

PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

HORSESHOE CRAB MANAGEMENT BOARD

Crowne Plaza Hotel
Old Town, Alexandria, Virginia
August 4, 2011

Approved November 9, 2011

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1. **Approval of Agenda, by Consent** (Page 1).
2. **Approval of Proceedings of March 23, 2011** by Consent (Page 1).
3. **Move to initiate Addendum VII to implement the ARM Framework and to direct the Horseshoe Crab Plan Development Team to include; one, the options discussed and reviewed by the Delaware Bay Ecosystem Technical Committee, the Horseshoe Crab and Shorebird Advisory Panels as options in the draft addendum; two, a status quo fallback option should the necessary data for the ARM Framework not be available; and, three, an option that would increase the male crab quota in Maryland and Virginia to offset any reductions in female crab quota due to the DBSA in those states** (Page 14). Motion by Jack Travelstead; second by Peter Himchak. Motion carried (Page 17).
4. **Motion to adjourn, by consent.** (Page 17).

ATTENDANCE

Board Members

Vincent Balzano, ME, proxy for P. White (GA)	Tom O'Connell, MD (AA)
Steve Train, ME, proxy for Sen. Langley (LA)	Russell Dize, MD, proxy for Sen. Colburn (LA)
Paul Diodati, MA (AA)	Bill Goldsborough, MD (GA)
Bill Adler, MA (GA)	Jack Travelstead, VA, proxy for S. Bowman (AA)
Mark Gibson, RI, proxy for R. Ballou (AA)	Michelle Duval, NC, proxy for L. Daniel (AA)
Rick Bellavance, RI, proxy for Sen. Sosnowski (LA)	Bill Cole, NC (GA)
David Simpson, CT (AA)	John Frampton, SC (AA)
Rep. Craig Miner, CT (LA)	Robert Boyles, SC (LA)
Lance Stewart, CT (GA)	Malcolm Rhodes, SC (GA)
James Gilmore, NY (AA)	William Orndorf, FL (GA)
Andrew Voros, NY, proxy for Sen. Johnson (LA)	Aaron Podey, FL, proxy for J. McCawley (AA)
Pat Augustine, NY (GA)	Spud Woodward, GA (AA)
Peter Himchak, NJ, proxy for D. Chanda (AA)	Michael Denmark, GA, proxy for J. Duren (GA)
Tom Fote, NJ (GA)	Wesley Patrick, NMFS
Bernie Pankowski, DE, proxy for Sen. Venables (LA)	Steve Meyers, NMFS
Rick Cole, DE, proxy for D. Saveikis (AA)	Jaime Geiger, USFWS

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

Ex-Officio Members

Larry Delancey, Technical Committee Chair	Jeff Brust, Delaware Bay Ecosystem TC Chair
Karen Karpanty, Shorebird Advisory Panel Chair	James Cooper, Advisory Panel Chair

Staff

Vince O'Shea	Bob Beal
Kate Taylor	Danielle Brzezinski

Guests

Kathy Knowlton, GA DNR	Ken Hastings, Mason Springs Conservancy
Michael Luisi, MD DNR	Carrie Kennedy, MD DNR
Brian Marsh, USFWS	Caroline Kennedy, Defenders of Wildlife
Gregory Breese, USFWS	Heather Murray, Defenders of Wildlife
Wilson Laney, USFWS	Allen Burgenson, Lonza Walkersville
Benjie Swan, Limuli Labs	Wilson Laney, USFWS

The Horseshoe Crab Management Board of the Atlantic States Marine Fisheries Commission convened in the Presidential Ballroom of the Crowne Plaza Hotel Old Town, Alexandria, Virginia, August 4, 2011, and was called to order at 10:55 o'clock a.m. by Chairman Thomas O'Connell.

CALL TO ORDER

CHAIRMAN THOMAS O'CONNELL: Good morning, this is the Atlantic States Marine Fisheries Commission's Horseshoe Crab Management Board. I welcome everybody this morning. I would like to call the Horseshoe Crab Management Board to order.

APPROVAL OF AGENDA

CHAIRMAN THOMAS O'CONNELL: The first order of business is consent of the agenda. Are there any questions or proposed changes to the agenda? Seeing none, the agenda will stand approved.

APPROVAL OF PROCEEDINGS

CHAIRMAN THOMAS O'CONNELL: The second item is the approval of our proceeding from the March 2011 board meeting. Are there any comments regarding those proceedings? Seeing none, we'll assume the proceedings are approved.

PUBLIC COMMENT

CHAIRMAN THOMAS O'CONNELL: The next item on the agenda is public comment.

This is an opportunity for the public to mention issues to the board that are not on the agenda. It is our normal practice, if time allows, to provide the public an opportunity on actions the board will take prior to voting on those actions. Is there any member of the public that would like to provide comment to the board on items not on the agenda at this time? All right, seeing none, we're going to continue on. The first agenda item is an update on funding for the benthic trawl survey. Danielle.

UPDATE ON FUNDING FOR THE BENTHIC TRAWL SURVEY

MS. DANIELLE BRZEZINSKI: I hope all of you were able to see the press release that went out last Friday. Due to the funds that were provided by the biomedical companies, we were able to secure matching funds from the National Fish and Wildlife Foundation in order to fund the Virginia Tech Trawl Survey for 2011.

If you remember from the past meetings, there have been some donations that had been collected from the horseshoe crab industry, and those have been put towards sea money for the 2012 survey. This is very good news, but long-term funding has not yet been secured for the Virginia Tech Trawl Survey.

MR. WILLIAM A. ADLER: How many of the environmental and recreational and conservation groups contributed to this? I know industry did and now Fish and Wildlife did. How many of those groups answered our letter?

MS. BRZEZINSKI: None, sir.

MR. PETER HIMCHAK: Danielle, I apologize, I was advised to read a last-minute minority report pertinent to this meeting. We have the funding for this year? I'm sorry to have to ask you to repeat what you just said.

MS. BRZEZINSKI: Yes, we secured the full funding for the 2011 survey to continue what was done in 2010, which include the New York Apex, outside the Delaware Bay and then also inside the Delaware Bay itself. The industry funding that have been organized was going towards sea funding for next year, but that's still only about \$18,000 towards a \$200,000 total.

DR. JAIME GEIGER: Mr. Chairman, as you know, I also wrote a letter to all the groups identified and previously written to by ASMFC, basically all the conservation funds engaged in this discussion again requesting them to look and hopefully contribute to funding the Virginia Tech Survey.

Unfortunately, I received very few positive responses and basically was ignored. Of course, that is a very disappointing result given the advocacy and the interest in a lot of the environmental groups in obviously the status of horseshoe crabs and obviously red knots. I also want to congratulate NFWF and congratulate the fishing industry and the biomedical industry for stepping up to the plate and contributing funds to continue the Virginia Tech Survey and hopefully continue to validate the ARM Model. Thank you, Mr. Chairman.

CHAIRMAN O'CONNELL: Any other comments or questions on the funding for the benthic trawl survey? Bill.

MR. WILLIAM GOLDSBOROUGH: I just want to comment on that last matter. I think it's great that we've got contributions from industry, both the

commercial fishermen and the biomedical folks and apparently not from any of the environmental advocates, but I do think there is a bit of a distinction we ought to recognize on the record, and that is that while they all have an interest in this resource the first two actually derive profit from the resource and the third does not. They have more of a non-monetary interest, so it's a bit of a distinction when we're asking them to contribute and remarking on the fact that they didn't. Thank you.

CHAIRMAN O'CONNELL: Any other comments or questions? All right, we're going to go through a series of reports from our technical committee bodies and advisory panel bodies. I think that's all going to lead us to our last agenda item, which is to discuss future management of horseshoe crabs.

I think it's important to recognize that funding has been secured for the benthic trawl survey, but it has only been secured for one year and to pay close attention to the reports you're going to hear so that we can have a good discussion and decide how we're going to proceed with management. The next agenda item is the Horseshoe Crab Technical Committee Report by Larry DeLancey.

