

**PROCEEDINGS OF THE**

**ATLANTIC STATES MARINE FISHERIES COMMISSION**

**HORSESHOE CRAB MANAGEMENT BOARD**

**February 23, 2006**  
**Arlington, Virginia**

## ATTENDANCE

### Board Members

George Lapointe, Maine DMR  
Sen. Dennis Damon, Maine Leg. Apte.  
John Nelson, New Hampshire F&G  
Ritchie White, New Hampshire Gov. Apte.  
Peter Whelan, proxy for Rep. Abbott (NH)  
Bill Alder, Massachusetts Gov. Apte.  
Paul Diodati, Massachusetts DMF  
Vito Calomo, proxy for Rep. Verga (MA)  
Eric Smith, Connecticut DMR  
Lance Stewart, Connecticut Gov. Apte.  
Pat Augustine, New York Gov. Apte.  
Peter Himchak, New Jersey DFG&W  
Erling Berg, New Jersey Gov. Apte.  
Frank Cozzo, proxy for Rep. Schroder (PA)  
Roy Miller, Chair, Delaware DFW  
Bernard Pankowski, proxy for Sen. Venables (DE)  
Howard King, Maryland DNR

Russel Dize, proxy for Sen. Colburn (MD)  
Bruno Vasta, Maryland Gov. Apte.  
Catherine Davenport, Virginia Gov. Apte  
Kelly Place, proxy for Sen. Chichester (VA)  
Jack Travelstead, Virginia MRC  
Damon Tatem, North Carolina Gov. Apte.  
Jimmy Johnson, proxy for Rep. Wainwright (NC)  
Mel Bell, South Carolina DNR  
Robert Boyles, Vice Chair, South Carolina DNR  
Malcolm Rhodes, South Carolina Gov. Apte.  
John Duren, Georgia Gov. Apte.  
Gil McRae, Florida FWC  
Rep. Mitch Needleman, Florida Leg. Apte.  
April Price, Florida Gov. Apte.  
Tom Meyer, NMFS  
Wilson Laney, US F&WS

### Ex-Officio Members

Gregory Breese, US F&WS, Shorebird TC  
Coordinator

Mike Millard, USFWS, TC Chair

### ASMFC Staff

Julie Nygard

Brad Spear

### Guests

David Kielmeier, HSC Harvester  
Caroline Kennedy, Defenders of Wildlife  
Ed Blaine, commercial fisherman  
Perry Plumart, American Bird Conservancy  
Carl Shuster, VIMS  
Howard Townsend, NOAA Ches. Bay  
Derek Orner, NOAA Ches. Bay  
David Frulla, Collier Shannon Scott  
Rick Robins, Ches. Bay Packing  
Stewart Michels, DE DFW  
Charles Lynch, NOAA  
Bill Windley, MSSA/RFA

Alan Risenhoover, NMFS  
Tim Dillingham, American Littoral Soc.  
Constance Campanella, Amer. Bird Conserv.  
Rich Rieger, Northern VA Bird Club  
Jeff Tinsman, DE DFW  
Greg DiDomenico, Garden State Seafood  
Scott Harper, The Virginia Pilot  
Mike Slattery, MD DNR  
Steve Doctor, MD DNR  
Paul Brodley, Richmond T-D  
Barry Kratchman, DE Valley Fish  
Bob Blumenthal, Cambrex BioScience

*There may have been others in attendance who did not sign the attendance sheet.*

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**ATLANTIC STATES MARINE FISHERIES  
COMMISSION**

**WINTER MEETING**

**HORSESHOE CRAB MANAGEMENT BOARD**

**DoubleTree Hotel Crystal City  
Arlington, Virginia**

**February 23, 2006**

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The meeting of the Horseshoe Crab Management Board of the Atlantic States Marine Fisheries Commission convened in the Washington Ballroom of the DoubleTree Hotel Crystal City, Arlington, Virginia, on Thursday, February 23, 2006, and was called to order at 9:20 o'clock, p.m., by Chairman Roy Miller.

**BOARD CONSENT**

CHAIRMAN ROY MILLER: I would like to get started if everyone could take their seats, please. All right, if we're ready to begin I'd like to get us started while staff is handing out correspondence.

Let me start off by introducing myself. I'm Roy Miller. I'm the new chair of the Horseshoe Crab Board. I'd like to welcome you today to this meeting. We have a fairly full agenda. We have a lot of correspondence.

What I would like to do initially is for everyone to look at the agenda and see if there are any additions or corrections to today's agenda. Anyone? Seeing none I'll just note that we're going — there is a lot of correspondence associated with this particular board meeting that is being passed out as we speak.

I think what I would like to do is after we do the approval of the proceedings from the November 1<sup>st</sup> meeting I'm going to call on our plan coordinator Brad Spear to at least highlight the correspondence so everyone is certain that they have the appropriate correspondence.

So our **agenda is approved**. I'd like to now take up the issue of proceedings from the November 1<sup>st</sup>, 2005, meeting. Everyone has those proceedings. Are there any corrections or additions to those proceedings?

SENATOR DENNIS DAMON: **Move to approve.**

CHAIRMAN MILLER: Senator Dennis Damon moved approval of those minutes. Is there a second? John Nelson. All those in favor say aye; those opposed, nay. Thank you. The minutes are approved. Brad, could I call on you for helping us sort through the correspondence for this particular meeting.

MR. BRADDOCK J. SPEAR: Thank you, Mr. Chairman. The letters that were passed out before, at the beginning of the meeting were letters that were sent to the commission this past week and weren't included on any of the briefing materials but they are relevant for the meeting today.

You were also given a copy of the Virginia Tech Trawl Survey report for the 2005 results. And that is also for your consideration for this meeting. And in fact several of the correspondence were in regards to that report. That's it.

CHAIRMAN MILLER: Thank you, Brad. Are there any questions in that regard before we get into the specifics? Seeing none, I'd like to open this meeting up for public comment. My procedure is to allow public comment at the beginning of the meeting and also to entertain public comment prior to the board voting on any motions.

Also, after we have a technical committee report and the board has exhausted all their questions and comments I'll also recognize the public at that time in case they have any questions for the technical committee report. So, could I have a show of hands of how many would like to make a public comment at this point in time. Let's see, 5.

All right, I think we can accommodate five without putting any time constraints but I would urge you to try and hold your comments to five minutes or less for the sake of brevity and to give everyone an opportunity to speak. I believe the first hand I saw was Rick Robins. If you would please identify yourselves for the transcribing purposes, thank you.

**PUBLIC COMMENT**

MR. RICK ROBINS: Thank you very much, Mr. Chairman, Rick Robins representing Chesapeake Bay Packing LLC and Bernie's Conch's LLC, two Virginia conch processing firms. We support the conservation and continued risk-averse management of the horseshoe crab resource.

And we recognize that the commercial future of all user groups depends on it. In conjunction with VIMS we are currently and actively engaged in research on alternative baits and ongoing efforts to improve bait saving devices for the whelk fishery.

Just this month we're beginning to test these new bait saving devices -- if you would pass that down. I specifically support the ASMFC and member states taking steps to maximize egg production for the benefit of migratory red knot in the Delaware Bay.

However, there is more than one way to accomplish this goal. One way is a full moratorium in Delaware Bay. This has problems. A moratorium is a very imprecise fisheries management tool.

It may be very precise politically, though, as it would surgically eliminate the whelk and eel fisheries as user groups. This approach is inconsistent with the goal of the plan and raises questions regarding the ASMFC's legal authority and standards.

Another way to maximize egg production for the benefit of shorebirds is to allow a limited male-only harvest for Delaware Bay. It specifically maximizes female escapement from harvest, thereby maximizing egg production.

Females are the true currency in this discussion and our conservation efforts should be focused there. The benefits of this strategy are identical or approximately the same as a full moratorium, depending on the harvesting technique.

It's consistent with the goals of the plan to manage the horseshoe crab resource as a multi-user resource and is consistent with the ASMFC standards. It allow for a limited harvest of males which outnumber females by a factor of 3.55 to 1 during spawning.

In January of this year this option was unanimously endorsed by the Delaware Shellfish Advisory Council as a preferred alternative. Furthermore, the technical committee agreed that it was a reasonable option for the board's consideration.

Dr. Schuster has written letters in support of it which I believe you have. Unlike a full moratorium this option is good for crabs, good for birds and good for fishermen. It's a win-win for managers and shareholders alike.

It's the only option that allows managers to manage for increased egg production while allowing the

industry to survive socially and economically. I respectfully request that this option, Option 2 for Delaware Bay, be advanced as part of draft addendum for public comment.

And I note that under the ASMFC rules this option would not prevent any individual state from taking more conservative action. I note that it could be amended at the final board meeting to allow for a nominal bycatch retention of damaged females in order to accommodate minnow and eel fishermen.

This option represents a strong action that may help avert a red knot listing or could serve as a foundation for a red knot recovery plan if such a listing is made. Furthermore, with respect to the options on the table for Virginia and Maryland, Maryland fisherman have voluntarily agreed to adopt a two-to-one minimum male-to-female sex ratio for their landings.

