

Those species from the advice of your own technical committee appear to be in trouble. We explored the option as well. I decided, after talking to people like Dave Smith, that they're not for us. That is what is happening right now in the fishery. I would just suggest that again the board look at those options in the future very closely.

Additionally, I think in the long run it would be ideal if we had stock assessments up and down the coast for these different populations so that they could all be managed in an ecologically sustainable way. For example, North Carolina has a population of crabs. That fishery is constrained at a very low level.

There is not a stock assessment in place to determine whether that's the right level. I think that's true of a lot of the states within the south. I would just suggest that be a long-term research objective that we eventually develop more specific assessments up and down the coast to better understand those other populations, because all of the studies thus far have been on the Delaware Bay or even heavily concentrated at least on that population. Thank you, Mr. Chairman.

DRAFT ADDENDUM VII FINAL APPROVAL

CHAIRMAN O'CONNELL: Thank you, Mr. Robins. Anybody else from the public that would like to speak? All right, seeing none, we're going to move on to Agenda Item Number 4. We're here today to consider final action on Draft Addendum VII. This addendum was initiated to replace Addendum VI, which expires in April of 2013. Danielle is going to be reviewing the options in that; but before we do that, we're going to allow Mr. Cooper to give an update on the Horseshoe Crab Advisory Panel Report.

HORSESHOE CRAB ADVISORY PANEL REPORT

DR. JAMES COOPER: I appreciate your allowing me to go a little bit earlier. Our Horseshoe Crab Advisory Panel met at the end of November. This was a conference call and we had six of our members representing five states, and, of course, Ms. Chesky. We were looking at Addendum VII.

We did agree on Option 3, which is the ARM implementation. Obviously, we think that's the good way and the scientific way of going forward and giving some allocation options. We continued to agree with the decisions we have made in May; no change there. We, of course, discussed additional suboptions of the two-to-one offset and the contingency plan option. Now, with regard to origin for the Maryland and Virginia crabs, we, of course, agree that Lambda 1, which means all of the crabs were coming from Delaware Bay, this isn't appropriate management. We also recognized the severe limitations of trying to use tagging data.

The consensus recommendation was that the Lambda values be considerably less than that; somewhere between the data generated by tagging and that of genetic data. The panel recommends that the two sets of data would be the window that is the upper and lower levels for Lambda.

With regard to weighting of the allocation harvest, we considered a number of things, the historical data, the current quotas and the estimated abundance. That would, of course, be referring to the trawl data. I haven't heard a report, but I assume that the trawl for 2011 has been completed and hopefully we'll have some data from that in the near future.

The panel felt it was inappropriate to base the allocation on estimated abundance or average landings at this time. The majority recommendation is still basing the proportional allocation on the ARM harvest to make the Addendum IV quota. We did have a minority recommendation for using the reference period landings.

Now, for the harvest cap we agree that the non-Delaware Bay crabs should be protected until we have sufficient data to suggest that the harvest levels can increase, but a decrease certainly isn't justified. Of course, Rick has just given you some input to help you understand some of the discussions that we had.

The panel recommends a harvest cap based on Addendum IV quota allocations to cap the harvest on non-Delaware Bay crabs. Now the stock allowance; the current panel recommendation would allow harvest of some Delaware Bay crabs, and this would avoid a problem of a complete moratorium of Delaware Bay origin crabs.

We are aware and we are optimistic that the horseshoe crab abundance will improve. We are cautiously optimistic. The panel also recommends that the board establish a stock allowance that maintains the current quota levels of female crab harvest in Virginia and Maryland. The panel saw the benefits as well as the problems associated with allowing a two-to-one offset of the males for females.

The potential economic loss was considerable; that is if no offset would estimate potentially a million and a half of loss for Maryland and Virginia. The majority recommends allowing the offset should the Delaware Bay stock allowance be lower than the current female harvest. The minority felt that the flexibility already exists and should continue.

If the board wished to implement an offset in the future that would certainly be good news for everyone. The contingency; the panel agreed that the board should consider the best available scientific information; and should the specific data needed for the ARM framework not be available, the panel recommends a contingency plan be included that the

board would use its resources, of course, to consider the most appropriate management option.

That's sort of a motherhood statement. Now, in summary, basically our report is pretty much the same as from April, but that the Lambda value would be somewhere between the current tagging and genetic information we have. The weighting of the allocation, well, Addendum VI, which is the majority and the reference period landings the minority. The harvest cap would be yes; that is, to Addendum VI, but certainly review that in the future looking for improvements.

With respect to the two-to-one offset, we have yes of the majority. Of course, we did have a minority of do not require. Obviously, the panel agrees of the need for a contingency plan so yes to that option. I will have to leave in a few minutes. However, there are some advisory panel members here. Rick Robins is here, Benji Swan is here and perhaps some others; so that if there is more detail required, I encourage you to use those resources. Again, thank you for your attention.

CHAIRMAN O'CONNELL: Thanks, Jim; that was a clear and concise presentation. Questions? Mr. Augustine.

MR. PATRICK AUGUSTINE: Excellent report. Outside the box, if you will, will the technical committee eventually look at what the effect of the horseshoe crab population is now and will be in New York relative to what is happening in Delaware and so on? My question is centered around the fact that our populations are on a pretty good decline right now.

Interstate commerce allows our folks to sell to the needy states, if you will. I do know that the issue has always been to bring back this stock, but in the interim I think someone has to look at how many more years will it be before our stock is going to be in deep trouble. We see the effects of it already in some of our bay areas. I'm not sure you can respond to it; but if we could look at it on your list of to-do to take a look at in the near future I'd appreciate it. Could you respond or not?

MR. JEFF BRUST: Pat, at this point the assessment that has been for horseshoe crabs certainly focuses on the Delaware Bay because that's where the majority of the data is. For the regions outside the Delaware Bay, we do have an indexed-based assessment. We do have trawl indices and other indices of abundance for those regions.

You will recall that the Virginia Tech Trawl Survey has been operating in the New York Apex for the last number of years. I can't recall how many, but we're getting better data there, but it's directed data as opposed to the other trawl surveys, which are just bycatch for horseshoe crabs. At some point, yes, it would be good to move into more quantitative analyses for these other regions. Right now we just don't have the data to support it, but it's something that the Horseshoe Crab Technical Committee, the coast-wide technical committee has talked about. We just need the data to support it.

MR. AUGUSTINE: Fair enough; I hope we do that soon.

CHAIRMAN O'CONNELL: Any other questions for Mr. Cooper? Roy.

MR. ROY MILLER: Jim, I don't know whether you misspoke, but I think you referenced Addendum IV. On the summary sheet on the screen we see Addendum VI. Just so we get this straight right up front; aren't they in fact the same thing in terms of their recommendations for harvest levels, Addendum IV and Addendum VI?

CHAIRMAN O'CONNELL: Yes, Danielle, is going to clarify that.

MS. DANIELLE CHESKY: Yes, Roy, you're absolutely right. Addendum VI was just an extension of Addendum IV, so any reference to Addendum IV quota levels or current management measures or whatnot are the same as Addendum VI, exactly.