HORSESHOE CRAB TECHNICAL COMMITTEE REPORT

MR. LARRY DeLANCEY: The technical committee met in the Technical Committee Meeting Week in late June. We discussed the current 15 percent assumed mortality from bleeding, especially in light of a 2010 paper that was written by Leschen and Correira, which they had mortality rates close to 30 percent, 29 percent-plus in one treatment of bled female animals. We discussed this paper at the meeting. Also, we have done this before in 2008. I'm sure if you've been on the board for a while, you may remember that.

Really, there is just a range of values you're going to get with different studies depending on conditions, area, and things like that. The committee recommended moving away from the 15 percent mortality rate and instead going to a range that has been seen in the studies from 5 percent to 30 percent, something like that.

Anyway, that's a recommendation and that would require a change in the language in the plan, so an addendum, and we could certainly work on the language if the board approves that. We also encourage where bled animals can put into the bait

harvest, to do it especially if they have been shipped over a long distance.

Again, we're not saying that the bait harvest itself should be raised, the caps or anything like that, but if more could be utilized – once they're bled used for the bait harvest, that would be we think a good thing. That might require a letter from either the technical committee or the states or even the board to the FDA where it states where they are still required in their biomedical permits that return the animals to the water.

I know Massachusetts has kind of the model where they actually are using them for bait, so that's another recommendation. We also recommend forming an ad hoc group, and that would include members in the states where there are biomedical facilities and the industry to get together and kind of document best management practices for the different areas.

It might certainly vary from one place to another and get all that down on paper so everybody will kind of know actually what is going on. The goal, of course, is to try to improve survival of these animals and some idea exchange. Again, that's a recommendation we making. We're certainly encouraging more studies like the ones we've had.

It's not well known what the effect of bleeding is on actual spawning of the animals, for example. There is any number of studies that could be done and the technical committee would be happy to review any of those and offer suggestions as we kind of move forward with this I think discussion that is going to be ongoing based on the increase in bleeding. That is something we'll be looking at for a while, I believe.

Other things we talked about at that meeting, we would like the stock assessment subcommittee at some point maybe to get together with the Virginia Tech survey folks and just maybe tweak some of that stuff; maybe not the design so much of the study, but maybe the reporting. They currently report two different ways with a normal distribution of the indices – you've seen those, most have, I'm sure – normal distribution or Delta and maybe just decide on one to present for simplicity sake; and also encourage them to conduct a catchability study if and when they get more funds. We think that is important. We'd certainly continue to support that.

And then just some other issues in general; it was more informational. NOAA is looking at all the trawl fisheries. I'm sure you're aware of requiring TEDs in most of those. It would have a very

devastating effect on the trawl fishery for the horseshoe crabs for the biomedical industry because based on one study at least it's a decline of like 80 percent catch when they use the TEDs. It would be a great problem if TEDs were required in that fishery. And then another thing which was of interest, there have been dead horseshoe crabs showing up in New England. I think it was on the border.

Penny Howell had mentioned this in Connecticut, on the border of Rhode Island, and people have actually observed blackback gulls preying on live horseshoe crabs. It's just another source of natural mortality which we found pretty interesting. And then was a Hong Kong Symposium also in June on the conservation of the Asian horseshoe crab in particular, but a lot of U.S. folks were there.

Mike Mallard and Dave Smith, who you all know, sent out a brief and I guess the major point they wanted to make that the blood supply from the Asian horseshoe crab is probably going to be depleted at some point, so that will increase demand on the U.S. limulus here. Dr. Cooper sent out an e-mail and he estimates that probably about 80 percent of the world's supply is the Asian horseshoe crab right now. That's all I have.

CHAIRMAN O'CONNELL: Just one point of clarification that Danielle mentioned to me in regards to the bleeding mortality; an addendum would not be required to establish a new range of bleeding mortality, but an addendum would be required to change the threshold level that is currently in the plan. Peter.

MR. HIMCHAK: Mr. Chairman, I had two questions for Larry. This 30 percent mortality estimate, first of all, is it a mortality estimate due to the collection, transportation, handling and bleeding? Is it cumulative over all those steps?

MR. DeLANCEY: Yes, I believe so.

MR. HIMCHAK: Okay, so potentially if – I don't know what gear they're using to harvest these horseshoe crabs, but it seems like some of the mortality could be addressed at earlier stages than the bleeding is what I'm getting at. What are they doing to the post-bleeding mortality component of the 30 percent?

Are they doing anything different as far as holding the crabs in a certain environment or for a certain length of time that would be a change in the trend from earlier estimates of post-bleeding mortality,

because we had some pretty good studies from Florida and South Carolina that were 15 and 20 percent, and then there was even an estimate of 3 percent when they were hand-harvested and essentially chauffeured to the bleeding facility.

So 30 percent, I'm trying to put that in focus as to, first of all, what is contributing – what are all the contributing factors? Are there any that could be addressed immediately and then is the post-bleeding mortality estimate a lot higher than 15 and 20 percent?

MR. DeLANCEY: On that Massachusetts paper where they did get up to the 30 percent, they actually thought they had improved some of the handling when they did that study prior to the bleeding, so they were saying in reality it could have been much higher before that. I'm not sure if they're changing much afterwards in terms of once it's over and putting them back out or that sort of thing. I don't know how much change there has been in that, but that's something when we get into documenting this stuff we can certainly look at.

MR. PATRICK AUGUSTINE: Did the group actually consider or review or look at other predation such as blackback herring and blueback gulls?

MR. DeLANCEY: It was more informational. We found out about it at this last meeting so we haven't done anymore discussion on natural mortality.

MR. AUGUSTINE: Well, the point is that it looks like we're moving along to make some decisions today, possibly, that may affect where we go and what we do. It looks like at the end of the day too many horseshoe crabs are either being removed from the population for one reason or another – it doesn't matter whether it's bleeding or bait or what – and/or the horseshoe crab population is not increasing in overall abundance.

It leads one to believe without looking at predation as a major concern and attack on this population and affecting the resurgence of red knots, we're going down a narrow slippery slope. I would this as a question; has any further consideration been given to the shift in location of blackback herring and herring gulls since the landfills closed in New Jersey and the fact that they're repopulating the area and serving as a major predator and component in the removal of horseshoe crab eggs in the Delaware Bay in particular.

Has any further consideration been given to that and will it, and that's just part of the question. The next question would be if not why not? It seems to me that the control is all on the fishermen and the biomedical group as control factors without looking at natural predation. In some of the pictures we saw where the gulls were literally attacking red knots to get at the eggs and driving them off should be of major concern to us.

Whether we kill them, cage them, relocate them or something, it looks as though there should be some action for assessment of that. Larry, I don't know if you can answer any of those, but I do think we as board members need a little more fleshed-out assessment of actual mortality and the effect it is having on shorebirds being able to get enough weight to continue their flight. Could you respond to any of that, Larry?

MR. DeLANCEY: I think the shorebird folks have looked at some of that and didn't they give a report like a year ago or so? Greg Breese gave some of that. Greg was here earlier and I don't mean to put him on the spot. Greg, do you want to respond at all to the gull question?

MR. GREG BREESE: This is Greg Breese; you have seen me before. That question has been looked at during my tenure as the Chair of the Shorebird Technical Committee on more than one occasion at the request of the board. We have not really been able to uncover any good trend data on populations, but what we have does not show an increasing trend in the bay population of gulls nor anything that really – other than the fact that as the food supply for all the birds and fish that are feeding on horseshoe crab eggs contracts and becomes less numerous, there is a concentration of foraging and that gulls will out-compete shorebirds.

In other words, the presence of a gull or a group of gulls will keep shorebirds, particularly red knots, out of that area. There is that effect that we are able to see in the field, but there hasn't been any good trend data on what the gull population has been doing. It looks like it's relatively stable. The report that the Horseshoe Crab Technical Committee got, which I was in attendance, was that in Rhode Island they were seeing what appeared to be an increase in predation of live crabs by blackback gulls. I'm in the process of trying to track down information if we can find out anything more about that.