This proactive conservation action should be affirmed and not penalized. Furthermore, in Virginia a much more precise option can be crafted that will separate Virginia's bay and coastal fisheries which would allow Virginia to specifically minimize any interaction it may have with Delaware Bay origin crabs.

And I would submit that a similar sex ratio should be adopted in Virginia's coastal fishery. I submit that Option 4, the full moratorium option for Virginia and Maryland, is inconsistent with the board's actions at the last meeting and the best available science.

In October of '05 the technical committee specifically concluded that the data do not indicate the need for additional harvesting restrictions outside the Delaware Bay. Option 4 for Virginia and Maryland, a moratorium, is therefore inconsistent with these findings.

Two population estimates suggest that a full moratorium for Delaware Bay is statistically and biologically superfluous. I have passed around a graph that depicts this. The combined 2004 landings for Delaware and New Jersey total just 173,000 crabs, of which 56,000 were female.

This represents a rate of removal of 1.5 percent of Berkson's initial mean estimate of 11.4 million crabs in the Delaware Bay region and just 0.8 percent of Dave Smith's estimate.

The conclusion that this rate of removal is inconsequential is supported by the Delaware Trawl Survey, the U.S.G.S. datasets and now the Virginia

Tech Trawl Survey, all of which indicate an expanding juvenile component of the population and a stable adult population.

It would be unprecedented and inappropriate to close an industry in order to save 1 percent of the population of the resource from harvest at a time when that population is responding to management. And that's exactly what is happening.

In October of 2005 the Horseshoe Crab Technical Committee referenced multiple independent datasets indicating that the adult population is stable and juveniles are recovering. They concluded that no additional harvesting restrictions were necessary either inside or outside of the Delaware Bay.

This is clear evidence that the current risk-averse management strategy and plan is working and the sanctuary is working. Just last week Virginia Tech released their 2005 and corrected and restated 2004 trawl survey results.

The author indicates that he understated horseshoe crab abundance by a factor of three. The original, erroneous 2004 results have been used as a pressure point to move this commission into an addendum process.

The new results now show a substantial and statistically significant improvement in juvenile horseshoe crabs and a stable adult population. We request that these results be vetted in a timely manner through the Horseshoe Crab Technical Committee prior to any final adaptive management action taken by this board.

These results strongly support the October technical committee findings that the adult population is stable and juveniles are expanding. Given these positive findings and subsequent Virginia Tech data extreme management measures are not warranted at this time and more reasonable, risk-averse alternatives should be considered.

While these results are un-reviewed by the technical committee, an array of management options for the Delaware, including Option 2, should be put forward for public comment to allow for an evolving understanding of the Virginia Tech data by this board. Thank you, Mr. Chairman.

CHAIRMAN MILLER: Thank you, Rick. I forget who was next. I did see Perry Plumart. You, sir.

MR. RICH RIEGER: Good morning. My name is Rich Rieger and I'm president of the Northern Virginia Bird Club. I live just down the road a little ways in Alexandria, Virginia. I'm not a scientist.

I don't have a lot of numbers to spew out. And I'm a little bit new to this part of the process. I've been bird watching for about ten years now as a serious birder. And there are some things in this hobby and in the natural world that I consider spectacles.

And spectacles to me are something that when somebody sees them their mouth just drops open and they're kind of hooked for the rest of their life. And for me one of my first spectacles around bird watching was to see the horseshoe crab mating ritual at Port Mahon in Delaware, just a little bit south of Bombay Hook National Wildlife Refuge.

The beaches that I, when I first saw them back in '95 were basically littered with horseshoe crabs. They were wall-to-wall, any sandy spot, and they were two and three feet deep, I mean two and three, four crabs deep, not feet, excuse me.

And since then that hasn't happened. And while I'm not a scientist I did start out my life trying to be a scientist at one point -- now I'm more of an artist -- people that I talk to that visit the Delaware Bay, people that have houses over there, they go over for vacation weekends, they just do not see that happening any more.

I go over there every year to try to catch part of the shorebird migration. I just do not see the concentration of crabs that I used to. And for as much as we have numbers and we certainly do hope that the crab population is stable and hopefully that it will be back on the increase, bird watcher after bird watcher that I talk to that visit the Delaware Bay say places where we used to see thousands of crabs we just do not see them any more.

So, it's anecdotal but I do believe that in science that observation has to play a vital role. And bird watchers are as a rule very observant people. Thanks.

CHAIRMAN MILLER: Thank you. Hands again, please. Yes, sir. Right there.

MR. DAVID KEILMEIER: My name is David Keilmeier from New Jersey. I'm a horseshoe crab harvester. I also am going to represent LaMonica Fine Foods and Carmen's Lobster Pool,

both, one being the largest processor in the United States for conchs and the other being an extensive harvester of whelks for 15 years in New Jersey.

I am here today to represent LaMonica Fine Foods and Carmen's Lobster Pool and myself, a horseshoe crabber in New Jersey. I have served on the New Jersey Advisory Board for horseshoe crabs for the past eight years.

Horseshoe crab harvesters in New Jersey have already made tremendous sacrifices the last few years due to emergency closures, and now that we are facing a total bay moratorium most conch fishermen and horseshoe crab harvesters will be forced out of business or toward other fisheries in New Jersey.

Based on the current take of horseshoe crabs, we feel that there is no need for a total moratorium. That being said, we are willing to work with the Atlantic States Marine Fisheries Commission and other states for other means, methods to harvest New Jersey's horseshoe crab quota.

And in leaving I would like to say that if me being a horseshoe crab harvester I have given, provided New Jersey with a lot of valuable information where I harvested the crabs. I have consistently reported tags of horseshoe crabs ever year.

And if you take me as a harvester out of the bay, you're taking that information that I've been giving freely and willingly for the last ten years away so we won't really have a good idea. So thank you very much, Mr. Chairman and everyone. Thank you.

CHAIRMAN MILLER: Thank you. Next hand. Yes, sir.

MR. ED BLAINE: Good morning. My name is Ed Blaine. I'm a commercial fisherman out of New Jersey. I'm a conch fisherman. I would just like to say I'm glad to be here and I see a lot of faces here that I know and people I don't know which it's good to see that everybody is concerned.

Back in New Jersey in 2005 the horseshoe crabbers harvested 90,000 crabs for the year. They were allowed to harvest 150 but time ran out. That's fine. That's conservation. There are 60,000 crabs less.

In 2004, 47,600 crabs were landed in New Jersey. That's less than 50,000. That's conservation. That's 103,000 less harvested. In 2003, 107,000 crabs were harvested. That's 43,000 crabs less than they were allowed to have. The total we were allowed was

450,000 crabs in three years. The total came out to 254,600. That's conservation.

Fish and Wildlife for the Delaware Bay say that at any given time in the Delaware Bay there is 16 million crabs; in Cape Cod, 14 million crabs. In 2005 with the harvest of the horseshoe crabs in the Delaware Bay 60,000 crabs were harvested in less than 12 hours.

Then they had their time to catch up and get a few more; they caught the other 30,000 which still 60,000 shy because of the timeline and the crabs moving. That's conservation -- not an over catch, less.

Out of 30 million crabs on the coast, less than 1 percent is used for commercial use eelers and conchers. Zero point seven crabs are used for biomedical research. Ten to 15 percent of them die which leaves 98.3 percent of the crabs on the coast. There isn't a fishery on the coast that leaves 98.3 percent of anything.

If there is proof that there is a shortage of crabs up and down the coast, then you must act. But please have the facts based on science, government science, not just because any group says there is a problem. Let's prove it.

You must find out why these birds are not coming back from the del Fuegos. I would really like to know and put this to rest and stop stressing out everyone who is working hard just to make an honest living and pay their taxes.

In New Jersey our newspaper reported that \$400,000 in revenue would be lost over two years. How did they get that number? Bad information. I stocked close to \$150,000 conching last year. I work hard. I know a lot of guys who did better than I did.

Now if I do that for two years that puts me at \$300,000. My newspaper said only \$400,000 would be lost but they were just talking about the guys harvesting the crabs to sell to us to use for bait.

So that would put me at two years at \$300,000, maybe a little less, plus the crabs at 400 plus eelers, plus all the other conchers. There is millions involved, not just what somebody with a pen in the newspaper wants certain groups to hear. I really appreciate being here.

Thank you very much. And I'm all for science. I don't want any group on my side to lie. If there is a problem, like I said in the beginning, let's act on it. I



agree with that. I do agree with that. And if there is not a problem, let's all be honest.

This is not about politics here. This is about livelihoods. Honest to God, this is livelihoods. I work very hard and I know a lot of people work very hard in my business. If I want to make more for a living, I put more days in at sea.

I work in weather sometimes I don't want to be out. But I'm just glad that I can be part of this. And I drove all the way down here to be here. And it's heartfelt on our way, it really is. Thank you.

CHAIRMAN MILLER: Ed, stay at the mic for just a second. I believe Commissioner Augustine has a question or a comment.

MR. PATRICK AUGUSTINE: Thank you, Mr. Chairman. A very good presentation.

MR. BLAINE: Thank you.

MR. AUGUSTINE: I hope you make that information available for our records. You mentioned early on in your presentation that you were catching far less than the quota. Was that because the horseshoe crabs actually weren't available and they had left the area or was it that you didn't have a need for them?