CHAIRMAN O'CONNELL: Well, thanks again, Jim. We're going to move forward and Danielle is going to give an overview of the addendum and summarize the public comments.

REVIEW OF OPTIONS

MS. CHESKY: The current timeline for Horseshoe Crab Draft Addendum VII has been going for quite some time in terms of the options that are within it. We went out for public comment since the last meeting and are bring the draft addendum to the board today for final approval. Really, at the base of the problem is that the horseshoe crabs interact ecologically with the shorebirds in the Delaware Bay Region.

While over the past ten to twelve years, since we've had the FMP, horseshoe crab landings have been reduced from their levels, but we haven't seen a

corresponding increase in shorebird populations. In addition, the other pressure for looking at a new Draft Addendum VII is the fact that the current addendum, as the Chair has mentioned, expires on April 30, 2013.

This graph here shows you the history, as I referenced, of the bait fishery. You can see the FMP was instituted in 1998 and where we are currently from the preliminary 2010 numbers under Addendum VI. As mentioned, the FMP was originally approved in 1998. Current management as we've discussed has really been an extension of Addendum IV, which was originally passed in 2006.

Addendum VI which was considered by the board in 2010 did include an option for ARM implementation, but there were concerns at the time about funding for the Horseshoe Crab Trawl Survey out of Virginia Tech. As a result the board included the sunset clause to revisit the issue. Going right into the options, the first option is a no action option, which would mean that the Addendum VI measures would expire on April 30th of next year, and the measures are set to revert to Addendum III.

The chart here shows you the difference with where each of the four Delaware Bay states would revert to under Addendum III versus the current Addendum VI measures. These include both changes in quotas and for most states as well a change in different seasons or closed seasons. Management Option 2 includes a continuation of the status quo, which would be our current Addendum VI provisions.

There are also options in there to either include or not include another sunset clause ranging from one to five years. Management Option 3 was implementation of the ARM framework and all of the wonderful suboptions that made this addendum quite complicated are really to answer the question of allocation.

The ARM itself puts out an optimized harvest level that includes all of the Delaware Bay crabs for the four states but no division among those four states. This is where we get into all these suboptions. The first suboption was termed Lambda and really the question was how much of each state's harvest is comprised of Delaware Bay crabs. A Delaware Bay crab was defined during the ARM framework process as a crab that will spawn at least once in Delaware Bay. It's a fairly broad definition.

Delaware and New Jersey are assumed to harvest all Delaware Bay crabs due generally to the nature of the

fishery. Maryland and Virginia however there were questions in the likelihood of them being a mixed-stock fishery, and so there are three options presented. These based on different sources of data and what we considered a default approach.

The first set of data came from the U.S. Fish and Wildlife Service Horseshoe Crab Tagging Program. These data suggested that 13 percent of Maryland's harvest and 9 percent of Virginia's harvest originated from Delaware Bay. The default approach was just to assume that all of the harvest of all the four states came from Delaware Bay. The genetics data implied that about half of Maryland's harvest came from Delaware Bay and about 35 percent for Virginia.

And just as a note, when we're talking about Virginia, we are only talking about the harvest that occurs east of the COLREGS Line and not the harvest that occurs generally up in the Chesapeake Bay. Option 3B was in weighting and it really asked what basis should the harvest be divided proportionally among the four states.

There are a few options that range from historic harvest to current management, estimated abundance and average landings. Just as a note, every one of these options interacts back with Lambda, so that is what made a lot of these options so complicated because as soon as one option was changed the end result was changed quite a bit.

This graph shows the differences based on a couple of assumptions; assuming the genetics Lambdas and the different weighting values are across your X-axis. I think the biggest thing here to note is that when you use average landings, New Jersey is not allocated any crabs, and that is because the average landings are based on 2007-2010, which is why you see New Jersey's bar go away.

A similar graph, like I said, assuming a different Lambda. This is based on the tagging data from the U.S. Fish and Wildlife Service. Again using average landings, New Jersey's allocation is zero. The third option had to do with the harvest cap, and this dealt only with the harvest cap of Maryland and Virginia's harvest. This was meant to protect non-Delaware Bay crabs.

Assuming that this fishery is a mixed-stock fishery, there was concern that there could be an elevation of Maryland and Virginia's harvest in general. There was concern about what support was there to support an increase in harvest. The cap was put forth and it was based upon again historical harvest levels,

different management levels, as well as average landings.

This is the range of options that were considered and included in the addendum. As you will see Addendum VI here highlighted, that is our current quota levels, and you will see that Virginia is 60,998, and again this is just in reference to Virginia's quota that is east of the COLREGS Line. To display the point, the current quotas are listed in the first column and then the potential quota under an ARM without a harvest cap could represent a 132 percent increase.

The Delaware Bay stock allowance was put into the allocation options to consider the fact that if the ARM recommends a moratorium, whether a full moratorium or a female-only moratorium, should Maryland and Virginia, recognizing that they have a mixed-stock fishery, still be allowed to harvest some crabs that are prohibited. We're working under the options under Harvest Package 3, which would recommend a female moratorium.

There was also the consideration of the Delaware Bay stock allowance to allow a two-to-one male-to-female offset, to allow more males to be harvested if the female harvest is restricted. This was taken into consideration after the board brought up the fact that a male crab is so much smaller and potentially represents less of an economic impact than one female crab.

Again, these options in terms of the allowance are relevant only if Virginia and Maryland are assumed to have a mixed-stock fishery. If we assume that all of the crabs that are harvested out of there come from Delaware Bay, these options become irrelevant. To sort of display the point in terms of the Delaware Bay stock allowance, 3D is the first column and that is with no offset, and 3E is the second column and that is with the two-to-one offset.

The easiest way to look at it is if there is no female harvest that is going to be allowed in either Maryland or Virginia, there is no harvest of females but the number of males that are allowed to be harvested can increase, as you see between the two different columns there; again, the same thing for Virginia.

As a note, 10 percent for either Virginia or Maryland represents approximately status quo of female harvest. Finally, the last suboption is a Plan B or a contingency plan. This is in concern that the annual data that is needed for the ARM input might not be available and whether that's the horseshoe crab abundance data from the Virginia Tech Trawl Survey

or the shorebird data from the beaches that is collected every year.

Currently the language will allow the board to set the management to either the Addendum VI measures, which are the current management measures, or the previous ARM recommendation. This would not require a full addendum but just board action, so a final vote. In summary, we've got Option 1, which is no action and will revert to Addendum III. Option 2 would continue the Addendum VI measures and the question would be for how long. Option 3 would implement the ARM framework with all the various suboptions on how to allocate that ARM harvest.

PUBLIC COMMENT SUMMARY

In terms of public hearings, four public hears were held; one in each of the four Delaware Bay states. There were about 32 public participants that attended among the four hearings. Forty-nine public comments were received; 41 from individuals and 8 from organizations. In summary, Option 1, there were two individuals. Option 2 we had a mix. Option 3 by far gained the most public support; although some comments favored Option 3 only with certain options.

The chart here gives you a summary of where the preferences fell under Option 3 in terms of the different suboptions. We received quite a few comments as well that ranged from shut down the fishery entirely to release the fishery from all management, so quite a range that was received. That's it.