MR. AUGUSTINE: Thank you for that clarification. Well, that being the case, it seems as though the

population of blackback and herring gulls that were residing in the landfills that were completely closed and they dissipated, wherever they went. Most of them I think, from what I understand and anecdotal information, moved down toward Delaware Bay and end up as a major component of removal of horseshoe crab eggs.

As a result, we have taken over the previous four or five years tremendous actions to reduce the harvest of horseshoe crabs' eggs in an effort, an overall effort to try to reduce – I'm sorry, to try to increase the number of eggs we have for the shorebirds. As a result, we still – although we have, again, anecdotal information that population of herring and blackback gulls may not be increasing, even if they remain static, we still continue to see a decline in the red knots.

If you read all the papers that Ms. Kennedy was the chairman of the research work that Pew presented several years ago, the researchers pretty much agreed that it was competition and some – one said bad weather and so on, eggs hatching and so on, but at the end of the day when you ask what have we accomplished in terms of allowing more food for the red knots, in the four years we have accomplished zip.

I don't say that lightly because we continue to see the red knot population on decline. We have not see, as Greg has pointed out – and it's anecdotal because I haven't seen the information he was referring to – we have not seen a decline in the blackback population. They're there; they're residents. It seems to me this is another case of predator/prey relationship and we are penalizing the fishermen or the biomedical service.

I guess the point I'm making, Mr. Chairman, it just seems to me we're moving forward to take some more action, and I think we need some more answers, so if I could request Larry or the technical committee somehow take a look at that interaction and see if we can identify what action – I don't know Fish and Wildlife – so, anyway, I think that's my request. And, again, it's bothersome and I think this has been thought around the table.

We seem to not be able to address it. We just seem to be constricting harvest and constricting it for both medical and otherwise, and it just seems to me we have to be as subtle as a meat cleaver here and ask why are the red knots being unable to get enough food during that stay over in the area where they need it. I'm sorry I took so much time, Mr. Chairman, but

it has been on my mind since the last three or four meetings. We do not address the issue. We bounce around it. We take action to further squeeze the industries. That's my concern.

CHAIRMAN O'CONNELL: Thanks, Pat, and I think we can discuss that further on the last agenda item on how we proceed. The technical committee provided three items to the board for consideration. One was to look at an addendum to change the threshold level of biomedical mortality to a range – just a change to that; I'm sorry – and then a letter to FDA that would allow the bait use of bled crabs and recommend the formation of an ad hoc group to develop best management practices for the biomedical industry. Any preference from the board at this time in proceeding with any of those recommendations? Peter.

MR. HIMCHAK: I think you should look at the specific biomedical companies and look at the number of vendors that file their reports required under Addendum III. If you're going to go this route, you're obviously giving harvesting capabilities to a select or a group of people and potentially leaving out current legal harvesters.

Before we jump into this strategy, I think it would be wise to see, well, who is going to be impacted, say, in South Carolina and who is going to benefit. Well, South Carolina doesn't have a commercial fishery and neither does New Jersey so maybe it just falls on Maryland and Massachusetts to see – you know, we have a select number of contractors supplying us with horseshoe crabs for bleeding and they would essentially get the entitlement to the state's quota is what I'm getting at, so look at the pros and cons of that and the impacts to existing legal harvesters.

CHAIRMAN O'CONNELL: Thank, Peter; so what I'm hearing is that we should perhaps research just a little a bit more before we take action on sending a letter. Any other items under this agenda item before we proceed? Jaime.

DR. GEIGER: Mr. Chairman, I sort of have mixed feelings about that. I still think there may be value of sending a letter to FDA to just again see what their stance is or what their opinion may be to utilize these organisms. I don't see any harm in that right now at least to get a response from FDA on this particular issue. Thank you.

MR. HIMCHAK: Tom, to that very point, you and I and Stew were on a biomedical working group back in 1998 and we were successful after many attempts

to get the FDA and the biomedical companies in the room at the same time. The outcome of that meeting was that the FDA has control over everything that occurs within that laboratory.

When they enter the door and then when they leave the door, the FDA does all the inspections on the facility; and then once those crabs leave the facility, the state agencies have the authority to determine their fate. Correct me if I'm wrong, but the FDA has no authority to dictate where those crabs go. It's the state agencies.

CHAIRMAN O'CONNELL: Well, based on this limited discussion, I wonder if the board would have any objection with proceeding with the technical committee's recommendation on forming that ad hoc group. This is one of the items that group could work on. Is anybody opposed to moving forward in that manner? Thanks; then we'll go ahead and do that. The next agenda item is the Delaware Bay Ecosystem Technical Committee Report from Jeff Brust.

DELAWARE BAY ECOSYSTEM TECHNICAL COMMITTEE REPORT

MR. JEFF BRUST: I was planning on giving a consensus report. The Delaware Bay Ecosystem Technical Committee met by conference call a couple of weeks ago. We reviewed a number of updates on shorebird status and horseshoe crab status from the surveys that we have going on. I was hoping it was going to be a consensus report, but due to recent developments this is going to be a majority report.

You should all have received a minority report that just came out the other day in the materials that were handed out just prior to this meeting. As I go through the presentation, I'll hopefully remember to point out the major differences between the majority report and the minority report. There are only a very few differences that were actually discussed by the Delaware Bay Technical Committee on their conference call. A number of the issues in the minority report were not discussed on the conference call, so I don't feel there is any need to bring them up here.

As I said, the technical committee reviewed a number of oral and written summaries both for red knot status and for horseshoe crab surveys. All of these reports were developed outside the technical committee process; so the people who did the research developed a survey report. The reports went to the technical committee.

The technical committee reviewed them just as they stood. This is one of the issues that the minority report had. The shorebird minority report wanted to tie in the implications of the shorebird status and the horseshoe crab status, basically trying to explain why the shorebird trends were what they were.

With the time that we had on our conference call and with the charge that we were given, the technical committee did not feel that was an appropriate task on that call. What I'm presenting today in the majority report is just what the trends were and not the whys and the how and the where that they became that way. This is just what the trend is.

The minority report wants to take it farther and say this is why the shorebird status is what it is, tie into the horseshoe crab results to the reasons for the shorebird status. That was the biggest concern I noticed in the minority report. The reports that we received were the South American winter counts, the Delaware Bay and the Virginia stopover counts, Delaware Bay weight gains and shorebird weight gains in the Delaware Bay, horseshoe crab egg density, and there was a new report by Conor McGowan who you will remember is sort of heading up the ARM deliberations. He is with the USGS.

He and a number of co-authors have written the reports based on some of the data that we have been looking at on red knot survival on Delaware Bay and red knot weight gain while they're on Delaware Bay. We also reviewed two horseshoe crab reports, the Delaware Bay Spawning Survey and the Virginia Tech Trawl Survey.

Moving into the winter counts in Tierra del Fuego, South America, basically the red knot counts declined by approximately 30 percent from 2009 levels. If you will remember they were pretty low to begin with so I believe the count now is below 10,000 birds on the wintering grounds in Tierra del Fuego. Prior to this it had been relatively stable since about 2005.

One point that was made during the conference call is considering some of the other information we have, we're probably missing some of the winter grounds, so this decline might be a bit overestimated, but the point still stands that the population has gone down again, and that is cause for worry.

Here is a graph of the counts. You can see they have been relatively stable for five or six years and then dropped about 30 percent in 2011. We are considerably below the numbers in the early 2000's;

and if you go back to the first survey in 1985 we're at significantly reduced numbers. We also received a report on the stopover counts in Delaware Bay.

A couple of significant changes that I need to mention; in 2009 the survey methodology was changed. They had had the same aerial count observer for probably 20 or 25 years. In 2009 she decided she had had enough and retired from that survey. We had two new counters. We also had a new observation methodology which changed the way they were counting while they were in the air.

In addition, they were supplementing the aerial counts with ground counts just to verify what was happening to make sure they were actually catching the appropriate trend. Also, in 2009 separate from the methodology changes, because of technical issues and I believe pilot issues, they were not able to conduct the aerial survey during the observed peak in shorebird abundance.