MR. BLAINE: Well, no, we always have a need for them. There is never a problem for the need. It's what people have to understand in the fishing business -- and the birders I'm sure will agree with me with this. Well, I don't believe it was last year, I'm not sure.

My friend Dave knows better if it was last year or the year before they halted the harvest of horseshoe crabs, something -- the birds came late so everybody was like, well, you can't harvest now. The birds are just getting here. They put a two-extra week moratorium -- am I not right? -- on the harvest. But we were -- go ahead.

MR. AUGUSTINE: So actually it was a closure to protect the birds and the availability of the eggs for them to beef up before they took their migratory route. Now, when that season was reopened, is there still a need for the remaining horseshoe crabs or have they now left the area and gone off back to sea?

MR. BLAINE: A lot of times the birds, I mean, excuse me, the horseshoe crabs will move. I

mean if there is a certain time, like on the moon, certain phases and weather conditions, the crabs will come up and sometimes the conditions get bad on that side of the bay which a lot of people do not understand.

If you get a screaming southwest wind, if the birds are pushing up on the beach and it comes hard southwest, they take a beating in the surf because of the bay so they, the crabs will move off the bank and they'll go try to find a secure area or they'll wait until the weather switches off. And the same for the side of Delaware. So the crabs do shift and move.

MR. AUGUSTINE: And in your experience in harvesting horseshoe crabs along the shoreline have you seen an increase in laughing gulls and other predators that are working on the eggs at the same time that the red knots are there trying to beef up?

MR. BLAINE: I'm glad you brought that up because for four days I fought real hard at home to pick the newspaper that the press put out. They had a front page and there was about 500 or 600 -- I believe they call them the hooded gulls, the black, they're hooded. I believe that's what they're called.

And if you look, you have to look through the gulls to see the birds. If you go down on the beach and you watch where any, if you throw food on the beach and one seagull goes for it, the other ones, he screams to get it, they all come at it.

Well, when these little birds are eating they do -- and I'm sure these people would agree with me -- that they do come in and hone them out. They push them because they're smaller. And they move somewhere else.

So they'll keep pushing them but yet they're eating. But I don't really know how much they can eat when something, it's like having a dog running up and down the beach. They have to eat but as soon as he comes they've got to run.

MR. AUGUSTINE: Well, thanks for painting that picture. We're concerned, I think in New York the same way as you are down in Delaware.

We don't have the same number of crabs but if we do move along the line where we restrict the harvest of horseshoe crabs in the four states that we're talking about -- and we may very well come to that conclusion -- it appears that we in New York may be inundated with requests for out of state needs for

horseshoe crabs and as an indirect result see a very, very significant hit on our population.

So I'm glad you answered those questions because I think it will help us in our deliberation as to what we have to do. And thank you for your full disclosure.

MR. BLAINE: Thank you very much. I appreciate being here today.

CHAIRMAN MILLER: Thank you. I believe there was one other hand. Yes, sir. Could we make a request of the speakers. Could we have them move behind Joe and next to John Duren. And, John, if you could make that microphone available, and the reason being is some of the folks up front can't see the speaker and we would like to accommodate everyone's wishes. Thank you.

MR. TIM DILLINGHAM: Mr. Chairman, members of the Board, my name is Tim Dillingham. I'm with the American Littoral Society. We are a conservation organization based out of Sandy Hook New Jersey.

We have been involved in the horseshoe crab and shorebird conservation efforts for a number of years. We also in addition to our advocacy here we have done work on trying to promote, identify and promote the habitat restoration along the Delaware Shore beaches and public education.

I just wanted to take a couple minutes at the beginning of this, I know you're going to take comment further on but first off to commend the board and the commission for their work on this.

I mean clearly I think we all recognize, even though we are in the midst of a very contentious debate about the course of action for the future, that the commission has taken steps to address the issue in terms of the ecological interactions between the shorebirds and the horseshoe crabs.

And I think that clearly there are results out in the real world there that show the fruits of your effort. I also want to commend the states of Delaware and New Jersey for their independent efforts in the stewardship of this resource.

It clearly is a difficult task to not only manage this fishery but to manage the ecological interrelationships between these two populations of animals which the science I think is probably not as definitive as any of us would like it to be in terms of what is going on here. I will say, though, that I

would agree with Mr. Blaine that we want to see these decisions made upon the basis of science.

And time and time again international experts and experts from within the states that have dealt with the shorebird part of this equation have said that the red knot is in peril, that it is on the pathway to extinction and that a 100 percent moratorium on the harvest is the most risk conservative measure you can take and in fact it is the appropriate measure to take, the step to take in order to protect those animals.

And I think, you know, thinking back on the conversation in Galloway in December, I just want to stress and hope that you keep foremost in your mind that that obligation is there to manage for the shorebirds as well as for the fishery as well as for the fishermen and the economic considerations that are there.

And I think that there really is very little basis to question the peril or the plight of the red knot at this point. And you have I think the best expert opinion that is available to you on the course of action there.

So I will close with that. I'll probably comment later on as you go through the technical reports but I appreciate your time and I appreciate your effort on this.

CHAIRMAN MILLER: Thank you, Tim. I thought I saw one other hand up. Perry.

MR. PERRY PLUMART: Thank you, Mr. Chairman and members of the Horseshoe Crab Management Board. I think it's important to — oh, I'm Perry Plumart with the American Bird Conservancy, Director of Conservation Advocacy.

The science, and I know that the commission and the board likes to base their decisions on sound science, the science on the red knot Rufus subspecies is that this bird is in serious trouble and it's threatened with extinction within five to ten years.

The science on that is peer reviewed by international shorebird scientists who have studied this bird extensively. They have looked at both the Arctic breeding grounds and the Tierra del Fuego wintering grounds and they have found that in only one spot where this bird goes is there a problem and that's Delaware Bay and the lack of horseshoe crab eggs in Delaware Bay.

In essence, the bird feeder there is empty at a key point in its migration. So that's why we are going

through this exercise today. I would say, Mr. Chairman, that I have been to the last two Horseshoe Crab Technical Committees. I went to the stock assessment committee.

And I think that, Number 1, what we have to look at first is before a lot of the studies that have been done is that they start after the heavy overfishing that took place in the 1990s, according to the Virginia Tech studied peer reviewed for the NMFS Journal by Michelle Davis that probably well over half of the biomass of the horseshoe crab was taken out before any regulations went in and before many of the studies that are going on. So the baseline that we're looking at is substantially reduced.

I think that what you also need to look at is that as the take of the horseshoe crabs went up, it mirrors the downward slide of the shorebird who has, which has declined by approximately 90 percent in the decade of the '90s.

I think the red knot appropriately is the canary in the coal mine for both the red knot and the horseshoe crab. I think that also the regulations that were put into place were based not on the population understanding of the horseshoe crab, not on the needs of the shorebird but basically on the needs of the bait industry at the time.

The regs that were put in were put in at cutbacks from the highest baseline, the highest landing records that were available. I think there has been some talk about doing a male-only or a male directed fishery.

I would say that the premise for this has started on the needs of the bait industry. And I think it's a very creative take on the issue. I appreciate the efforts that the commercial interests have put into trying to move this proposal forward.

But it's not based on any science. It was not discussed at any of the horseshoe crab or stock assessment committee technical meetings. It's based on, it has not been peer reviewed, studied, looked at.

And in fact as many of you know, if you go to see the horseshoe crabs when they are spawning nature seem to have indicated that the female needs multiple males in order for them to survive or prosper.

The other thing I think, and this is an usual fishery in many ways, but you have to remember that unlike when you're taking a look at other fisheries, whether it's menhaden or what have you, that if you manage the horseshoe crab just for the horseshoe crab, that

that could well mean a death sentence for the birds, that you have to -- that the red knot and the other shorebirds need a superabundance of horseshoe crab eggs on the beach in order for them to make their weight gain survivals.

So merely taking, merely managing for the horseshoe crab is not enough in this situation. I appreciate the efforts of New Jersey and Delaware to take a look at a moratorium in the Delaware Bay and to take a look at how we can reduce the take of other horseshoe crabs that are of Delaware Bay origin.

And I look forward to the discussion today and hope we can have that, those items put out for public comment in the draft addendum. Thank you, Mr. Chairman.

CHAIRMAN MILLER: Thank you, Perry. John.

MR. JOHN DUREN: Perry, I appreciate your comments and I do have a question for you. You indicated that the full range of the red knot has been studied and that habitat seems to be in good condition for the bird everywhere except on the Delaware Bay. I believe that's correct and my question for you is, is that published information or research that we could have available for the commission?

MR. PLUMART: Yes, it is. The scientists, because they were trying to understand the phenomena, have gone to Tierra del Fuego. They have gone to the Arctic breeding grounds, and they've also looked at other shorebirds that, and other birds that go to both of those places.

And they have found that their populations are stable or increasing. So the one key factor that it seems to be in, is the lack of horseshoe crab availability in Delaware Bay. And the work has been led by Dr. Larry Niles from the state of New Jersey. And I'm sure that we can make it available for you.

MR. DUREN: Thank you.

CHAIRMAN MILLER: Other questions, Pat Augustine.