CHAIRMAN O'CONNELL: I really appreciate Danielle's efforts in taking this complex Option 3 and making it understandable for us. Any questions for Danielle? All right, seeing none, we have a couple of reports; the first one is Jeff Brust on the Delaware Bay Ecosystem Technical Committee.

DELAWARE BAY ECOSYSTEM TECHNICAL COMMITTEE REPORT

MR. BRUST: I am Jeff Brust with the New Jersey Marine Fisheries. I am the Chair of the Delaware Bay Ecosystem Technical Committee and I'll provide the report from the TC on our recommendations for the different options for Addendum VII. For the main options in terms of the specific management action, Option 1, the technical committee felt was less risk averse than the ARM framework, and that was not our preferred option.

Option 2, which continues status quo, we felt that there was no scientific basis for the harvest levels that have been implemented. Also, in the past we've sort of delayed the implementation of the ARM because we've still been making great strides in understanding the models and developing the models and all that.

At this point we feel that there is little new information that we could develop by delaying the implementation of the ARM. Also continuing with status quo would not give us the benefit of a feedback loop. By this what I mean if we implement something through the ARM, we see how the stock responds, we can incorporate that into the data inputs to the model and we learn about the learn process, we learn about the population response to management activities, and we can move forward from there.

Continuing with status quo would not give us this opportunity, so this is not our preferred option. We did state that if the board does elect to continue with the status quo that there should be a sunset clause included. Moving on to Option 3, obviously this is our preferred option. The harvest levels under this option are scientifically derived.

It would incorporate the feedback loop to allow learning through management implementation on how the stocks respond. It is considered at this point the best available science for these two populations. Within the suboptions of Option 3, the Lambda value, the proportion of each state's harvest that comes from Delaware Bay, unfortunately the technical committee could not reach consensus.

For the default values, these were considered the most conservative values for the Delaware Bay stock, but again the numbers are not scientifically derived. They're just default values. The genetics-based values, these are scientifically derived numbers, but it must be noted that we used borrowed data. It was not a specific-directed study to collect this information.

We borrowed data from a previous study to help us understand the question at hand. The conclusion that the technical committee reached is that the majority of the committee felt that the Lambda values should be set no lower than the values based on the genetics study, but there was a minority opinion that it's possible that the true numbers are between the tagging numbers and the genetics numbers, so that was the minority opinion.

There was consensus that the best way to get the true answer or the most scientifically supported answer is

to conduct a directed either genetics and/or tagging study to address this question. There was consensus that a directed study would be good. The majority opinion is somewhere between genetics and default and a minority somewhere between tagging and genetics.

Allocation among the states, you'll remember that there was no previous technical committee recommendation on this option because we felt it was a policy decision. Since we were asked, we took a crack at it. Using average landings we decided would be unfair. As Danielle noted, New Jersey would get no harvest and would get no quota because of their current moratorium they have had no landings in the last few years.

Basing the allocation on the results of the Virginia Tech Trawl Survey, these give us the best estimates of the relative abundance within the states and of the population as a whole. The survey was not designed to allow us to divvy up the stations among the states and develop state-specific estimates of abundance. We thought that although it gives us good estimates, it is not appropriate to use for allocation.

We felt that the recent harvest allocation levels were probably the best to use because they reflect past policy and management decisions. They're in place, they're accepted by the states, and we thought that would be the best numbers to base the decision on. It was also noted that if the states are more conservative than they need to be under the requirements of the plan, that the board should not reallocate the unused crabs to the other states.

In particular if New Jersey has a moratorium or if any other state has a moratorium, those crabs should not be reallocated to the other three states without a moratorium. They should remain unused and stay in the population. For the harvest cap, again this is only required if the board chooses Lambda values that are not one for all states.

Reference period landings in Addendum I level landings would be ineffective at limiting the harvest. Again, average landings penalizes states for past quota underages. Virginia and Maryland have not harvested their full quota in the last couple of years. If we used average landings, their landings would actually go down from their current quotas.

The recommended option is the Addendum VI landings. It best reflects past management actions. It would provide an effective cap that would protect the southern stock from overexploitation. The Delaware

Bay stock allowance, again there was no previous technical committee recommendation. Also, this is only required for Lambda values less than 1.

Unfortunately, we could not reach consensus on this issue either. The majority opinion is that deviations from the ARM Model, the recommended harvest level under ARM Model, would undermine the intent of the model framework. Deviations would also interfere with our utility in evaluation of the framework, how well it is operating.

There was also concern that if we allowed a bycatch of females that it would turn into a targeted quota of females, which could be dangerous. The majority recommendation is to recommend against implementation of the DBSA. There was a minority opinion, however, that even a 10 percent bycatch allowance would not be excessively detrimental to the ARM process, and this would also maintain the current harvest levels of females in the Maryland and Virginia fisheries.

The two-to-one offset option, 3E, this is a new option that was not discussed by the TC at previous meetings. The consensus opinion was that allowing this two-to-one offset would further convolute the implementation of the ARM, moving farther away from the intent of the ARM Model. The recommendation is that the two-to-one offset not be allowed.

As far as a backup plan, Option 3F, the technical committee felt that the selection of a specific backup plan at this time is premature. The actual decision could be affected by many factors such as the status of the resource, when data become unavailable, how long the ARM implementation has been in effect and how long we expect a data gap to exist; other things also, but these are just a couple that I came up with real quick.

The technical committee recommends an alternative strategy other than what is provided in the draft addendum. We suggest that the board requests input from the Delaware Bay Technical Committee and/or the relevant advisory panels at the time. If and when we ever come to this situation, the technical committee and the APs review the available data and provide recommendations to the board and the board makes a decision at that time on the best way to move forward. And just to give credit where credit is due, this was an idea that was brought up the Shorebird AP, and we just stole their idea. I believe that concludes my report.

CHAIRMAN O'CONNELL: Thank you, Jeff, great report. Any questions for Jeff. Peter.

MR. PETER HIMCHAK: I'll go right to the heart of my dilemma is the 3D, the Delaware Bay stock allowance. Again, the worse case scenario is we come up with a package under the ARM of a male-only allowable harvest for the Delaware Bay population; and if there is no Delaware Bay allowance for females, either 1 through 10 percent, and we don't allow a two-to-one offset for males to females from the Delaware Bay population – because that's recommended against by the technical committee – doesn't that redirect effort on other spawning populations of horseshoe crabs, looking for female horseshoe crabs.

MR. BRUST: You mean outside the Delaware Bay Region?

MR. HIMCHAK: Yes.

MR. BRUST: It has that potential, yes. If we're not allowing – if the ARM Model recommends a harvest of zero females at this time and we're not allowing an offset – excuse me, and we're not allowing the DBSA, then there would be no female harvest from any of the four Delaware Bay states, Maryland, Virginia, Delaware and New Jersey, so that could redirect female harvest to regions outside the Delaware Bay.

DR. JAIME GEIGER: Mr. Chairman, I appreciate the recommendations of the technical committee. Again, I think in summary from my position and from the position of the Fish and Wildlife Service, I think these recommendations are science-based. They represent a fair and equitable proportion and recommendation for the states.