Regardless, this is the information we have. In 2009, when those changes occurred and when they were not able to do the aerial survey, the ground counts which they used as a substitute for the aerial counts showed an increase in the shorebird abundance; but in 2010, still using the new methodology but they were able to do the aerial counts, the counts went down to numbers that we had seen prior to 2009, prior to that increase.

The conclusion is that the 2009 numbers were probably influenced by a staging event. The way this survey is done is once a week they go out and they do these counts. Between the counts, birds come and birds go and whether you're seeing the whole population or not, no one ever knows.

We think in 2009 we just happened to do the ground count on a day when there were a lot of birds there and the next day or two days later a bunch of these lifted off and went to the Arctic. We don't think this was a true population event where the population actually increased and then decreased again. We think it was a function of the way the survey is conducted.

Another concern that the technical committee expressed both with these counts and the ones on the wintering grounds is there is no estimate of uncertainty in these counts. The shorebird folks who were presenting the data are confident that variability around the counts has been consistent because we've had the same counters.

The technical committee wasn't convinced that was true because there were other things that might affect the count such as weather and a number of other things. That was pretty much the only concern that we expressed with the results that we had seen. There was no estimate of uncertainty around these counts, but here are the results.

You can see the second to last point there, that was the 2009 index. It has got the asterisks over it showing that this was slightly different. These were the ground counts only. It looks like the population went up but then in 2010 you can see it's back stable with the 2003-2008 numbers, so that being what it is.

This was one of the indicators that suggested maybe we're missing some of the wintering counts because this population was relatively stable, but the minority report does point out that the Delaware Bay counts are also influenced by the short-distance migrants. The wintering grounds are the long-distance migrants.

What comes to Delaware Bay includes these birds that are flying from South America but it is also birds that are coming from the Southeast U.S.; so if the counts in the Southeast U.S. are relatively stable and these birds are showing up on Delaware Bay, they might be influencing the results. We also had a report from some Virginia Tech research. Sarah Carpenter, who is the chair of the Shorebird AP, gave us the results of the Virginia counts.

What we see there is that the ground counts and the aerial counts show good correlation and that's good news. It gives us a good indication that we're capturing the population trends accurately. There did appear to be an increasing trend in the counts on Virginia beaches since about 2006, and that coincided with an increase in their major prey. Purple mussel abundance seems to be increasing over the last number of years.

But because the time series is so short and because these surveys can be pretty variable, it's hard to tell if this is a true population increase or if it's just survey variability that shows a positive trend. There was a little concern there. Also, the Virginia data, there is new information that suggests that the seasonal movement between Virginia and Delaware Bay and back to Virginia – the transitions between these two areas is higher than we previously estimated.

So, new information here and hopefully we can include it in the reports in the future and use it for our population estimation. Here is the figure of the

counts. You can see a rather slight but their increase between 2006-2010, but notice prior to 2006 the next most recent survey was 1996. We don't know what happened between 1996 and 2006, so we don't know if the population declined and now it's climbing back up.

There is a lot of uncertainty in these numbers. We don't know if that's an actual trend or not. In previous years I believe you probably have not seen a lot of this Virginia data. During the conference call we discussed the importance of this data because it is an important staging ground for some of these birds.

We wanted to make the point to the board that we think there should be increased collaboration between the folks in Virginia and the folks in Delaware Bay. Everyone on the call agreed with it. Certainly, the researchers think it's important because they are the same species and we need all the information we can get on the species to track their trends.

We also made a recommendation to the board that we think this Virginia data should be included every year. When we give you updates, we should include this Virginia data. I guess that will be something we'd like to hear from you on at the end of this presentation. Delaware Bay weight gain of the shorebirds, the proportion of the birds that make their threshold weight of about 180 grams prior to liftoff to the Arctic, the proportion increased in 2009 and 2010. This is good.

This is probably related to good spawning conditions for horseshoe crabs. We've had calm weather on the beaches during spawning. It allows the crabs to come up and spawn. We've had the right temperatures for spawning prior to the birds get there so that the eggs are on the beach by the time the birds get there, so we've had good crab spawning conditions and that will result in good shorebird feeding conditions usually.

One caveat, though, is that these increased numbers, these better proportions of birds making weight, they're still not as high as they were back in the mid-1990's. Here is the figure, so you can see that they're increasing. 2008 was particularly bad because we had a storm on Delaware Bay early May that pushed the horseshoe crabs off the beaches until early June, and by then the birds had come and gone. There were no eggs on the beach for the birds. But 2009 and 2010, we've seen favorable conditions.

The horseshoe crab egg-density study being done in Delaware Bay by Delaware and New Jersey

researchers, overall there is no trend for 2005-2010; but despite that we saw a pretty big increase in 2010; near 2005 levels in most of the bay. I hate using superlatives but really the numbers in Mispillion Harbor and Delaware Bay were truly outstanding, really driving the population probably.

Now, the fact that there is no trend in the egg densities is rather contradictory to the information we're seeing where we were getting better weight gain in these birds and so we tried to come up with a couple of explanations for this. Obviously, the very high densities in Mispillion, all of the birds might be going there, feeding there, gaining their weight and heading off.

Another factor that might be involved, we've seen the crabs are using broader areas of beaches, more beaches and broader areas of these beaches, which is spreading the eggs out, so we might not be seeing the egg densities that we'd expect just because they're spreading out. Also, there was a concern that there is wide variability in the egg survey results.

They're very dependent on weather and timing and location on the beach, so there was some concern that maybe the egg survey doesn't have the sensitivity to capture the actual trend in eggs. That will hopefully explain some of the contradictory results we're seeing here. Also, there is still work going on to explain some discrepancies between the Delaware and New Jersey egg counts.

Two things here; when we've shared samples, Delaware generally gets a higher number of eggs in the same sample that New Jersey does, so what is the difference here? We're looking into that. Another thing is that New Jersey tends to have higher spawner densities and lower egg densities, so we're confused about that and there is some work that we want to do there, and perhaps the board can give us some direction there.

You can see up on the top left there that the darker bars, the taller bars are the Delaware trends in egg densities. The lighter gray and the short bars, those are the New Jersey egg densities. The Delaware densities, those are excluding Mispillion. Hopefully, you can see the scale, that top left graph, the maximum we have seen is about 35,000 eggs per square meter, and that's in Delaware.

If you look at the lower right graph with Mispillion Harbor only – Mispillion, Delaware – in any given year it's at least a hundred thousand eggs per square meter, and you see in 2010 we're up around 750,000

eggs per square meter in Mispillion Harbor, so about 20 times what we're seeing everywhere else in Delaware; and, I don't know, a hundred times more than what we're seeing in New Jersey. So, seriously, these are outrageous numbers and this might be driving the weight gain numbers.

Moving on the paper by Conor McGowan and his co-authors, two big key issues come out of this paper. One is that the ability of birds to achieve threshold weight is directly linked to the number of female horseshoe crabs spawning during May. They also looked at the number of horseshoe crabs observed in the trawl survey, and there was no link there. It's directly linked to the number of female spawners that we see in May.

Secondly, they also found that red knot survival is linked to the ability of these birds to achieve weight. They looked at birds that achieved weight; they looked at birds that did not achieve weight; and there was a difference. It wasn't very large but there was a difference. They also found, however, that there are factors external to Delaware Bay, external to fisheries management that are also significant in determining the survival of red knots on the breeding grounds or between observations on Delaware Bay.

This graph shows – the top series of lines there, they break this stopover period into two periods – excuse me, actually into three period; the early to middle and then there is middle to late. The top series of points shows that there is no real trend. If the birds arrive early, there is no real trend in weight gain with the number of horseshoe crabs that are on the beach.

These are birds that arrive in the middle period and they have only a short period of time to gain weight before they need to leave to make it to the breeding grounds; you can see a very strong relationship between the number of female horseshoe crabs on the beach and their ability to make weight. This is important for a number of reasons, which I'll go into in a second.