MR. AUGUSTINE: Perry, I think you know where my position is. We want to do as much as we can to protect the red knot and make sure it doesn't go to a state of extinction. All the board members over the last several months received a package from Carolyn Kennedy, white bound, with

the study that you talked about or referred to in regard to Mr. Duren's comments.

And it's interesting to note that in the proposal for listing that was presented it specifically has some points that are troubling in that we're going to make a decision or decisions that will affect the livelihoods of an awful lot of folks and at the same time not contribute significantly to the protection and continued expansion or regeneration of red knots.

And under the study results in the first part -- if you will bear with me, Mr. Chairman, there are two or three areas I'd like to refer to -- horseshoe crab egg density and red knot mass studies, this part of the presentation by Niles and so on showed that the bay was unseasonably cold in May of 2003 and most crab breeding took place in June which, from what I understand, was out of sync with when the birds arrived.

However, egg density has increased slightly in 2004 when temperatures were higher and egg availability coincided better with the shorebird stopover. Then it goes on to say in another area there has been a systematic reduction in the mass of knots leaving Delaware Bay for the Arctic.

MR. PLUMART: I'm sorry, Mr. Augustine, can you tell me what you're reading from?

MR. AUGUSTINE: I am reading from this document that was put out and mailed to each one of the board members on September 5<sup>th</sup> with a cover letter from Carolyn Kennedy, Director of Conservation Initiatives, Defender of Wildlife, that include in it, if you will bear with me, Appendix 1, 2 and 3 which are the assessment of wintering areas of red knots in both Northern Brazil and then the areas that you refer to and another report from the New Jersey area.

And basically what they've said is there are other contributing factors that I think we as board members have to weigh before we make this decision. It goes on to say here in another one I've referred to, the first report, that said preliminary scans of birds failed to find any orange flagged or red flagged birds in this particular area, concluded that the wintering flocks of red knots are a separate population from the Texas, from the Tierra del Fuego knots.

It will therefore be important to study this particular population closely for the next few years. Attempts to monitor survival using data on captured and re-sighted birds in Delaware Bay have been plagued by

the fact that a substantial portion of the rufa population either bypass the bay or do not migrate to North America in certain years.

And I'm not taking it out of context. It's there in that body. And then if I may go to another section further in that, that shows that the population density had changed.

It talks about the re-sighting of red knots in Northern Brazil that pass through Delaware Bay in the spring each year suggests that possibly one-quarter of the flock in the bay in 2004 were from the Northern Brazilian population.

If this extrapolation is approximately correct it suggests that a large number of red knots from Terra del Fuego did not migrate to the bay in 2004, either avoiding it or avoid migration in South America.

In either case, the disruption to the normal migratory schedule is expected to have deleterious effects on population growth through declines in reproductive success in recruitment. And then we go to another study --

CHAIRMAN MILLER: Pat, could I interrupt for just a second. I'm going to make a request of you if you'd indulge me for just a second.

MR. AUGUSTINE: Yes.

CHAIRMAN MILLER: Could you briefly summarize the point you're trying to reach, Pat, because not everyone has the particular document that you reference in front of them at this point in time.

It was, as you said, mailed to the board earlier but I don't believe it's generally available at this particular meeting to everyone. So if you could, if I could ask you to briefly summarize I'd appreciate it. Thank you.

MR. AUGUSTINE: Yes, I can do that. Thank you for your indulgence in listening to me read through this. I was quite concerned when I read these parts.

Basically what it sounds like has happened, according to what I got out of these documents, that the birds have changed their migratory path somewhat and to a point where it appears that many of these, as many as 40 percent from what the documents say, are now stopping in North Carolina, South Carolina and Georgia as opposed to taking the

trip up to the Delaware and completely bypassing that area.

The documents further go on to say that there was a definite change in wintering conditions in Canada, northern Canada where the birds lay over and actually produce their eggs. And as a result, according to this document, it appears that many of those eggs never hatched in the last two years. That's what I got from this.

So I'm building up to a point where I think having this information with what we've heard from the folks who want to put a moratorium on this, there appears to be a disconnect. And I hope someone, including the technical committee, can enlighten me on that. And I hope that satisfies your need, Mr. Chairman.

CHAIRMAN MILLER: Thank you, Pat. There were a couple of hands that came up while you were speaking from board members. John Nelson.

MR. PLUMART: Could I just respond?

CHAIRMAN MILLER: Bear with me just a second, please, Perry. John.

MR. JOHN I. NELSON, JR.: Thanks, Mr. Chairman. And I appreciate you know the discussion that we're having. Obviously we want to get as much information as possible. But I think it's important for us to make sure of when we start having the discussion that when we're using information that it has been vetted through the technical committee.

I realize these are, what Pat is using as an example is something that has been published by a group and sent around to everybody. But I'm not aware that that has gone through our technical committee for them to consider.

And I think that what we are doing right now is having a discussion on a particular issue which we haven't even sent that addendum out for public comment yet. And I think it would be helpful to just, to recognize that we're just going to have a discussion a little bit later on putting an addendum out to public comment.

And I think a lot of this discussion probably is afterwards, if we decide to go out to public comment for that addendum. So, those are the two points I'd like to make, Mr. Chairman, as far as trying to just keep ourselves organized on how we're discussing all of this.

CHAIRMAN MILLER: Thank you, John. And I appreciate that. Pete, were your comments, Pete Himchak, along the same line?

MR. PETE HIMCHAK: Yes, perhaps I could clear up this procedural confusion. The official document being developed for the U.S. Fish and Wildlife Service relating to the listing, potential listing of the subspecies of red knot has not come out in final format yet.

It has gone through a number of re-writes. It was just distributed to the Shorebird Technical Committee and the Horseshoe Crab Technical Committee for comments that were due February 21<sup>st</sup>.

There is a lot of information that was disseminated through binders and other mail outs earlier this year. But the official document being developed by the U.S. Fish and Wildlife Service is presently being reviewed by the technical committees and that is the document which may or may not include the components that you reference.

But it is the full embodiment of the information probably including information that hasn't been released yet so it is premature at this point to discuss specifics within the complete range.

CHAIRMAN MILLER: Thank you, Pete. George Lapointe, did you have an additional comment on this?

MR. GEORGE LAPOINTE: Just, thank you, Mr. Chairman, just a request to board members that we not use the public comment period as a debate forum which we're I think in danger of doing here.

The questions that are being raised are entirely pertinent but we want to get on with the substance of the meeting and so the questions are good but first we'll have the draft addendum and then those questions we'll need to get, wrestle in our own minds before we make a final decision. And so it's just a caution that we not try to pre-debate the issues.

CHAIRMAN MILLER: Perry, thank you for your patience. I didn't want to cut you off but I did want you to have an opportunity to respond but please keep in mind the comments of the other board members concerning the sequence of how we'll take these issues up today if you would, please.

MR. PLUMART: Thank you, Mr.

Chairman. I would just say I'm impressed that Mr. Augustine read the material we send him and thank him for that. I think, you know, when you're taking a look at a scientific document like that you can take a look at various parts and look at minutia or whatever.

But the fundamental conclusion of the document was that there has been a decline of 90 percent in the red knot population, that it's in trouble and that it's due to the result of there being, as I said before, the bird feeder being empty. And so I think you need to look at the conclusion of the document as well as reading the finer points. Thank you, Mr. Chairman.

CHAIRMAN MILLER: Thank you, Perry. Additional comment, Kelly.

MR. KELLY PLACE: Yes, I'd like to ask a brief question of Mr. Plumart, also. Would you mind coming back for just a moment, Perry? Thanks for your comments, Perry. I think we all share a concern for the situation with the red knot.

One comment that you made, though, which I think goes directly to Option 2B is that you suggested the *limulus polyphemus* needs multiple males in order to breed and that there were scientific evidence of that fact. I have two documents here from November of '05 and January of '06 that suggest and actually states that the extra males in the Delaware Bay spawning phenomenon are superfluous.

And I just wondered if you could cite the scientific evidence that you alluded to that suggested that limulus, unlike the other populations around the world, needs multiple males because -- and you may well have documented evidence that I haven't seen but if you could cite that I would appreciate it.

MR. PLUMART: Well, Kelly, what I said, as I indicated earlier, that I was at the last two Horseshoe Crab Technical Committees and I was at the stock assessment committee and there is not evidence one way or the other, that it has not been studied, that whether the excess males are needed or, nobody knows if they're excess in fact. And I would just say as you know from observations at the beach that females are frequently tended to by multiple males, two to four, five, sometimes.

CHAIRMAN MILLER: Thank you.

MR. PLACE: You take exception, then, to the two documents I have here and I believe the board has that states that the excess males are superfluous? Thank you, Mr. Plumart.

CHAIRMAN MILLER: All right, I saw one other hand. Charlie. Let this be the last public comment we have at this particular juncture. There will be additional opportunities for public comment before this meeting is over. Thank you.

MR. CHARLES GIVENS: Thank you, Chairman Miller, and I just have a couple -- my name is Charles Givens and I'm from Cape May and I'm representing hand harvesters of horseshoe crabs in New Jersey.