Again, given the Fish and Wildlife Service trust responsibilities related to red knot conservation, I believe by maintaining the ARM Model and the integrity of the ARM Model it maintains horseshoe crab and red knot conservation efforts based upon the best available sound science. From the Fish and Wildlife Service perspective I strongly support the recommendations of the technical committee. I think they are again based on the best available science.

This board has invested considerable effort and support in developing the ARM Model, and I appreciate the leadership of this board in doing that. Again, this model does represent a unique model tying together two unique species, horseshoe crabs and red knot conservation. I think it's to the credit of

this board to support the ARM Model, but now is the time to support the implementation of the ARM Model. Any deviations or undermining the ARM Model will not result in conservation of red knot populations. Thank you very much, Mr. Chairman.

CHAIRMAN O'CONNELL: Thanks, Jaime. We do have two more reports; but before we move forward, any questions for Jeff? Adam.

MR. ADAM NOWALSKY: Jeff, you mentioned that the technical committee for the decision with regards to Lambda recommended not going lower than the genetics values. Was there any discussion about a more preferred value by the TC that fell within the range of options that were in the document?

MR. BRUST: Just to clarify, the majority opinion was not to go below the genetics values. In terms of more specific numbers, other than the three that we had on the table, we did not go into that much detail. We thought the best way to get a more scientifically sound number is to do a directed study. We didn't want to try and guess a specific value. We wanted to put bounds on it.

MR. NOWALSKY: Has there been any significant discussion made about what this directed study would entail and what kind of timeline we'd be looking at for that?

MR. BRUST: Nothing specific, no. We've kicked around a couple of ideas but just very generally. It would take a directed meeting to develop the survey design.

MR. WILLIAM A. ADLER: Based on your evaluation of Option 3, it looked to me – and correct me if I'm wrong – when I read what you had, that you had 3B, recommended recent harvest levels as being okay; and 3C, that you recommended the Addendum VI landings. Those sort of like were right there and stuck out. Am I correct in those recommendations?

MR. BRUST: Yes, that's correct. It does appear to be inconsistent. The difference is the recent harvest allocation levels do not imply that they had to be harvested, so New Jersey has been allocated a quota. That's taken into consideration for the allocation. In terms of the harvest cap, well, New Jersey doesn't even come into the harvest cap.

The recent landings, Maryland and Virginia and I believe Delaware as well have stayed below their allocated harvest in the last couple of years. If we

use the average landings, their actual quota under the – their harvest cap under the ARM Model would be lower than what their quota would be. It's rather non-linear. It's not easy to visualize. The states have been more conservative than they need to be and we don't want to penalize the states for being conservative I guess is what it boils down to.

MR. STEWART MICHELS: I have a couple of questions. Jeff, the genetics data that were used for making the determination of the proportion of Delaware Bay origin crabs; where were those collected? Were those collected from the fisheries, do you recall?

MR. BRUST: I believe at least some of them were and I believe some of them could have been collected from trawl surveys. Yes, both.

MR. MICHELS: Okay, offshore, though?

MR. BRUST: Yes, offshore, but it was for a project that Fish and Wildlife or Geological Service was working on at the time and not to address this issue specifically. We borrowed their samples.

MR. MICHELS: Okay, and then I'm not sure you'll be able to answer this one, but going back to the model itself, you were on that committee, weren't you?

MR. BRUST: Sort of, yes.

MR. MICHELS: Do you recall was there some consideration given to the timing of the harvest occurring? Is there something embedded in the model that addresses that; so that were we to go with the ARM Model process, should we continue to have our current constraints on the timing of harvest; that is no harvest from January 1st to June 7th in those states?

MR. BRUST: I'm dredging up memories. I don't recall any discussions about the timing of the fishery and the timing of the closures. We've just been operating under the current scenario of when the fisheries occur and when the closures are required.

MR. MICHELS: Okay, so you basically have been operating under more or less the assumption that the current January 1st to June 7th closures would persist?

MR. BRUST: That's my recollection, yes. I guess just to clarify, you're wondering whether a different type of fishery – the fisheries that exist now, the majority of them are hand harvest on the beaches during spawning. I guess you're sort of getting to the

question of would an offshore trawl fishery make more sense.

MR. MICHELS: Well, like in Delaware's case a lot of our landings early in the year come off our spawning beaches. However, if you could harvest crabs beginning January 1st, they may shift more to a dredge-type harvest. Some of the other states' harvest may be impacted similarly. I was just wondering – I can recall something about transition probabilities being in the model, but I don't really have a good appreciation for how those data impact this.

MR. BRUST: I guess it would be something worthwhile to bring up to the committee, but, I'm sorry, I don't recall having those discussions at this point.

CHAIRMAN O'CONNELL: All right, we have two more reports so let's move forward. We have a Shorebird Advisory Panel Report. The chairperson, Sarah, was not able to make it so Danielle is going to give that update.

SHOREBIRD ADVISORY PANEL REPORT

MS. CHESKY: The Shorebird Advisory Panel met in the end of November as well via conference call to discuss the Addendum VII options. They considered Option 1, no action, to revert to Addendum III and decided that was definitely a less risk-averse approach. It would simply be moving backward in the management progress that has been made. They recommended against that.

The second option, to continue the status quo, certainly they recognized that it's based on past management policy but allows no ability to adapt future changes in the fishery. They recommended against Option 2. The Shorebird Advisory Panel did endorse Option 3, implementation of the ARM as it is based on the scientific modeling of the two main species, the red knots and the horseshoe crabs.

As it is still going through development, it is adaptable to changes in research as well as changes in the fishery. In terms of Suboption 3A Lambda, again how much of each state's harvest is comprised of Delaware Bay origin crabs, the Shorebird AP endorsed the genetics values for the fact that they seemed the most reliable at the time.

They were also most risk averse that were also scientifically defensible. The Shorebird AP recognized that the default of assuming one and one for Maryland and Virginia had no scientific basis. In

terms of the allocation weights under Suboption 3B, the Shorebird AP endorsed the Addendum VI levels.

They liked the fact that similar to the Delaware Bay TC that the Virginia Tech Survey Abundance Data was the best estimate of current abundance levels; but as the survey was not designed to estimate state-by-state abundance levels they recommended against using that. Additionally, the average landings would punish New Jersey for implementing more conservative measures than what the ASMFC Plan would allow.

Finally, Addendum IV or Addendum VI, as we've discussed, were recommended. They're the most risk averse in protecting the male horseshoe crabs and offset some of the devaluation of the male crabs in the ARM Model. In terms of the harvest cap, the Shorebird AP did agree with the TC and the Horseshoe Crab AP on this to, yes, implement the harvest cap for Maryland and Virginia and base it on the Addendum VI levels, recognizing that there is no evidence currently that non-Delaware Bay crabs that are harvested in Maryland and Virginia can sustain a higher harvest level at this time.

In terms of the Delaware Bay stock allowance, the Shorebird Bird AP was adamantly against implementing any kind of a stock allowance. They recommended that the board implement measures that would maintain as near perfect implementation of the ARM as possible. They recognized that the Maryland and Virginia stocks are mixed, but it is impossible to tell where a crab has originated when it is harvested.