The second figure shows the survival probabilities and it's broken up into birds that did make weight and the birds that did not make weight. For each point – the point on the left is the bird that did not make weight and point on right are the birds that did make weight. You can see in most years the birds that did not make weight have lower survival chances than the birds that did make weight.

The other factor, though, is that bottom line there is the snow depth measured from four stations on the

Arctic breeding grounds and you can see a very strong correlation between the amount of snow when the birds arrive and their survival. What was backwards about this is when there is more snow they have better survival, so we're still trying to figure out what that is.

One of the explanations is that when there is more snow, there is more snow melt, there is more water up there, a lot of these birds are eating insects, more water/more insects, more food for the birds. That is one possible explanation but really this is very new information and we don't have the full explanation. Two points from this; birds that don't make weight have generally lower survival but survival is also influenced by factors external to Delaware Bay and external to fisheries management.

Two summarize the McGowan et al paper, the good news is horseshoe crab management, the work that we're doing here does have the potential to influence the red knot status. We have more crabs on the beach. We have better weight gain and we have better survival. Also, the factors that the ARM Group has selected for monitoring to keep track of both the horseshoe crabs and the shorebirds are the right ones. That's a pat on my back – sorry!

The bad news, though, is there are several factors external to management that also influence red knot. The influence of these natural factors can be pretty large. If we have good snow, we have good survival. If we have no snow – I'm simplifying it here, but if we have good snow we have good survival; and if we have no snow, we have poor survival.

Another thing, if we have good match between when the crabs spawn and the eggs are available and when the birds show up, we have good survival and good weight gain. There are a number of factors that we need matches to get good conditions. These poor natural conditions always occur or they always occurred in years. This is not a new phenomenon.

But now that we've got horseshoe crabs at lower abundance we've got shorebirds at lower abundance, the importance of these poor environmental years are much greater. We just need to keep those in mind as we move forward. Okay, I think that was everything for the shorebird reports and we're on to the horseshoe crab spawner survey.

In 2010 most of the female spawning activity we saw occurred in May. As I mentioned before, this is good. We want the crabs on the beach in May so that the eggs are there for when the knots show up. Over

the ten or twelve years that the survey has been conducted, there has been no trend in female spawners baywide or in either of the states, but there is an increasing positive trend in the number of spawning males baywide.

Also, because we have sex differential harvest, we looked at the sex ratio. Male-dominated harvest does not seem to be affecting the sex ratios on the beach like some thought that it could. Here are the trends. The top left graph is the females; the number of spawning females every year. You see it's relatively flat with some variability.

The bottom left is the number of males observed per square meter on the beach; slightly increasing trend over time. The graph on the right just shows the sex ratios. One interesting fact is even with male-dominated harvest the number of – the sex ratio of the number of males relative to females has actually increased in the last couple of years; certainly greater than they were in the 2000 and 2001 period.

The Virginia Tech Trawl Survey occurred in 2010. There were several areas that they observed but I'm only going to talk about the ones relative to the Delaware Bay. The offshore Delaware Bay area, which included the core and the peripheral areas, the immature crabs were significantly lower in 2010 than they were in 2009. Part of the reason was the catches in 2009 were exceptionally high, but even so the numbers in 2010 were among the lowest in the time series.

For newly mature and the fully mature males and females, these all increased slightly. In 2010 the Virginia Tech Trawl Survey also began sampling the Delaware Bay Proper, the lower Delaware Bay. This is the first year that they have done this. We hope to continue this. Danielle mentioned we have the funds to do this in 2011.

We can't really say anything about the trends because we only have one year, but it is interesting to note that the catch of all groups – males, females, mature, immature, fully mature – they were higher inside Delaware Bay than they were offshore, and the number of immature males and females was significantly higher.

The top left figure is the immature. You can see the increasing trend over time except for 2010 outside the bay dropped significantly, and then the one that Kate is circling right now is what was inside the bay, so you can see they were substantially higher than what was observed outside the bay. The top right is

the number of newly mature crabs and the bottom figure is the number of fully mature crabs.

Again, you can see that outside the Delaware Bay they were lower than anything seen inside the bay. Just to summarize, the winter counts of shorebirds on their wintering grounds in Tierra del Fuego, they're down, but some of the information that we've seen in other surveys suggests that we're probably missing wintering grounds.

That doesn't mean we can recover all those birds so there is probably still a decline, but maybe not as significant as we had observed. Within Delaware Bay the stopover conditions have been favorable for the last couple of years. There have been good spawning conditions for the crabs which result in good egg densities and therefore good weight gain for the knots.

The McGowan et al papers show that the weight gain and survival are influenced by management. For the spawning survey there is no trend in female spawners but there is a significant increase in males. For the Virginia Tech Trawl Survey, including the Delaware Bay, the Lower Delaware Bay stations, that will give us much better information on what is happening in this population over time.

Just one more topic to discuss that we did not – it wasn't a survey but the technical committee requested that I present it. Beginning this month the Fish and Wildlife Service will begin reviewing the data on whether or not red knots should be listed. They expect that they will have a proposed rule in the Federal Register by the end of next year, and if possible that will include a proposed critical habitat designation.

There will be a public comment period following this proposed rule. I'm not sure exactly how long the public comment is, but they expect that a final rule – if the Service still believes that the knot should be listed, the final rule and the critical habitat designation will come out approximately one year after the proposed rule, and then the effective date will be 30 days after publication of the final rule. At that time they will begin development of a recovery plan for red knot if required. I believe that's everything I've got and I can open it up to questions.

CHAIRMAN O'CONNELL: Thanks, Jeff. Before we get into questions, there were two items that the technical committee recommended, and it was to increase collaboration between the Virginia and Delaware Bay Shorebird specialists and make it a

regular occurrence to include the Virginia data. Questions for Jeff? Bill.

MR. ADLER: Mr. Chairman, questions and observations. I did notice that one of the charts shows that the red knot birds were in decline about the same time that the harvest was in decline because we had put regulations in, it seemed to me, and all of a sudden along with the less harvest came less birds.

The other thing was I think you did mention that it looks like they could have been in other places. I think last year there was a report that showed that some of the sightings were at different locations than what they normally were at, and I think you mentioned something that they might be somewhere else.

I also noticed that in one of your charts, the Virginia number in 2009 was down, this chart here, and at the same time you mentioned a very high thing in Delaware Bay, so I think they ended up in Delaware Bay instead of Virginia is what this is telling me. The other thing is if it's listed in the endangered species, does that mean that something has to be done with their predators rather people? I wonder how they handle that one. Thank you.

MR. BRUST: Just a quick response; you make some very good observations. As I mentioned earlier, we obviously had questions about some of these interactions, like you said, what happens in Virginia compared to what happens in Delaware Bay. The call that we had, we didn't have the time to go into some of these details.

It's a very interesting point that you make and certainly one that we would like to dive into. Hopefully at some future date we will get the opportunity to do that. Hopefully I can give you an update in the future. As far as what happens if the knot is listed, I do not know the specifics but I know it's pretty dire across the board. I guess it depends on if it's listed as threatened or endangered and how that impacts other species, the horseshoe crab and all that. I think it depends largely on that, but I would also defer to some of our Service representatives here to go into more specifics.

CHAIRMAN O'CONNELL: Thanks, Jeff. Any other questions? Seeing none, we'll move on to the Shorebird Advisory Report. Welcome, Sarah.

SHOREBIRD ADVISORY PANEL REPORT

MS. SARAH KARPANTY: The Shorebird Advisory Panel met in May and discussed the four questions related to the recommendations on the ARM allocation scenarios. My name is Sarah Karpanty and I'm from Virginia Tech. The first question – and I just wanted to go through these fairly quickly and make time for questions – the first question that we sought to provide input to the board on related to how much of each state's harvest is comprised of Delaware Bay origin crabs.

The next several slides, I just put together a table showing on the left the Shorebird Advisory Panel recommendation, in the middle Horseshoe Crab Advisory Panel recommendation which Dr. Cooper will speak more on, and on the right the Delaware Ecosystem Technical Committee, their original recommendation which you asked us to consider.