The first thing I'd like to point out is that in New Jersey we only do have a hand harvest; we don't have a trawl harvest. That was eliminated by the division in '98 I believe.

I would also like to point out that in New Jersey we do not and have not harvested horseshoe crabs from the beaches where these red knots feed since approximately 1998. We in no way interfere with their feeding process. And I just want the board to be clear on that.

Another, actually I had a question for Mr. Augustine. He mentioned a report that you got from Defenders of Fur or Defenders of Wildlife -- they used to be called Defenders of Fur. I haven't had a chance to review that but I was wondering in that document do you have a title called "Declines in the Wintering Populations of Red Knots in Southern South America"?

MR. AUGUSTINE: Yes, sir.

MR. GIVENS: You do have that? Well, if you would, would you turn to Page 7 of that title.

MR. LAPOINTE: Mr. Chairman, point of order. I'm sorry for the gentleman. I don't want to please don't get in a debate about the information. Please after the meeting share the report among yourselves and as we move forward make comments.

If we bring this out to public hearing make comments on the voracity of the information in the document during the public hearing process but now is not the time to comment on a particular page about a particular report we don't all have. I'm sorry.

CHAIRMAN MILLER: I'm forced to agree with Commissioner Lapointe on that. Mr. Givens, could you quickly summarize? Have you made all your points?

MR. GIVENS: Certainly not, Mr. Miller, and I'd like to affirm my right to speak here before the council and to make my points just as everyone else has. You've afforded plenty of time to everyone else and I haven't taken very much time and I just have a couple of quick points.

CHAIRMAN MILLER: Certainly. The only thing Commissioner Lapointe was suggesting is that we not get into a debate on the specifics of wording in reports that we don't all have in front of us but please feel free to speak.

MR. GIVENS: I do not see where the specifics of that is relevant. If it's important to me to make this point and I'm speaking for other people besides myself, I think that you should let me make it.

CHAIRMAN MILLER: Go ahead, Mr. Givens. Please make your point.

MR. GIVENS: Well, thank you, Mr. Miller. Mr. Augustine, do you have that report? On Page 7 do you see the section where it says is the decline real? Do you see that? Do you see the second paragraph?

Can you read there where it says, it says, "with counts falling from over 100,000 in the mid-80s to fewer than 10,000 in 2003" and they cite Clark from New Jersey and L.J.N., Larry J. Niles, unpublished data from New Jersey?

MR. AUGUSTINE: Mr. Chairman, I'd rather not respond. He has got the information and if he would read it into the record I think he would -- I can agree with you on or off the record because I do have it and I've read it.

MR. GIVENS: All right, well, if you notice they're reporting then that there was less than 10,000 crabs in 2003. Now, is that the information that you have?

MR. AUGUSTINE: Yes, it is.

MR. GIVENS: Are you aware that this report was submitted and published before the term of the experiment was over? I mean, they do survey red knots until the 15<sup>th</sup> of June. This report was submitted, it was received in May, May 29<sup>th</sup>, 2003. Now that's before the period is over.

Now, after that there was another count of birds and that count was much higher, almost twice as much.

So I would like to caution you and the board when you're reading the science to make sure that when you see a study that you're not completely in awe of this. This is published in Condor which is the journal of the Cooper River Ornithological Society.

It's considered gray literature because it's not peer reviewed. This has not been peer reviewed. So, I'd just like to point out the inequity of filing a report which states a number that is a number that's derived before the experiment is completed as you go back into all the years from '86 when they first started this survey.

Now that's not the only incidence of this. Last year, 2005, I read in a newspaper, I read an Associated Press report that the highest number of birds was I believe 15,000 and I read that on the 25<sup>th</sup> of May.

Now, the peak time for red knots according to the studies over the years historically has been the 28<sup>th</sup> to the 30<sup>th</sup>. So I would just like to point out that there are two incidents where the final numbers for the final counts of red knots on the Delaware Bay have been reported before the term of the experiment is over.

Now, I don't think that's equitable conduct. Some people would claim that that's research misconduct by the federal government standard which would be omission, fabrication or falsification of data.

So, I think you have to, if you're going to read these reports you have to read them very carefully and you have to compare them with other known values and figures that are well known.

CHAIRMAN MILLER: Are you just about ready to wrap up, Mr. Givens?

MR. GIVENS: I think I will wrap up, thank you.

CHAIRMAN MILLER: Thank you for your comments. Pete Himchak.

MR. HIMCHAK: Yes, Mr. Chairman, I would just like to reiterate that all of these data are, will be contained in the assessment document being developed by the U.S. Fish and Wildlife Service and that will undergo a public commenting period so it is inappropriate to debate portions of it at this point. The public hearing will address the full embodiment of the information.

CHAIRMAN MILLER: Jack Travelstead.

MR. JACK TRAVELSTEAD: A real quick question, will that document be available to the board before we have to vote on the addendum we're now considering?

MR. HIMCHAK: Jack, I don't know the timeline on that. I know that the comments from the Shorebird Technical Committee and the Horseshoe Crab Technical Committee were due February 21<sup>st</sup>. We have developed our comments and they have been submitted.

I don't know, I'm sure the comments may elicit some additional work on the document before it goes out to public comment so there is a scientific screening of the, to ask for clarifications on certain datasets. But I don't know the date or the public hearing process.

CHAIRMAN MILLER: Thank you.

MR. LAPOINTE: Roy, just a --

CHAIRMAN MILLER: George Lapointe.

MR. LAPOINTE: I thank Mr. Givens for bringing up the issue. I think that was your name, sir, and I apologize if it isn't, of bringing up the issue of questioning the science, the information, because we should.

And Pete's comments about the review of red knots, if I'm an optimist I say we'll have the report; if I'm a realist I say we probably won't. But I think our technical committee, both the Shorebird Technical Committee and the Horseshoe Crab Technical Committee, can help us weed through the questions about the debate about the science and that's what we'll probably have to rely on.

#### **ELECTION OF VICE CHAIR**

CHAIRMAN MILLER: Thank you, George. What I'd like to do next is entertain any nominations from the board for a vice chair for this particular committee. Jack Travelstead.

MR. TRAVELSTEAD: Thank you, Mr. Chairman. **I'd like to nominate Robert Boyles for vice chair of the committee.**

CHAIRMAN MILLER: That was made by Jack Travelstead and seconded by George Lapointe. Are there any additional nominations? Pete Himchak.

MR. HIMCHAK: Yes, as his reward for reading through all the documents I would like to nominate Pat Augustine from New York as vice chairman.

MR. VITO CALOMO: I'll second that.

CHAIRMAN MILLER: Seconded by Vito Calomo. Are there any additional nominations?

SENATOR DAMON: **I make a motion nominations cease.**

CHAIRMAN MILLER: There has been a motion made by Dennis Damon that the nominations close. Is there a second to that?

MR. G. RITCHIE WHITE: Second.

CHAIRMAN MILLER: Seconded by Ritchie White. All in favor say aye; opposed, no. All right, the nominations are closed. Pat Augustine.

MR. AUGUSTINE: Thank you, Pete. I appreciate that, for your nomination. I would like to do this, vice chairman. As you know, I'm already involved as chairman and vice chairman of several of the other boards. And as much as I want to do this, if Mr. Boyle really is up to the task, I would withdraw my nomination.

CHAIRMAN MILLER: I guess we should direct that to Robert.

MR. AUGUSTINE: Yes.

ROBERT H. BOYLES, JR.: Yes, sir, that's fine. I believe I'm up to the task. How is that?

MR. AUGUSTINE: Thank you, Mr. Chairman. With that I withdraw my nomination. Thank you, Vito and Peter. And therefore I would like to close nominations and cast one vote. Congratulations, Mr. Chairman.

CHAIRMAN MILLER: Since we now have one candidate and the nominations are closed I guess by unanimous acclaim Robert Boyles then you become the vice chair. Congratulations. The next agenda item, I'd like to move on to the technical committee report including the stock assessment subcommittee model review. And I will call on the new technical committee chair, Mike Millard in just a second.

But before I do, Greg Breese is still with us. Greg is



the outgoing chair of the technical committee and since he is stepping down today and passing the honors on to Mike Millard I'd like to just recognize Greg for his services to the commission for the past 3.5 years. Congratulations. Mike.

## TECHNICAL COMMITTEE REPORT

MR. MIKE MILLARD: Thank you, Mr. Chairman. As you said, the Horseshoe Crab Technical Committee and the stock assessment committee met in January back-to-back with a fairly specific agenda in front of them.

That agenda was to review some recent and relevant information that has come forward regarding horseshoe crab population dynamics and estimations. The three papers that we addressed in general are shown here.

The first one was a surplus production modeling effort by some folks out of Virginia Tech University. Then we had a mark-recapture estimate paper from Dave Smith et al., and finally a simulation modeling on an age-structured population, some work done out of my shop with the Fish and Wildlife Service in Pennsylvania.

So I think it's fair to characterize, we went into this meeting, the stock assessment committee I'm speaking now, went into this meeting with a fair amount of uncertainty as to where and how all these pieces were going to fit together.

But I think I can characterize at the end of the meeting with some tweaking and some discussion, a great deal of discussion, actually, not all of it collegial but by the end we were collegial and I think we all arrived at the point of a reasonably consistent picture was starting to emerge from all of these studies, as I hope I can explain here.