The ARM process must be allowed to work in order to determine what the next adaptive management step should be. The AP did recognize that they would reconsider this recommendation in the future in part of the review process, the double-loop review process that is part of the ARM framework.

Similarly, in consideration of the Delaware Bay stock allowance with the two-to-one offset of males to females, the Shorebird AP was again adamantly against this. They recommended that again the board maintain near perfect implementation of the ARM. They believe that this would again increase harvest on the males, and there is no evidence that the non-Delaware Bay crabs can sustain higher harvest levels, and again the ARM process must be allowed to work without convoluting the implementation of it.

Finally, as Jeff noted, Suboption 3F, the AP came up with alternative language that would not lock the

board into one option or the other but keep it open and utilize the technical committees and APs to review what would be the best scientific available data at the time should the specific data to implement the ARM not be available.

In summary the AP recommended genetics data values for Lambda, implementing the allocation weights using Addendum IV or Addendum VI, the same thing, quota levels; the same thing for the harvest cap, use the Addendum VI levels, and implement the cap. They were adamantly against both the Delaware Bay stock allowance with or without the two-to-one offset. Finally, they recommended that the board utilize their resources and consult the technical committee and the advisory panels before making a decision on any kind of a back-up plan. Thank you.

CHAIRMAN O'CONNELL: Thank you, Danielle; any questions for Danielle? Peter.

MR. HIMCHAK: Mr. Chairman, not a question but an observation, really. I mean, yes, my biggest difficulty is this Delaware Bay allowance; but then if you look at the current packages in the addendum for the ARM Model implementation – and just an observation; that the current harvest alternative number four approximately reflects the current bait harvest allowance in the region, and that does include 140,000 females as well as 280,009 males.

I guess our biggest fear or my biggest fear in this whole thing is the constant discussion of a 600,000 male ARM implementation phase. I just wanted to point that out as an observation.

CHAIRMAN O'CONNELL: All right, one more report, law enforcement report. Mark

LAW ENFORCEMENT COMMITTEE REPORT

MR. MARK ROBSON: The members of the Law Enforcement Committee had a conference call to look at the addendum and provided you some general comments regarding enforceability issues that we see in a memo that was provided to the board. I won't go through the memo in detail; it's available to you.

I will say that in general one of the themes that I have heard in my new role here, of course, from the LEC is the guiding principles are always standardization and simplicity. I know you've heard that before from law enforcement, and I think you will continue to hear that as a guiding principle.

The members also recognize that in management there is also a compelling need to be flexible and accommodating of state or local needs. We see that and we understand that balance that's needed. In the memo we spent some time laying out the current situation of harvest among the four states if to point out that it's not particularly standardized or simple, and I think we all recognize that as well.

To extent that the ARM can move in the direction that is a little bit more standardized or a little bit more simple, we would certainly welcome that particularly if it was possible to make the closed seasons or areas further consistent among the states or even within the states in particular areas, and we would point out some of the differences in allowable harvest, for example, off of Virginia where there are some differences.

That was our overall intent in writing the memo and providing that guidance as to what the current situation looks like from an enforcement perspective it is difficult. I also would like to point out that we have referenced a document that was done in 2009, the guidelines for resource managers on the enforceability of fishery management measures.

We took a look at that particularly with regard to implementing enforcement for closed seasons and also with regard to the differentiated sex harvest. In looking at that you'll see that it's referenced in the memo as well. We recognize this is a small, fairly compact fishery in terms of the local area of the four states primarily.

It's self-reporting and there is a high level of compliance. As far as we can determine there doesn't seem to be that particularly serious an issue there. However, again looking at enforcement, standardizing and simplifying certainly aids in compliance and it certainly aids in enforcement. When you look at the possibility in the ARM of bringing together some of the closed seasons so that they are either not necessary or if they are standardized, we certainly would support that.

Closed seasons, per se, are certainly enforceable and we reference that in the memo. They just require good communication and coordination of quota closures and other issues among and within the states. The issue of sex-differentiated harvest is a bit of an issue. Our members pointed out, of course, the difficulty of officers in the field having to identify male versus female horseshoe crabs.

That's not an insurmountable problem. Officers are trained in these kinds of things all the time and they're very capable of making those field identifications, but it does add a layer of complexity. The two-to-one sex ratio maintenance is a special problem as it relates to the potential for the Delaware Bay stock allowance.

In our memo we have cited that if it was at all possible to not have that, it would certainly enhance enforcement and make that part of the compliance issue easier to keep track of. Maintaining or being able to identify a proper sex ratio of males to females is very difficult. It would rely primarily on voluntary compliance.

If in fact you were to go to that sort of an approach, the Law Enforcement Committee would strongly recommend that a constant sorting and maintenance of males and females in separate bins, if you will, would be very important both for on-the-water checking of compliance with those ratios and in terms of checking them at the landing sites or at the dealers. That pretty much summarizes what we had provided in our memo to you. We appreciate the opportunity to comment on this important fishery. Thank you very much, Mr. Chairman.

CHAIRMAN O'CONNELL: Thank you, Mark. Any questions for Mark? Jim.

MR. JAMES GILMORE: Mark, most of the report and the focus of this is on the four states. However, in New York as the first adjacent state outside of this we still seem to be having an enforcement issue because the moratorium in New Jersey essentially created a bit of a poaching problem for us.

We've increased law enforcement to the extent where we can, but we still see the steady decline in our population. Even with the voluntary reduction, we cut our quota by 50 percent, so it still seems to be a problem that is spilling over from the four states. Is there any consideration for maybe factoring in some of what is going on in New York into the efforts on this?

MR. ROBSON: Our New York representative to the LEC did contribute some comments in our conference call. Again, this gets to the issue of varying closed seasons depending on which state or area you're in. Even though we didn't have any information or discuss any information about any problems with illegally harvested horseshoe crabs moving from one area where it's open or the kind of

problem you're citing, we don't have any information on that, but certainly that's a problem.

That's one of the reasons why if you're going to have closed periods, they need to be consistent across the board; or if you can have a system that doesn't necessarily require those seasonal closures and have just a straight quota-type system, that would in part address that kind of an issue. One of the things that was pointed out – and I don't have any information, but I think one of our LEC members mentioned, and perhaps some of you members have this information – a lot of these problems of poaching and moving product from an illegally harvested area to a legal harvest area at a given point in time, that may depend in part on the value of the fishery and the price that is available. Unfortunately, there is that incentive as that value and price goes up to do the wrong thing.

CONSIDER FINAL APPROVAL OF THE ADDENDUM

CHAIRMAN O'CONNELL: Any other questions for Mark? Okay, moving forward the next item on the agenda is to consider final approval of the addendum. Just listening to the reports, it seems like there was a lot of similarities with the suggestions with probably the only issue that was where we heard some different opinions was the Delaware Bay set-aside.

One question I wanted to ask Jeff I think it would be helpful for the board is assuming the highest level option for the Delaware Bay set-aside, which is 10 percent, do you have a sense of what percentage of the population of females in the Delaware Bay Region that is?