The Shorebird Advisory Panel – and we had consensus on all these decisions – recommends Option 3, which sets the Lambda Value based on the genetics data. We decided to recommend this option. We feel that the genetics data are the most reliable at this time. The tagging data was not – the study design was not designed for a mark/recapture study.

Thus, we do not feel that those data should be used to set the Lambda Values. We actually feel that this is the most risk-averse option for the shorebirds. You will see that the option that we selected was in agreement with that of the Ecosystem Technical Committee. It's slightly different from the Horseshoe Crab Advisory Panel.

The second decision that we were asked to consider related to the question of on what basis should the total recommended harvest output from the ARM Model be divided among the states? The Delaware Bay Ecosystem Technical Committee originally offered three options. They did not make a recommendation. They feel that forces the decision of the board.

The advisory panels reviewed this information. In the end the Shorebird Advisory Panel recommends using Addendum IV quota levels to currently set the allocation weights between the states. You'll hear from the Horseshoe Crab Advisory Panel that it's very similar to their recommendation. The reasons why we chose this option, we do see some value in using the Virginia Tech Trawl Survey data.

Those abundance data are very attractive and it would be interesting to set the allocations based on those, but that Virginia Tech Survey was not designed to quantify state-by-state abundance levels. Therefore, we do not recommend using that data. We felt that using the average landings, the reference period landings would unfairly punish New Jersey for their conservative harvest quotas that they've set in recent years.

We felt that the Addendum IV levels which we recommended were risk-averse and that they would protect male horseshoe crabs, which we felt that would offset some of the devaluation of male crabs in the ARM Model and the emphasis of the ARM Model on the female crabs.

This third decision related to the harvest cap for Maryland and Virginia. The question was should there be an overall harvest cap on Maryland and Virginia harvest to protect the non-Delaware Bay origin crabs. Our recommendation was similar to that of actually the advisory panel and the Ecosystem Technical Committee.

We recommend that we maintain Addendum IV quotas as caps for Maryland and Virginia. The reason was simply that we did not feel that there was any evidence at this time that non-Delaware Bay crabs consisting higher harvest levels; and so pending further information, we would reconsider that recommendation.

Then, lastly, this is the one decision where the Shorebird Advisory Panel does differ from the Horseshoe Crab Advisory Panel. The question relates to should there be an allowable but minimal harvest of Delaware Bay origin crabs for Maryland and Virginia if the ARM output requires a moratorium on male crabs, on female crabs or on both?

The Shorebird Advisory Panel's recommendation is that we maintain the output of the ARM Model in terms of harvest, and that would include recommending a female moratorium in Maryland and Virginia. This was definitely an issue that required the most discussion of the four decisions, and in the end the reason behind that recommendation are three points I would like to make.

First of all, the Maryland and Virginia stocks are mixed and we recognize that and that setting the Lambda Values is less than one, but we recommend using the genetics data to set those values, but we do know that those stocks are mixed. The other

challenge that we all know is that in the field at harvest time it's very difficult or actually impossible to determine the crabs origin, so there is never certainty in what crab you're harvesting.

The basis of our decision, though, is really that we feel that the ARM Process should be allowed to work. It should be allowed to go forward. If the ARM Model output is recommending a female moratorium, we feel that we should make management decisions based on that ARM Model and allow that to play out.

We feel that if we start saying we can harvest females in certain areas and not in others, that it would be very difficult to interpret how well the management recommendations from the ARM are working. We did feel also, though, that we should reconsider this recommendation if there was additional evidence of sustained increases in crab or shorebird populations. This is simply a summary slide. Again, the decisions are on the left, the Shorebird Advisory Panel recommendations are the second column compared to the other groups. I would be happy to take questions at this time.

CHAIRMAN O'CONNELL: Thanks, Sarah, and maybe I should provide an opening remark to Sarah just to remind the board at the previous board meeting there was discussion from the board as to how we go forward with the ARM Model if we wanted to use that for management.

The technical committee I believe provided us some different allocation scenarios, so we asked that both of the advisory panels provide the board some input and their thoughts in regards to allocating the Delaware Bay component of the horseshoe crab stock if we began to implement. Sarah provided a great summary of that and we'll hear from Jim Cooper, but these are some of the issues that we will come back to if the board wants to discuss moving forward with the ARM Model. Peter.

MR. HIMCHAK: I need a point of clarification. Sorry, Sarah, but you said that you did not support the reference period landings because they would disadvantage New Jersey based on recent management actions. I think it would be just the reverse. Using the reference period landings would put us back as the top harvester of Delaware Bay horseshoe crabs. Our reference period landings are over 600,000 horseshoe crabs.

MS. KARPANTY: I see your point here. That is what we discussed but let me make sure I'm not

missing something in our summary of that discussion. I had a discussion outside of the room, but I understand the point you're making. We did not recommend the reference period landings. I see your point.

We did feel that we wanted to go with the more risk-averse option, which, again as you said, reduce the percentage that was allocated to New Jersey, so I think in the end we selected the option that we felt was most risk-averse – more risk-averse. And you're right, I think we did not interpret the reference period landings correctly in our original discussion, so I see your point.

CHAIRMAN O'CONNELL: Thanks, Sarah. Any other questions? All right, we'll proceed with the Horseshoe Crab Advisory Panel Report from Jim Cooper.

HORSESHOE CRAB ADVISORY PANEL REPORT

DR. JIM COOPER: I would point out to the group that it was 40 years ago in 1971 that I opened the first commercial laboratory for producing LAL from the horseshoe crab, and we're in this room because that has become a very vibrant and sustainable business. We have an enormously important health care product, and it's all of you that acting together can make this industry sustainable

I would like to point out that Tom O'Connell, through very hard and dedicated work in the late 1990's, laid the groundwork for an FMP for this industry of fishery and LAL or biomedical, as you would like. I would also point out that this biomedical; it's an American industry. Yes, there is a tiny Chinese output, but this is an American industry and at least 70 percent of our products do indeed go around the world. It's a profitable industry. It provides a livelihood for thousands of laboratory personnel and hundreds of fishermen who are critical to the supply of this raw material.

Now, I'm sure all of you have in hand the AP's report. I have only a few minutes so I can only go through the highlight. We have relatively good representation from the stakeholder states for the biomedical. We, of course, were dependent on our good friend here, Jeff, to lead us through the Delaware Bay Ecosystem Technical Committee. He gave us a great summary on that.

Then we reviewed the ARM Model. We recognize that this is basically a specific region. This is the

Delaware Bay four-state area, so that we were really focusing then on the four factors that would impact on allocation to the four states involved, so this is really an allocation process that we addressing.

We then, of course, recommended continuation of the ARM Framework but was hoping there would be a contingency plan should there not be funding for the trawl survey, which, of course, we're glad to hear we have one more year at a minimum. Let's move on then to the Delaware Bay origin.

Now, in this report they have something called Lambda; and if it's one that means all of the crabs in a given area would have Delaware Bay origin, and, of course, that's not really the case, so assigning one to Maryland and Virginia would certainly not be accurate. We did observe the limitations of the tagging data, which we felt were very inadequate.

Then, of course, these are experts in the room understanding how the horseshoe crabs indeed live their life. They're not great ocean goers; they don't go a lot north/south. They're basically inshore/outshore types of movement and, of course, dictated by foraging, spawning and that sort of thing. We recommended that the Lambda Values fall perhaps somewhere between tagging and genetic data, and in that report that means that we're looking at Option 3 of that report for setting of values for future management.

Now, with respect to the weighting system, obviously we have historical and current and estimated abundance such as the trawl data. Like the other committees we thought it might be premature to base the allocation on estimated abundance, again because it's not intended for that purpose. The majority feeling was basing the proportional allocation on the Addendum IV quota.

With respect to the harvest cap, we agreed that non-Delaware Bay crabs should indeed be protected unless there was data to suggest that we could increase these harvest levels, but we also recognize that there seems to be an equilibrium right now, sort of a maintenance of numbers of horseshoe crab from year to year in their respective areas, so certainly a decrease is not justified.