Just to be clear on what our terms of reference were, they were fairly specific. We wanted to evaluate the adequacy and the appropriateness of each of these models; go through their assumptions and identify if assumptions were met or unmet and what the ramifications of those might be; evaluate if the results of these various models could be used as a basis for management decisions by you folks; provide recommendations for improving the models, primarily to the authors of the models for another go-around; and, finally, in general to use this new information to summarize the status of the horseshoe crab population, particularly in the Delaware Bay area, of course.

What I hope to do here and I'm going to do it fairly briskly, is step through. As I step through these three models I will give you one or two slides on sort of summarizing how we felt about the model in general based on those terms of reference as I just read.

And then I will give you a slide or two on what the results of that model were. So you will hear about what we thought about it and then what the results of the model actually were. Number 1 we'll take up is the surplus production model.

We did some tweaking and some updated runs of the model since the actual manuscript that went forward for publication. We took that as a group at the stock assessment committee, updated some of the indices, removed some, added some in a group format.

And we felt that after these updated runs had been completed during that workshop that this model was indeed adequate and appropriate for qualitative trends in relative F and relative abundance of the horseshoe crab stock in Delaware Bay.

At this point I think we emphasized the word qualitative assessment of current F in biomass. And I'll tell you what that means in a minute here as we look at the next graph. The manuscript itself that went forward also used a surplus production routine to project population, horseshoe crab populations, and say something about recovery times.

The stock assessment committee arrived at the point where we felt that was probably inappropriate to do given the assumptions of the surplus production modeling effort, that projections were not appropriate, primarily due to the lag time that the horseshoe crab life history incorporates, ten years to maturity.

And this sort of life history is not consistent with the assumptions of the surplus production modeling, particularly as far as projections. And again the surplus production model is a generalized model. It aggregates.

It looks at everything all at once. There is no age structure incorporated into it. And we felt that was a weakness as far as projecting into the future what the horseshoe crab population would do.

We're working on that, however. We're currently doing some more simulation studies to help test that, how this surplus production model might apply to a critter like the horseshoe crab that has a ten-year

delay to maturity.

So we're working on that. So that was kind of in the quick and dirty how we felt about the surplus production model. It did certainly have value to the, for the issue. And the results, the important results of that surplus production model are shown here.

The B or the red line is F over MSY ratio. That's what this surplus production modeling spits out. And the shape of that is what we are saying is probably true and is consistent with the many other studies.

That is, F, the FMS over Fmsy ratio was high in the late '90s. And again the higher this is you might think the more egregious it might be. But being, that ratio being high is not a good thing.

And then we think in response to management actions in the late '90s, early 2000s that the F ratio has started to decline since then. That's the red line. So that is the general shape of the fishing effort in relation to Fmsy. And we believe that is a fair characterization of it.

The blue line represents the biomass over biomass MSY. If that's below one that's a bad thing. That suggests that the biomass is below an MSY biomass. So we think, you know, in response to this high F here that has probably pushed that biomass below the Bmsy biomass and has since sort of cruised along at that level.

Again, we purposely left the Y axis off this graph because we believe in the shape of these estimates more than the location. Statisticians like to talk about a shape parameter to a distribution and then a location parameter.

If you know both of those you've pretty well got the beast described. We think this model gives us a pretty good view of the shape of the distribution but maybe not the location, exactly where it is. That's why there is no Y axis there.

So keep that, especially that red line, that's a good one to keep in mind. And the stock assessment committee believes that that's probably a true characterization, the best we can do right now for the F.

And we move on to the mark-recapture study now. This again estimates a population, gives us an absolute population abundance for the bay. The original paper was for 2003. And since then it has been, 2004 has been added.

We found this to be after our analysis of the assumptions and everything that goes into it an appropriate and these were useful estimates of harvest rates. Given the abundance estimates and the landing estimates we could come up with harvest estimates in the bay.

There was, recapture rates were low. Approximately 16,000 tags were put out in the bay over two years. Recapture rates were in the 40s each year, 30 to 40 each year. There are several reasons that could be. Most of them were tested.

And the one that's most likely is in fact a relatively high population abundance in relation to the number of tags put out. The estimates from this model again are snapshots, abundance estimates taken at one point in time and as such are not all that useful for evaluating population parameters.

But they start to give us, as I talked about before, we saw a shape of the distribution. These estimates start to give us a location of where we are in space with the horseshoe crab population.

So a picture is starting to come together a little bit. There is no, we have arrived at no biological reference point, however to determine whether these harvest rates are sustainable. That's important to remember.

So I apologize for this is kind of small. I hope the second one will be a little bit bigger. The estimates that came out of that, those mark-recapture studies were in 2003 close to 20 million. That's males and females in the bay; in 2004, 13 million. They were not statistically different numbers.

The harvest rate, associated harvest rates given the landings data that go with those, 4 percent in 2003 and 3 percent in 2004. Another good, I say good is a hopeful, promising result that came from this tagging effort in the bay was, it had to do with juvenile horseshoe crabs.

There were many signs that the juvenile cohort are on the increase. This map shows that they were distributed bay wide, the catch of juvenile horseshoe crabs, in these trawl samples. And here, not to get too much into the weeds but, as we move from 2003 to 2004 to 2005 these are age class distributions.

And you can see as we move from '03 to '05 the age classes, there appears to be more age classes showing up. And again this makes sense in response to the

recent management actions that the board has put in place. So that's a fairly promising picture, with respect to horseshoe crabs, only.

And then finally we'll move on to the age-structured simulation model, purely a desk-based exercise, simulating an age-structured horseshoe crab population using estimates that we pull from the literature for age-specific mortality, fecundity, and just making, stepping the population on a year time step through time and letting it go, letting it run.

And we can game with that, put in harvest rates, remove harvest rates, shift harvest rates and time and see what that does to a simulated population. It's helpful for pointing out the relationships between population parameters and these harvest levels, or gamed, supposed harvest levels that we can pick.

Many of the model parameters, due to the literature base being what it is for horseshoe crabs, many of the model parameters are assumed. They are not actually estimated from the literature. That's a problem but that's what modelers do.

That's the best you can do. You take everything you can and you have to assume the rest. But because of that we don't think that this model is really ready for primetime in terms of using for direct management decisions yet.

But it does provide us insight into what might be going on with the horseshoe crab population. And it is most useful for identifying life stages that influence population growth. And as we'll see, the early life history stages, as is the case with many fisheries, are most influential in determining cohort strength.

One thing, this is a quick little animation, if you will, and what we can do with this, if you look at this, this is a projected population. Again, this is a simulated population with uncertainty around it in the colored cones.

This is a conditioning period which you don't really need to worry about. But then we let the population go. We harvest 200,000 a year and we let it go and you can see the sort of growth potential given the various sets of parameters of the population at 200k harvest per year.

If we move forward we drop that down to 100k per year, you can see that growth trajectory for the population goes up; but that makes sense. That shouldn't surprise anybody. Drop it down to zero

harvest, again the population trajectory goes up.

So, is that, you know, that begs the question is that a reasonable or is that a significant increase in population growth? Without knowing the vital population parameters or a biological reference point at this point it's hard to say.

But nevertheless dropping harvest does increase the growth trajectory of a population. That makes sense. But to put that in perspective, we do that sort of gaming with all the, each population parameter.

And this is what we call a tornado plot that gives you the relative effect of tweaking a parameter in that simulated population. For instance, here is harvest down here. Here is the relative effect of tweaking harvest on the growth trajectory of a population in relation to tweaking, say, Age 1 through 8 mortality, Age 9 through 10, Age 11 through 17.

Or up here if we tweaked Age 0 mortality that is change it by 5 percent, more Age 0 survive, that is the relative impact that we can realize on that population growth.

That is to say if we could somehow manage for Age 0 mortality and that would be a trick -- it would have to do with habitat protection and many other things that are probably beyond our control -- we would have greatly have the most impact on helping this population grow.

That is the parameter that most effects cohort strength in horseshoe crabs, far and away, at least in our simulated population. So in summary all three of these models have strengths and weaknesses. Each contributes sort of its own little piece to the picture which we think is emerging much more clearly than it has in the past.

The production model, again, provides the qualitative estimates of trends, the shape of the relative fishing mortality and abundance. The mark-recapture studies provide a snapshot estimate starting to put a location on that shape. And then the age-structured simulation model is a good tool for us to game with and see what's important perhaps in the population as far as helping it to grow and rate of growth.

To say that again, the general picture we believe is relative biomass has declined through the 1990s to the present. This is  $B$  over  $B_{msy}$ .  $B_{msy}$  is open for discussion if that's a reference point or not but that is what the surplus production model spits out.

Relative fishing mortality has exceeded Fmsy since the '90s with that ratio peaking around '98. Again, that was that hump, the curve, and has since been declining we think due to the management actions.

Current harvest rate appears almost certainly to be below 10 percent, perhaps below 6 percent, but appears maybe to be in excess of Fmsy, given the surplus production results. Two things, I mean we've been talking about horseshoe crabs and the horseshoe crab population.