MR. BRUST: We have a couple of estimates of abundance of females in the Delaware Bay Region of around 6 million and 7 million crabs, somewhere in that number. I don't remember the specifics. Under a 10 percent DBSA the female harvest I believe would be somewhere between 60 and 75,000 female crabs. Someone can correct me if those numbers are wrong, but they're at least in the ballpark, so that gives you a number of about 60,000 out of 6 million, which is about 1 percent female harvest if we went with the 10 percent DBSA.

CHAIRMAN O'CONNELL: Okay, thanks, Jeff. We have got about a half hour left here, so board discussion. Jack.

MR. JACK TRAVELSTEAD: Thank you, Mr. Chairman; I appreciate that question you just asked

of Jeff. It's very helpful. This is a complicated addendum. It was really difficult for me to understand, but I want to thank Danielle for all the work that she did to make it so much clearer.

That was an excellent presentation and I especially appreciate you taking the time to put those tables together that I had requested and the outline. It really helped make things a lot clearer. Mr. Chairman, having heard all these reports; and as you said there is so much consistency between the recommendations, I'm prepared to offer a motion if you're ready that could further the discussion.

CHAIRMAN O'CONNELL: Yes, I think that would be helpful.

MR. TRAVELSTEAD: I think staff has the motion and can put it on the screen. I will read the motion and then I'd like to go back and just give a little bit of explanation as to why I'm offering what I am. I would let the board know that there has been some significant discussions among the Delaware Bay states on this, and I think there is a fair amount of support for this.

I would move to adopt Option 3, ARM implementation, with the following suboptions; Suboption 3A that is Lambda values based on genetics; Suboption 3B, weighting based on Addendum VI quotas; Suboption 3C, to implement a harvest cap for Maryland and Virginia based on Addendum VI quotas; Suboption 3D, implement a DBSA at the 10 percent level; Suboption 3E, that there be no allowance for the two-to-one male-to-female offset; Suboption 3F, include a consultation process with the TC and the APs to recommend to the board one of the two options for the contingency plan. Those two options were, of course, the Addendum VI measures or the previous ARM recommendation. I guess we need a second.

CHAIRMAN O'CONNELL: Can we get a second for that motion; seconded by Pat Augustine.

MR. TRAVELSTEAD: The motion is fairly consistent with the recommendations that we heard this morning from the TC, the AP, the Shorebird Group, and the public comments, all of which supported implementation of the ARM framework. Where it deviates slightly would be in the Lambda value. I would note the AP suggested a Lambda value somewhere between tagging and genetics.

I'm convinced the tagging data doesn't show us or isn't robust enough to consider those values and so the motion uses the genetics values. I would note that's consistent with public comment and the Shorebird and Technical Committee recommendations. As for Options 3B and 3C on the weighting and the harvest cap, the motion recommends Addendum VI. That is consistent with the TC, the AP and the Shorebird Group, so I think we're okay there.

As for the Delaware Bay stock allowance, my motion recommends the 10 percent level. That's consistent with the AP recommendation and the minority opinion of the TC, but, Mr. Chairman, I think answer you just got on the fact that if you set the DBSA at 10 percent you're talking about affecting about 1 percent of the female horseshoe crabs in the Delaware Bay.

I'm satisfied that the 10 percent value offers sufficient protection. It does maintain the status quo. The motion does not support the two-to-one offset males for females. That's consistent with the technical committee and the shorebird and law enforcement recommendation that we just heard.

I would say that if my motion were amended to lower that DBSA level below the 10 percent, then I would have to insist that we do implement a two-to-one offset to make up for the loss of those females. I think the 10 percent level is appropriate. Lastly, the fallback plan, the Plan B, Option 3F, is consistent with the technical committee recommendation to allow for consultation with the TC and the APs to consider – or we would at least be bounded in our Plan B by what Addendum VI tells us versus what the previous ARM measures were. That's all I have at this point. Thank you.

DR. GEIGER: Thank you, Jack, for that motion. Again, I appreciated it. It's pretty much in line with the technical committee recommendation. Again, I don't think it's the role of the Fish and Wildlife Service to make decisions on allocation between and among the states. Certainly, I think that I've heard good arguments on both sides of this case.

I would add that I do think the one option, the Delaware Bay stock allowance deviates from the technical committee recommendation as Jack appropriately pointed out. It does deviate from the ARM Model prescription. Again, I'll be very interested to see what the technical committee does to show what that is going to be in the overall conservation efforts.

I would much prefer zero on that particular issue based upon science, but I certainly understand the concerns of the Delaware Bay states on that one. Again, my main point is it does deviate from the ARM Model. It does allow additional harvesting of horseshoe crabs, and I think that is not in the best interest of horseshoe crab conservation nor red knot conservation at this point in time. Thank you, Mr. Chairman.

MR. AUGUSTINE: A very complex motion, Jack, and thank you for that. Again, I just want to reiterate myself under Option 1 about the third paragraph. I think I'm right; it just says annual cycle – well, first it says if this option is chosen, implementation of the ARM framework could occur after August of 2012. The board meeting would be comprised of two cycles, double-loop learning, annual cycle, iterative phase and longer-term cycle revisiting a setup phase every three or four years likely coordinating – okay, that's ensured that that is going to happen? Okay, that's all I needed.

MR. HIMCHAK: Mr. Chairman, I support all elements of the motion except for the Delaware Bay stock allowance, but again we don't know what the specific package of the ARM Model will be presented to the board and currently two of the five suggested packages include harvest of females of 140,000 and 210,000.

If we're talking about a 10 percent allowance of 60 to 75,000 females out of the population, I think then it becomes a moot point, but I would have to follow the wisdom of the – the division would certainly support the zero tolerance on the Delaware Bay stock allowance if there was a male-only harvest allowed. Thank you.

MR. MILLER: Mr. Chairman, I, too, support the bulk of the suggested motion. Just to follow up on Dr. Geiger's concerns, I could use some more guidance with regard to the DBSA recommendation in the motion. Perhaps I could call upon the technical committee chair to explain the difference in their recommendation as opposed to the recommended option in the motion in regard to that DBSA of 10 percent. Thank you.

MR. BRUST: The majority recommendation was not to implement the DBSA. The main reason is it moves away from the intent of the ARM framework. The ARM as developed, we had consensus decisions on harvest packages. We gave the model five harvest packages to select from that best gets us to the explicit objectives of the horseshoe crab and

shorebird populations; what we're trying to manage these populations towards or for.

We gave five explicit options to select from and that's the optimum. The intent is you want to limit it to a certain number because otherwise the world is your oyster and you can make it do whatever you want, so we had to limit the number of options that it could select from. Of the five that we've selected, it will pick one and say that is the optimum of the five that we've given it.

If you pick something other than the optimum, you've just nullified the entire intent of the model. You have selected something that the model isn't even given the choice of selecting, so you're moving away from the intent of the model. I'm not sure I'm explaining it well. We had to narrow our focus somewhat, give it a certain number of choices. These were selected by the technical committee and approved by the board. If now we're doing something that isn't even on the menu, what is the point of using the ARM Model?

In addition to that, as I mentioned before, there is this feedback. We implement something from the ARM, we see how the stocks respond, and we use that information the next time we update the model and select a new harvest level. Again, if we use something that's different from the five that we've selected, it makes it harder to really figure out what is affecting the populations.