We also agreed with the Delaware Bay Ecosystem Technical Committee to recommend a harvest cap based on Addendum IV of quota allocations. That addendum was reached with a good discussion with respect to allocations to cap non-Delaware Bay horseshoe crabs. With respect to the stock

allowance, our recommendation was a little bit different to certainly to allow harvest of some Delaware Bay horseshoe crabs. In doing that, that avoids some of the problems should there be a complete moratorium on Delaware Bay origin crabs.

We were aware, of course, that there seems to be a general improvement in the numbers of horseshoe crabs in Delaware Bay much like other areas. It certainly is occurring in South Carolina. Our recommendation was then to establish a stock allowance that maintains status quo levels for female harvest in the Virginia and Maryland waters.

There was a minority recommendation that thought the referenced landing actually represented the true abundance and that would weigh in on deciding or impacting on the stock allowance. With that, I will complete this report and take some questions if they're ones that I'm able to address.

CHAIRMAN O'CONNELL: Thank you, Jim. Questions for Jim? All right, I appreciate the great work of all our technical and advisory panel bodies. I think you provided a great update and provided a good foundation to lead us into our next discussion, Agenda Number 9, to discuss next steps of horseshoe crab management.

DISCUSSION OF NEXT STEPS OF HORSESHOE CRAB MANAGEMENT

Just to reflect back, we have invested in development of this Adaptive Resource Management Model. We've had a peer review; the board approved it. We're still struggling with long-term funding but we did secure funding for one year. We're at that point in time to discuss whether or not we want to look at an addendum to initiate implementation of the ARM Model or we could continue status quo or something in between. Let's open it up and have a good discussion. Jack.

MR. JACK TRAVELSTEAD: I have grown fond of status quo to some degree. It seems to be working fairly well, and we've heard some good news from some of the advisors today. I do appreciate all the work. We have four different groups working on this and each of you are doing a great job.

Virginia committed a long time ago to development of the ARM and we all did around the table, and I think it has moved along to the point where we do need to start using it. We've been presented with a variety of options from the various groups. I'm not prepared at this stage to suggest that we should favor

any of those options over the others, but I do think we should initiate the development of an addendum today to get this out to the public for comment.

A couple of concerns; one is we all know that the status of funding for the Virginia Tech Trawl Survey is in doubt in the future, and so I think we should include a fallback option, if you will, for status quo in the addendum, if we agree to send it out today, that would put us back to where we are now in the event that funding for that survey is not available.

Of course, that data from that survey is what feeds the ARM, so hopefully we will be able to come up with funding in the future for that. And then I'm also interested in consideration of an option that would allow for an increase in male harvest in Maryland and Virginia if the Delaware Bay stock allowance suggests that we need to reduce from where we are now.

I'd like to see an option considered and available to the public to comment that would offset the reductions in female harvest by an increase in the male quota in Maryland and Virginia. The reason I suggest that is we just heard that male crabs are increasing significantly; and in spite of the fact that we have a male-dominated harvest, there doesn't appear to be any changes in the male-to-female sex ratio. The amount of increase in male harvest that we'd be talking would be quite small in comparison to population levels so I don't see any harm there. Mr. Chairman, having said all that, I have a motion if you're ready for one at this point to further the discussion. It's up to you.

CHAIRMAN O'CONNELL: Sure, let's put a motion up there and I think that will help the discussion given our timeframe.

MR. TRAVELSTEAD: I had given it to staff previously and I do want to make some changes to what I had given staff, and I'll make those as I read it. **I would move to initiate Addendum VII to implement the ARM Framework and to direct the Horseshoe Crab Plan Development Team to include; one, the recommendations of the Delaware Bay Ecosystem Technical Committee, the Horseshoe Crab and Shorebird Advisory Panels as options in the draft addendum; two, a status quo fallback option should the necessary data for the ARM Framework not be available; and, three, an option that would increase the male crab quota in Maryland and Virginia – and change the words “by two times”; eliminate that; so it would read “an option that would increase**

the male crab quota in Maryland and Virginia to offset any reductions in female crab quota due to the DBSA in those states.

That would be my motion, and just for clarity Part Three there is saying that if the female quotas go down, they would be offset by an equal amount on the male side of the equation in the two states.

CHAIRMAN O'CONNELL: Do we have a second; Peter Himchak. Jaime.

DR. GEIGER: I, too, feel like Jack; I think it's time to start implementation of the ARM Model. Again, I congratulate all the advisory panels and the technical committee. I think the reports were outstanding. I think it is still premature to have discussion on the various options at this point in time, but right now I appreciate Jack putting that motion on the table. I think it's a reasonable good start. Thank you very much.

MR. HIMCHAK: Mr. Chairman, I support the implementation of the ARM Model. The commission and the states have invested an awful lot into a sophisticated management tool that deserves use as soon as possible. Notwithstanding that, yes, I have concerns about the Virginia Tech Trawl Survey; and if there is no funding for 2012, do we fall into a backsliding motion? I guess this is a question for Mr. Brust.

I guess if we go ahead with the ARM Model and then we don't have funding for 2012 for the Virginia Tech Trawl Survey and we fall back to maybe the status quo, does that have a detrimental effect to the future use? You know, there is no continuity then in the ARM Model, so that's a question.

One comment; I agree with Jaime, I think it's premature to just limit the addendum to the recommendations of the three committees. There were a number of options – there were many options that they made a recommendation on, and I would like to see the options particularly on the allocation basis go out to public hearing. So two comments, and, Jeff, could you help me out on the ARM interruption.

MR. BRUST: There are I guess a number of ways to address this. First of all, yes, the ARM is almost – not entirely dependent but heavily dependent on the Virginia Tech Trawl Survey; so if that goes away, then we're in a bind, but I guess it could depend on how long that Virginia Tech Survey is non-existent. If it's one year, there may be a way that – you know,

lots of surveys miss one year for technical reasons of whatever. Occasionally you do see an interruption in a survey index. It's possible with just one year missing, if we get funding for 2013 and beyond, we could still use it.

Certainly, we would need detailed discussions at the ARM level to figure out what we could do. There might even be – right now we've structured the ARM to depend on the Virginia Tech Survey, but if it looks like that is going away maybe we need to initiate discussions on is there is anything else that is possible to base this on? I don't think there is but we would need to discuss it at the ARM level. The answers to those questions would really define where we go next. I guess the short answer is at this point, yes, we are heavily dependent on the Virginia Tech Survey; and without that we are kind of stuck.

CHAIRMAN O'CONNELL: I've got Pat and Jaime, but before I recognize you guys I'm just trying to refer back to my Roberts Rules of Order. We've heard from several people that offered some support for the motion. Does anybody want to speak in opposition of the motion? Peter.

MR. HIMCHAK: Correction; I only spoke to support of a portion of the motion.

CHAIRMAN O'CONNELL: Thanks for the clarification. Pat.

MR. AUGUSTINE: Jeff, do we know what the cost of that survey is? I'm sorry, I don't know where the money comes from; was it coming out of our budget or is it coming out of Virginia; where is it coming from?

MR. BRUST: The cost of the entire survey, which includes both Delaware Bay and the New York Apex, is around 200 or 210, something like that. For a number of years, from 2001 until 2009 or so it was a line item in the NMFS budget, I believe. That line item went away in 2009 or 2010 and we have been struggling to come up with it. For 2011 it has been funded by industry and matching grants from NFWF.

MR. AUGUSTINE: Just following on, Mr. Chairman, I was concerned about it because as you know we're struggling with NEAMAP support; and if it weren't for the research set-aside program, that would disappear also, and that is critical. It's just that we need to be aware of that; if that does go away and we can't get industry to come and backfill we're in trouble.

DR. GEIGER: I appreciate, Jeff, your explanation on the funding and the past history and obviously options for the future. Given the extraordinary cooperation and given the extraordinary innovation and creativity that we have had in developing the ARM Model and basically the extreme importance to future management efforts by this board, I think I'm a little more optimistic about longer-term funding for the survey.