Of course there is another important side to this story and that is how horseshoe crabs interface with the shorebirds. That interface between horseshoe crabs and the shorebirds is a big unknown right now.

That needs to be solved. That needs to be addressed. We think, well, we are. We will call upon the Shorebird Technical Committee. The Horseshoe Crab Technical Committee will be calling upon the Shorebird Technical Committee to become more engaged with us.

As we set about to manage the horseshoe crab population we need to know what we are managing towards. These MSY or Fmax or F.2 or any of those biological reference points may have no real relevance when we're talking about managing for shorebird needs, energetic needs.

So that's a frontier that has yet to be tacked and needs to be addressed sooner rather than later. So the technical committee basically accepted what the stock assessment committee presented which I just went over with you.

There were some concerns from the technical committee over this notion of this peer review was sort of internal in that many of the authors on those papers were also on the stock assessment committee that did the review.

We did have two external reviewers, Dr. Rich Wong and Dr. John Brodziak from Woods Hole come in and help us. And they did provide I think a great amount of value added. There needs to be a briefing with the Virginia Tech researchers, particularly regarding the offshore benthic trawl survey.

Communication has been lacking somewhat in the past year or two and we are in the process of fixing that. There are many questions about the future of that survey and where it's going and where it has been.

The Horseshoe Crab Tagging Subcommittee should probably be reconvened. This language in the addendum of crabs of Delaware Bay origin is problematic to us. I think helping us or trying to define how will we define what crabs are crabs of Delaware Bay origin. There is some tagging data out there which might help us move forward in that, clearing that up a little bit.

And then Brad will get into the Addendum IV issues here. There is that phrase of crabs of Delaware Bay origin that we're wrestling with a little bit and there was the seasonal male-only harvest option that you heard about a little earlier today.

The technical committee did in fact kick the male-only harvest option around a little bit. There was some concerns about the impact on the sex ratio in the extant population. They were met, I think, at that point by saying well, it would be, it's only for two years and the quotas are still in place.

And this option might only be in place for two years. It would be watched closely; therefore they didn't see that as a major problem at this point. But it would need to be watched closely.

There was concerns over an impact to egg abundance if female crabs were still caught in the bycatch by mobile gear if we allowed a male-only harvest. There was a concern over a disproportionate impact to the conch and eel fisheries with a male-only harvest.

Males do well in the conch fishery but not so well in the eel fishery. Is that a problem? And then the moratorium on harvest through June 7<sup>th</sup> might not allow for maximum egg availability for the late migrating red knots.

There was concern expressed over that. But at the end of the day the TC, the technical committee agreed that the proposed male-only alternative is reasonable and recommended that the plan development team include it or something similar in the draft addendum. And with that I will conclude.

CHAIRMAN MILLER: Thank you very much, Mike, for that excellent report. I think what I would like to do is entertain questions from the board on the report. Perhaps we could structure those questions, those of you who have questions first on the three models that he presented, go ahead and ask any questions in that regard. Jack Travelstead.

MR. TRAVELSTEAD: Thank you. Mike, I

thought that was an excellent report, a lot of information to consider. I have, actually I have three questions. Could you go back to your slide that showed the F over F at MSY ratio. And I think it was the blue line, red line. Yes, that.

I guess my question is, if it takes horseshoe crabs nine or ten years to reach sexual maturity, is this graph, does this graph suggest that we may have already solved the problem by the actions we've taken?

In other words, at what point do you think that blue line is going to start moving upward? Is it going to move up on its own because of action we've already taken? Or does the red line have to get below F at MSY before you start to see the blue line peak up?

MR. MILLARD: We beat that question around quite a bit amongst ourselves and I agree. You would think that given the declining trend of the red line that at some point the blue line will come up. And that's an unknown to us.

This is — I should have made myself more clear. We are working, we're using simulation to help us better understand what a ten-year delay to maturity means in terms of these lines. My own, my personal opinion is that that has an affect.

That ten-year delay somehow explains what you're asking but we need to actually simulate out a population, harvest it, let it grow, harvest it and stick those results into the surplus production model to confirm that that is in fact, you know, help us, give us some insight into what is going on there. But we believe that that delay is in fact, it muddies the picture a little bit as far as surplus production modeling.

MR. TRAVELSTEAD: The other question I had, later in your presentation you talked about harvest rates of .04 and .03 for a couple of years which I think to most of us sitting around this table are extremely low harvest rates when you compare them to other species that we have to deal with.

And I guess my question is, are there other species with similar life history characteristics like the horseshoe crab where we know that harvest rates that low have a significant impact on the population? Is there other science we can borrow to draw some conclusions there?

MR. MILLARD: I don't, in my experience I don't have one on the tip of my tongue. I guess I

would open that up to the expertise we have around the table. But I can't think. To me they seem like low rates but at the same time we don't know the vital population parameters of the population so they may not be low. But you're right, in traditional fisheries framework they appear low.

MR. TRAVELSTEAD: Last question. Toward the end of your presentation you talked about habitat protection. Can you give us, you suggested that there were things that were outside of the realm of the board but can you give us some specific suggestions as to the type of habitat protection you think might be needed for this fishery?

MR. MILLARD: I wish I could. These are Age 0 that are out there in the flats, in the sand flats and the mud flats. The source of mortality for those I think is unknown so we would have to get a handle on what the primary source of mortality for them is and attempt to do something to mitigate that.

It may be predation. You know maybe it has nothing to do with habitat. My guess is it's probably both, predation and decreased habitat. So certainly increasing Age 0 habitat would be good, increasing the quality of it.

MR. TRAVELSTEAD: Thanks, Mike.

CHAIRMAN MILLER: Wilson Laney.

DR. WILSON LANEY: Two points in response to Jack's question, the first one about the low harvest rates. I will defer to those of you around the table with more expertise than me in population dynamics but it seems to me that I recall hearing that with species that are slow growing, take a long time to reach maturity and even with high reproductive output such as with Atlantic sturgeon I think the sustainable harvest rates that have been modeled for those stocks are pretty low.

I'm not sure they get to 3 or 4 percent, Jack. But I think that that's the pattern that you see with long-lived organisms that, even that produce a pretty large reproductive output. And then for things like sharks whose reproductive output is even lower but also take a long time to reach maturity then it may be even lower. I don't know. I'll defer to some of my other colleagues that have more knowledge on that point.

To your second question to Mike about habitat and about factors that may be affecting mortality of those very small horseshoe crabs, any of you who have visited maybe some of the wings outlets on some

southern beaches, anyway, -- I don't know whether you have those up north or not -- you go to the large bins of curio items and you will see literally thousands of little, tiny horseshoe crabs that are dried and sold as curios.

Now where those are coming from I have no idea. I don't know whether the harvest of those is coming from the Mid-Atlantic or the Gulf of Mexico or where but I think it's worth asking that question.

And I don't know whether those harvests are being picked up by -- I suspect they're not being picked up by our ACCSP program or the FIN program on the Gulf Coast but I don't know. That's just a suspicion on my part. But somebody is taking a whole lot of those things and putting them in the curio tray.

CHAIRMAN MILLER: Thank you. Lance Stewart.

DR. LANCE STEWART: Yes, just a suggestion to Wilson's last comment, it has been my experience most of those are casts. Those are the skeletal remnants of the live animals so they don't really, I don't think, enter into predation or any mortality factor.

But my concerns are more to the technical committee and questions of whether they're really satisfied with the methodologies that are fundamental to the population biomass estimates.

And a few things that concern me are the facts that the specific gear sweep technology has bothered me for some time, that you know, that that is standardized. It's well explained in any technical report, and that the methodology of their station selections and mechanics of trawling are the best.

Because I'm concerned about surveys being relative. Surveys can always be relative. You can't really estimate population densities and abundance on surveys unless you know what the maxima are at certain times.

I'd suggestion about three years ago that it would be, you know, relatively prudent knowing a little bit about crustacean behavior that they conduct nocturnal trawl surveys and/or diving transit surveys to get absolutely real values to compare their survey results.

You know understandably we can't conduct nocturnal surveys all the time but at least to get some real, real, real estimates of population densities. And

I'm just asking that of the technical committee, if you feel comfortable with working your models based on the data you're getting? Having seen a few miscalculations in the Virginia Tech studies which we're founding most of our decisions on is disconcerting.

CHAIRMAN MILLER: Is there any response to that, Mike, or Greg, possibly?

MR. GREGORY BREESE: Well, I would say that there is concern about that and in fact there has been some significant discussion at the last couple of meetings about where we're going with the Virginia Tech survey and how well it's measuring what we think it's measuring. And we're trying to get a meeting together with them to try to get a better handle on that.

MR. MILLARD: If I might I guess I would add that at least I think in the '05 report Virginia Tech has gotten away from the actual estimation of numbers and gone to more of a catch per tow estimate which is one way of side-stepping your concern about absolute estimates and is probably a prudent way to go at this point.

CHAIRMAN MILLER: Howard King.

MR. HOWARD KING, III: Thank you, Mr. Chairman. Mike, I echo the excellent presentation, that was very good. Given the information that you've presented to us, could you give us a realistic view of under the best circumstances how many years down the road it might be before the biomass line comes up above the relative line you've shown?