It's not entirely the harvest package that we've put in. It's what the board has selected. I guess the short answer is if you're going to deviate from the five options that we have input into the ARM Model, is there any need to actually implement the ARM Model? If we're going to go with status quo, why not just go with status quo and not call it the ARM Model? I guess that's a very base and very crude way of putting it, but if you want status quo then we can do status quo without the ARM Model.

MR. MICHELS: Jeff, just getting to that point like New Jersey right now is harvesting zero of their allocation, right?

MR. BRUST: That's correct.

MR. MICHELS: And that will persist until there is legislative action taken?

MR. BRUST: At this point, yes, it's a legislative decision to implement the horseshoe crab harvest again.

MR. MICHELS: And what is the basis do you recall for opening that up; aren't there criteria in there?

MR. BRUST: It's based on the shorebird population numbers. I don't remember the actual numbers, but the shorebird population has to reach a certain threshold abundance and there has to be a certain threshold abundance of horseshoe crab eggs on the beaches available to the shorebirds before the horseshoe crab fishery will be opened again. I'm sorry I don't remember the specifics, but those are the two reference points.

MR. AUGUSTINE: I have counter what you're saying, Jeff. Not to be a nasty old guy, but I need to say some things. At the cost of our horseshoe crab population we would disallow 10 percent taken from that stock whereas if we allow the 10 percent from that stock to be taken, a lot of that will not come from New York.

On the one hand we're saying we have to have this model perfect with deviations. In the meantime what is not being allowed to take there is being taken from somewhere else, so what is the difference? Secondly, when was the last time we had a shorebird assessment or a real thorough one of what that stock is doing?

Third, we measure the number of eggs left on the beach after the black gulls, the herring gulls and the other gulls beat the living daylights out of the shorebirds who can't get at the eggs. Many eggs are left on the beach. The population of horseshoe crabs is increasing. Our population is going down at the expense of not allowing these horseshoe crabs to be harvested.

If you look at all the other extenuating circumstances and put it together to have a perfect model at the expense of other state's horseshoe crab population, I don't think that's a fair game. It just seems to me with what the population dynamics have occurred and are occurring in Delaware Bay, it's on a positive trend. We talked about 60,000 crabs out of 6 million. What is it; it's nothing.

I think on the one hand to say, golly, if we deviate from the main theme that ARM represents and don't allow this, the bottom line and the question is at whose expense and at what expense? We know it's happening. We know horseshoe crabs are coming from New York to New Jersey and to Maryland, wherever they can't get them and they're making a ton of money.

It's not about the economics; it's about the need. Rick Robins made some very strong points about their concerns from the bait population and what they're doing to substitute. The folks who need the bait in the Delaware Bay area, whatever those states are, they're taking them from where they can get them.

To have a perfect model and end up at the cost of something else and not see any increase in the shorebird population, because I think at the end of the day that's what we're talking about – horseshoe crab protection is being driven by shorebird populations that is on a continuing decline and has no indication it's rebounding, with other birds beating up and taking care of the eggs or eating the eggs in that Delaware Bay area. It looks like it's an endless cycle until we get rid of some of the predators and improve the habitat conditions of shorebirds. I would support this a hundred percent. It would be wonderful if we could go to zero, but I just don't see it as a practicality. Thank you, Mr. Chairman.

CHAIRMAN O'CONNELL: Just looking at the time, we have about ten minutes left. I think the focus of this DBSA issue has been well presented on both sides of the issue. I did see Tom Fote, and Tom has not had a chance to speak yet so I'll give him an opportunity.

MR. THOMAS FOTE: When we started the horseshoe crab situation many years ago, it really was about shorebirds. One of the concerns over the shorebirds and the horseshoe crabs was when we were going list red knots as an endangered species, and that is close to happening. If you basically do that, it's going to affect all the harvesters of horseshoe crabs.

I guess it was a preemption. I've been sitting next to the U.S. Fish and Wildlife Service and hearing about red knots and the decline over the years. Again, it's an endangered species. Now we talked about sturgeon yesterday and what is going to be the consequences of that. If they list the red knot, it's going to be even a more serious concern.

Put that into perspective; right or wrong, that's where this has been driven. I agree with Pat, it has been driven by the shorebirds and the amount of the horseshoe crabs that basically is necessary. I made a statement one time, well, my job is to protect the horseshoe crabs for the red knots since I'm on the fisheries and I was told it's both. Otherwise, we get

an endangered species listed that would affect us all. That's the concern here.

CHAIRMAN O'CONNELL: I'm going to allow one more comment given the fact that it was over a decade that I started working with Peter on this horseshoe crab issue, so, Peter, last comment and then let's see if this motion stands or fails.

MR. HIMCHAK: You may not like calling on me **because I'm moving to amend the motion to change 3D to zero percent the Delaware Bay allowance** to see if I get a second on that, but it would be the Division of Fish and Wildlife's preference in the addendum. Thank you.

CHAIRMAN O'CONNELL: Second by Jaime Geiger.

MR. AUGUSTINE: Call the question, Mr. Chairman.

CHAIRMAN O'CONNELL: All right, just before we vote on this motion, it was noted to me as a point of order we did not allow any discussion on this motion. We are going to allow a brief discussion before we take a vote on the motion. Are there any comments on the motion to amend? Roy.

MR. MILLER: Mr. Chairman, it's not a comment so much as a request for clarification either from you or from Jeff or Danielle. What are the implications? If this suboption were to pass, what are the implications for Maryland and Virginia; would someone clarify that for us, please?

MS. CHESKY: The implications of a zero percent DBSA would within the current motion that's on the table would not change the overall harvest levels for Maryland and Virginia, but they would have to be all males. There would be no female harvest allowed.

MR. MILLER: Thank you; that's what I thought and I wanted to clarify that.

DR. GEIGER: Obviously, this is a difficult question for several of you around this table, but I just want to reemphasize this board took a great step in supporting the ARM Model development. That was visionary, that showed real leadership and that was based upon the best available science to resolve a variety of a complex resource interaction; conservation of horseshoe crabs, supporting a bunch of users, and conservation of red knot populations – again, visionary, strategic, great leadership.

This substitute motion preserves the implementation of the ARM Model. It relies on the best available science to manage horseshoe crabs with an indirect impact on conservation of red knots as well. I would strongly urge you all to consider that, to factor in our discussions previous to this that we use sound science to make sound management decisions. I believe this incorporates all the best available sound science as we move forward in this process. Thank you very much.

MR. HIMCHAK: I had a question for Danielle. If the Delaware Bay allowance is zero, would not Maryland and Virginia still have a female harvest component from stocks other than the Delaware Bay population?

MS. CHESKY: No, and the reason being that the consideration in the original inclusion of the Delaware Bay stock allowance is because Maryland and Virginia's harvest is assumed to be mixed. Even if Maryland only catches four crabs – because of the implications of Lambda, which is assumed that 50 percent of the harvest comes from Delaware Bay, even if they only catch four crabs, two of those are assumed to come from Delaware Bay.