Certainly, I think that in spite of this challenging budget climate, I think working with the existing partners that have stepped up along with NFWF and other partners to identify a longer and possibly more stable funding stream, I think we'll be able to be more reassured that we will have the necessary data to continue to do the adaptive management necessary to implement the model. I'm a little more optimistic and I'm seeing that less of concern for me and any motions.

CHAIRMAN O'CONNELL: Thanks, Jaime. Anybody else? Peter.

MR. HIMCHAK: Mr. Chairman, I don't know if this is a friendly amendment to the motion or I should make a substitute motion. I mean, the recommendations coming out of the three committees, one of them was to use a blend of the tagging and the genetics, so even there, there is not a definitive, you know, pick this option, which further strengthens my urging to include the options discussed and reviewed by all these committees.

I would like to change the word "recommendations" to the phrase "the options discussed and reviewed by" and then the public would have a thorough understanding of the genetics versus the tagging and why one was selected over the other. They would have a better understanding of what the allocation was based on and the third issue that escapes me at the moment. If that's not a friendly amendment, I'll make a substitute motion.

CHAIRMAN O'CONNELL: Jack, would you consider that as a friendly amendment?

MR. TRAVELSTEAD: I think it was my poor choice words. In fact, what I was after is exactly what you've described. Let's include all of them in there, make the document complete and then make the tough decisions after we hear from the public, so it's a friendly amendment.

CHAIRMAN O'CONNELL: Jack accepted that. Any other comments on the motion at hand? We are running good on the schedule so let's see if there is

anybody from the public that would want to provide comment before we take a vote. Anybody from the public, please raise your hand. Please come up to the microphone, Rick.

MR. RICK ROBINS: Mr. Chairman, Rick Robins, Horseshoe Crab AP member. I'd like to speak in support of the motion, but before I do I'd like to just step back and express broader support for the ARM. I think the process that the commission has initiated to develop this model has been rather remarkable. It has been extremely innovative.

The way that there was technical advice combined with stakeholder input through structured decision-making I think reflected really an excellent choice of methods for trying to develop goals and objections that then formed the technical modeling in this process. I think a lot of progress has been made in the last couple of years with this initiative.

When it's completed, I think it will be a high-water mark for this commission. I would also like to say that I think the commission deserves a lot of credit for the decisions it has already made. You've made a lot of tough choices in the past to get the horseshoe crab management to the point that it is now with a very low rate of removals.

If you look back at the 2009 benchmark assessment, F current over Fmsy is roughly 25 percent, so you're fishing at a very low level of mortality. You're doing that to specifically account for the ecological importance of the species. I think on that point it's probably the most conservatively managed fishery for ecological purposes on the east coast.

But as we move into a period when the red knot is likely to be listed by the Fish and Wildlife Service, I think it does become imperative that we have a model that explicitly grounds the management of the resource in a model that links up dynamically the interactions between the crabs and the shorebirds. I think it builds on your past success. I think you've already put the resource on a path to recovery.

I think the spawning conditions that we're seeing over the last few years that the Ecosystem Technical Committee referenced were evidence of that. I think there has been a lot of noise and variability on an inter-annual basis in the Virginia Tech Trawl Survey results. Hopefully that will smooth out over time and hopefully we can develop a better understanding of catchability in that survey.

I think that will help, but I think overall the picture is one of improvement. I think this has the potential to continue to build on your past success, so I speak in support of it. I think it's very important, as you go into this, that you have management tools that would mitigate impacts in the implementation.

I think the Delaware Bay stock allowance combined with Lambda is one way to do that. In the alternative, what has been added in terms of slightly increasing male harvest to offset any changes in the DBSA is also another important management tool to have as go through the public hearing process. I would support the motion as presented. Thank you.

CHAIRMAN O'CONNELL: Thank you, Rick. That was the only public comment, so I'll bring it back to the board. Before I read the motion, just for clarification on the motion makers – we have one more public comment. Please come to the microphone, state your name and your affiliation, please.

MS. CAROLINE KENNEDY: Caroline Kennedy, Defenders of Wildlife. I have a question. Is there going to be a separate motion regarding any impacts from the biomedical or any of the recent discussion about the increase in the biomedical harvest and the mortality associated with that or is this the only motion that you are going to consider?

CHAIRMAN O'CONNELL: Well, the board did agree upon the formation of a workgroup to look further into the biomedical practices. That's the only action the board took at this time. It would be up to the board whether or not they take any further action today. Jack, just for clarification staff wanted me to ask under the second component of your motion, the status quo I assume refers to Addendum IV?

MR. TRAVELSTEAD: Yes, sir.

CHAIRMAN O'CONNELL: And the seconder? Okay, thanks, Peter. I'll go ahead and read the motion: Move to initiate Addendum VII to implement the ARM Framework and to direct the Horseshoe Crab Plan Development Team to include; one, the options discussed and reviewed by the Delaware Bay Ecosystem Technical Committee, the Horseshoe Crab and Shorebird Advisory Panels as options in the draft addendum; two, a status quo fallback option should the necessary data for the ARM Framework not be available; and, three, an option that would increase the male crab quota in Maryland and Virginia to offset any reductions in

female crab quota due to the DBSA in those states. Motion by Mr. Travelstead; second by Mr. Himchak.

Do you guys want a brief caucus? All right, it seems like you are ready to vote. All those in favor please raise your right hand; all those opposed please raise your right hand; any null votes; any abstentions. **The motion carries.** Before we move on to other business, I would like Danielle to provide an update on the status of the PDT to see if we need to make any changes to that. It has been a couple of years.

MS. BRZEZINSKI: Mr. Chairman, I just checked our data base and we don't have any horseshoe crab plan development team currently. If the board members would be so kind as to e-mail their suggestions for PDT members and we will circulate those to the board to see if there is any objections to those.

CHAIRMAN O'CONNELL: The last item on the agenda is other business. Is there any other business? Peter.

OTHER BUSINESS

MR. HIMCHAK: Mr. Chairman, I guess I'm giving a heads-up to maybe commission staff and other states where biomedical industries are operating. We have been flooded by environmental organizations through the Open Public Records Act for all of the records dealing with the operation of the biomedical industry in New Jersey. I understand this has happened in Maryland as well. I don't know about Massachusetts or South Carolina.

The difficulty here is that the Addendum III reports that come in that give all the details on the biomedical activities of the companies, these are confidential business records. These are tantamount to – in our statute these are tantamount to an individual commercial fisherman's landings, and we have to deny them on that request.

What I have explained in the request that we received in New Jersey is specifically that these logs go to the ASMFC and compilation summary reports come out through FMP reviews to protect confidentiality of the companies and to give us an assessment of what the biomedical industry's impact is.

So just be aware that ASMFC staff may be asked – you know, that would be a simple thing; just get all the FMP reviews from when after the FMP was adopted, and there should be ample information in those records. Thank you.

DR. GEIGER: One other piece of business, Mr. Chairman; I would ask the technical committee to work with members of the Fish and Wildlife Service and the National Marine Fisheries Service to continue to solicit and put together proposals for out-year funding for the Virginia Tech Survey. I think that's not too early to start those cycles going, identify funding sources and start working on trying to get more continuity for the survey. Thank you, Mr. Chairman.

CHAIRMAN O'CONNELL: Good suggestion. Any other business to come before the board?

MR. ROBERT E. BEAL: Back to Pete's comment from a minute ago regarding confidential data; a number of reports that ASMFC receives from the states or annual compliance reports; at times those do contain confidential data.

Our practice is – well, just because that data is transmitted to ASMFC in a state's compliance report, that data does not then become public. It's still confidential data. Our practice is if someone requests data that a state has determined is confidential is to refer that individual back to the state that collected that data and the state's protocols prevail on the release of that data to any individuals requesting that data. I just want to let the board members know how we handle requests for data that a state deems to be confidential.

ADJOURNMENT

CHAIRMAN O'CONNELL: Do we have a motion to adjourn? All right, we'll end this meeting.

(Whereupon, the meeting was adjourned at 12:30 o'clock p.m., August 4, 2011.)