CHAIRMAN O'CONNELL: All right, are you guys ready to vote on this motion? All those in favor please raise your right hand; all those opposed please raise your right hand; any abstentions; null votes. **This motion carries eight to six to zero to zero. This amendment gets folded into the main motion.** Do we have any discussion on this motion? Jack.

MR. TRAVELSTEAD: **I'm going to move to amend the motion now to allow under Suboption 3E a two-to-one male-to-female offset.** With the setting of the DBSA at zero percent, you've significantly changed this fishery to the point where if we can't take females, we've got to be able to make up that difference somehow. In terms of bait we know the males are a lot smaller than the females, so the only way to really make it up is with that offset that offered in Suboption 3E. My motion would be, under Suboption 3E, to allow the two-to-one male-to-female offset.

CHAIRMAN O'CONNELL: We've got a motion to amend Suboption 3E to allow a two-to-one male-to-female offset made by Mr. Travelstead and seconded by Mr. Augustine. Discussion on the amended motion? Stew.

MR. MICHELS: Danielle, can you tell us what the implications of that would be?

MS. CHESKY: Certainly, I'll try. What this would allow is for Virginia to have about 20,000 males harvested above the current approximately 61,000, and it will allow Maryland a harvest of an extra about 85,000 males above the current level 170,000 crabs total. It would put Maryland's total harvest at 255,980 males and Virginia's at 81,331 males; no females for any of the four states.

If you're looking on this very small print, 8 by 14, you're going to want to look at the top row far to the right. You will see the option there and it's the third option from the right. You would look at 3A, Lambda, genetics; 3B, weight, Addendum VI; 3C, cap, Addendum VI; 3D, DBSA, no; 3E, two to one, yes. Here you'll see Delaware and New Jersey at about 162,000 and then again Maryland and Virginia below that.

CHAIRMAN O'CONNELL: Thanks, Danielle. Does that answer your question, Jack? Roy.

MR. MILLER: Mr. Chairman, I wonder if you would give me the latitude to direct a question to Mr. Robins. I'd like to know the implications on the industry. Would this compensation of two- to-one males to females, this offset, would that provide enough crabs for business purposes for those fisheries that need horseshoe crabs to support their conch industry? I know I'm speaking very generally, but I'd be curious to know his opinion of this particular motion. Thank you.

MR. ROBINS: Thank you, Mr. Chairman, for the opportunity to address this. In fact, that's exactly what this does. There were two measures built into the array of options that would have mitigated the impacts to the industry associated with the ARM implementation. One was the Delaware Bay stock allowance.

This is an alternative to that that simply replaces the lost female crabs that would come out of the fishery if the ARM Model is precisely implemented, and it would replace those lost females at a two-to-one rate with males. I think in economic terms at least that would mitigate the impacts. Now, as I said before, the fisheries still are not in equilibrium; but if you implement the ARM with a zero DBSA, then you're taking out about the equivalent of 80,000 females out of the fishery.

Right now those are worth just over twenty dollars apiece in terms of X-vessel conch value that is associated with those female horseshoe crabs. That would be a ceiling on your potential economic

impacts associated with the motion you just voted on. This mitigates that by replacing those lost females at a two-to-one rate with males.

CHAIRMAN O'CONNELL: Roy, do you want a followup?

MR. MILLER: If I may, and Mr. Robins may not feel qualified to answer this, that may offset for purposes of the conch industry, but my recollection, when I was more involved in fisheries management, it would not necessarily offset the needs for the eel industry which, as I recall, was more highly dependent upon female horseshoe crabs than perhaps the conch industry. I would just like to make that point. Thank you.

CHAIRMAN O'CONNELL: Thank you, Roy, and I think Mr. Abbott has got a question for you also, Rick.

MR. DENNIS ABBOTT: I'll direct the question to you, Mr. Chairman, but maybe Mr. Robins could answer it. It seems as though in years past there was talk of development of an artificial bait. Whatever happened to that; are we not using that at all at this time?

CHAIRMAN O'CONNELL: I think Danielle may be the best to provide an update on that.

MS. CHESKY: Just from my reading of past discussions that I've heard prior to my coming to the commission, there had been work on an artificial bait but the results of where they had gotten were not sufficient in terms of replacing. The last I heard they had been looking for more funding to further the research, but considering where they had hit some – not dead ends but just not as successful as they were hoping to really replace the bait, there wasn't any further progress beyond that.

CHAIRMAN O'CONNELL: I think it's time to call the question. Do you guys need to caucus or are you ready to vote? All those in favor please raise your right hand; all those opposed please raise your right hand; any abstentions; null votes. **The motion carries ten, four, zero, one.** All right, we'll move this amendment back up to the motion. Any discussion on the main motion now? All right, do you guys want to caucus?

(Whereupon, a caucus was held.)

CHAIRMAN O'CONNELL: While you're caucusing, I'm going to reread the motion; move to

adopt Option 3, ARM implementation, with the following suboptions; Suboption 3A, Lambda values based on genetics; Suboption 3B, weighting based on Addendum VI quotas; Suboption 3C, implement a harvest cap for Maryland and Virginia based on Addendum VI quotas; Suboption 3D, implement a DBSA at zero percent; Suboption 3E, to allow a two-to-one male-to-female offset; Suboption 3F, include a consultation process with the TCs and APs to recommend to the board one of the two options for a contingency plan. Motion by Mr. Travelstead and seconded by Mr. Augustine.

All right, all those in favor please raise your right hand; all those opposed please raise your right hand; any abstentions; null votes. **The motion carries twelve, two, zero, zero.** Mr. Adler.

MR. ADLER: Is it appropriate to make a **motion to approve the addendum as modified?**

CHAIRMAN O'CONNELL: Yes.

MR. ADLER: I will so move.

CHAIRMAN O'CONNELL: Seconded by Mr. Bill McElroy. All right, are you guys ready to vote on this motion? All right, all those in favor please raise your right hand; any opposition; any abstentions; null votes. **The motion carries unanimously.** Is there any other business that the board would like to bring up today? John.

OTHER BUSINESS

MR. JOHN DUREN: Mr. Chairman, I totally support the ARM method for dealing with a complex issue like this, but looking at the short-term and long-term cycles that the ARM is going to impose it would appear that this management board will have to meet and deal with the horseshoe crab issues at least once and perhaps twice a year for the foreseeable future.

Given our discussion yesterday about the need to put more of our commission time and resources on to those species that we haven't even got a good start on, my question is, is there any way we can put some of this on autopilot so we don't have to put so much of our time into horseshoe crab issues at our meeting weeks. I don't expect an answer today, but maybe as chairman you could direct Danielle and Jeff or the plan development team to give some thought to that.

CHAIRMAN O'CONNELL: Thanks, John. We do have one other item which is implementation plans that the states need to submit. In talking to Danielle,

it was suggested that if the states could submit their implementation plans by June 1st, that would allow the technical committees to review them and the board to consider those for approval at the August meeting. Is there any opposition with using the June 1st date? All right, thanks.

ADJOURNMENT

CHAIRMAN O'CONNELL: Do we have a motion to adjourn? Any objection? Seeing none, the meeting is adjourned.

(Whereupon, the meeting was adjourned at 10:10 o'clock a.m., February 9, 2012.)