MR. MILLARD: I would hesitate to go on record with that. It would be speculation, purely. And as we move forward with this simulation modeling I would feel more comfortable answering that. I mean I would have a number to give you other than just pulling one out of the air.

But clearly the direction appears to be going in the right direction of the F. But as far as actually crossing the lines, and we did take away, as I said, that Y axis for a purpose. So where that line is, we don't really know, so, sorry.

CHAIRMAN MILLER: All right, I have Greg then John then Pete so far.

MR. LAPOINTE: My question, Mr. Chairman, isn't about the model, it's about some of the conclusions at the end and you had said you

wanted to segregate so I can wait if other people have model questions.

CHAIRMAN MILLER: I think that might be a good idea. Next was John Nelson.

MR. NELSON: Thanks, Mr. Chairman. Mine is somewhat similar to Howard's. So with the Y axis not being there do all three lines move in sync with each other and that's the basic picture that you're painting? Or does MSY stay steady?

MR. MILLARD: MSY is not steady in a non-equilibrium world, which we now assume everything is non-equilibrium. So MSY can change depending on the population abundance. So the lines are related but there is certainly not a one-to-one correlation.

At this point that's the best I could tell you. They will move in certain directions but there will be some variability in relation to the movement. But MSY is not a steady constant for any population.

MR. NELSON: Yes, I know it, most of the ones that we deal with. The other question, and again I recognize you don't have the axis on here, the Y axis, but you had one table that showed abundance of almost I think 20 million and then the next year in '05 was 13 million.

And is that really captured by the model, the base model projection there? Or are they, it seemed like you should have shown more of a drop on the model with this type of information.

MR. MILLARD: And that, the fact that you don't I think is a, symptomatic that the model is a very generalized smoothing, if you will, of what is going on in the population trends. I wouldn't I guess expect it to see or reflect a year-to-year variation like we would see in an absolute abundance estimate. It has no age structure or cohort strength associated with it so it's sort of a smoothed picture.

CHAIRMAN MILLER: Pete.

MR. HIMCHAK: Mr. Chairman, I can share the technical committee's pain in trying to deal with most recently the Virginia Tech Trawl Survey data and recognizing the need for a full presentation of the four-year dataset to the technical committee and the stock assessment subcommittee.

Subsequent to the technical committee there have been a number of e-mails and again there may be

funding limitations and this explanation of the dataset was being discussed in the form of a conference call or some kind of a well, web teleconference which a number of us thought would just be inappropriate for gaining maximum understanding of the dataset.

So if, again, I don't know the financial resources but certainly a face-to-face meeting is imperative for the Virginia Tech researchers and the two horseshoe crab technical committees. Maybe Brad can comment on if funding is available to hold this.

MR. SPEAR: I spoke with Bob Beal about it briefly and we didn't have money in the budget to hold another technical committee meeting, especially this early, this soon after we had a meeting, a technical committee meeting in January. But there, I mean there may be opportunity for shifting money around. I'd defer to Bob I guess at a later time.

CHAIRMAN MILLER: Pat Augustine.

MR. AUGUSTINE: Thank you, Mr. Chairman. I, too, would like to congratulate you on an excellent report and presentation on the information. I need to ask the following question based on what you've said, the growth and concerns and so on with the harvesters, where we've gone from '04 to '03.

We have an option coming up that now indicates that we might decide to go with a full moratorium in certain areas. And I'm just wondering from your experience and reviewing and all of this data, could you give us an idea as to what you think — maybe this is a hip shot thing — what you think might be the advantage of any area doing that for a given period of time?

Could you give us an idea from what you think the growth of the population might be in view of the fact you indicate it's a ten-year cycle in order to get them from little fellows up to spawning size?

MR. MILLARD: Well, the advantage would be that you would have whatever that the harvest might be, 300,000 in the bay, that many more spawners on the beach.

In terms of a population, what that means to the population, whether we would be able to detect that, if we were to do another abundance estimate after that, immediately after that two-year event given the confidence limits that you see here and the sort of uncertainty around that I'd be surprised if you were able to detect any effect of that.

It would probably have an effect but would we be able to detect that? Would it be large enough for us to detect given our current methods? I'd be surprised if that were the case.

MR. AUGUSTINE: Thank you. That was really the answer I was looking for. And I know any time you can reduce harvest or take either fish, in this case horseshoe crabs, out of the population you have an immediate advantage. There is no question about it. But in the bigger picture that we're dealing with, as you went on to explain it would be awful difficult to measure it from a total population point of view.

That relates, then, again to if a moratorium would be most effective to help the red knots in their, in hopes of bringing back that population by protecting these crabs versus the total economic impact of shutting the fishery down which effects another segment of this whole thing. I just wanted to get it on the record and I do thank you for your information, Mike.

CHAIRMAN MILLER: Jack Travelstead.

MR. TRAVELSTEAD: Several of the speakers have talked about the Virginia Tech Trawl Survey and some problem with getting presentations of the data or it's not clear to me what the problem is but being from Virginia if there is something that I can do to help that issue move along if you could talk to me offline I'll be glad to do whatever I can to help solve that problem. I don't want to take up the board's time with furthering that.

But having said that, we do have this package from Dave Hata at Virginia Tech that talks about some errors that were made in the calculations in '04 and I'm just wondering if the technical committee is going to go back and look at the new information and reassess it and if so will they have a report relative to what that now means for us at the next meeting?

MR. MILLARD: I'll take a stab at that. I in fact would answer probably both your questions. We have dialogued with Virginia Tech and they're willing to do whatever, you know, needs to be done, to meet us wherever and whenever.

As Brad spoke earlier I think it's now a question of funding that technical, an additional technical committee meeting. And when we do this -- I'm sorry, please restate the second question.

MR. TRAVELSTEAD: It was looking at the new corrected data.

MR. MILLARD: We would certainly engage in a Q and A with them regarding not just '04's corrections but the entire program and I think the technical, as Peter stated, the technical committee would feel much more comfortable having these folks face-to-face and asking specific questions. And, again, Virginia Tech has indicated a complete willingness to do so.

CHAIRMAN MILLER: Paul Diodati.

MR. PAUL DIODATI: I apologize for being out of the room during the first part of your presentation but can you just repeat what is the value that you considered for F at MSY.

MR. MILLARD: The surplus production model, as probably you know, Paul, will give you a point estimate but we chose as recommended by Mike Prager, the ASPIC programmer, to more or less disregard those point estimates of Bmsy and Fmsy and as they are estimated I think as the wording is with poor reliability and rather just look at the ratios of F over MSY and B over Bmsy.

So we stayed away from those point estimates of which you ask about. They are output. I don't have them at my hand here. I mean they are in the report, but we could look at them but we were advised and accepted to generally disregard them.

MR. DIODATI: Extremely low, though, given what I saw in the earlier --

MR. MILLARD: I believe so.

CHAIRMAN MILLER: Ernie Pankowski.

MR. BERNIE PANKOWSKI: Thank you, Mr. Chairman. Mike, has there ever been any exploration or thought to a hatchery for the horseshoe crabs?

MR. MILLARD: It was discussed at the Estuarine Research Federation meeting in Norfolk a year or two ago. I don't, not with much gravity I don't think. I'm not sure who would want to embark upon that endeavor. It has been discussed to some extent but not seriously I don't think.

CHAIRMAN MILLER: We seem to have progressed a little bit beyond the model so, George, why don't you go ahead and raise the question that you brought up earlier.



MR. LAPOINTE: Thank you, Mr. Chairman. And my thanks to the committee as well. Can you go, I think it's your last slide, that one. The moratorium on harvest through June 7<sup>th</sup> might not allow for maximum egg availability for late migrating red knots.

Did the technical committee discuss other dates, 15 June, 22 June? Just because my sense is that the migration window for red knots is kind of narrow so the addition of additional one-week units might make a difference and so I just wanted to know if that was part of your discussion.

MR. MILLARD: That was part of the discussion. The difficulty is that there isn't a particular date that satisfies everything. June 7<sup>th</sup> was originally chosen because that seemed to capture most of the later arrivals that had been known up to that point and last year was quite unusual in that the birds were even later. No date was decided upon, however.

MR. LAPOINTE: Thank you.

CHAIRMAN MILLER: Paul.

MR. DIODATI: I guess this becomes an ecologic, certainly a puzzle for ecology because it seems that as the horseshoe crab populations decline steeper we're also at the same time maximizing opportunities for predation on their eggs. So, at what point does that become the overriding factor for the population decline of horseshoe crabs?

MR. MILLARD: I'm not sure I have an answer for that question, Paul.

MR. DIODATI: Well, is that a concern? Should that be a concern at some point?

MR. MILLARD: You're asking is there sort of a critical mass of horseshoe crabs?

MR. DIODATI: Well, it seems that we're trying to, we have a situation of population decline in horseshoe crabs. And at the same time that we're lowering fishing mortality to address that we're increasing opportunities for predation on their eggs. It seems that those management strategies need to coincide at some point if we're going to have some balance.

MR. MILLARD: I guess I don't follow on how we are increasing opportunities for egg predation.

MR. DIODATI: By decreased, well, as we create more moratoriums on harvest and create windows of opportunities for birds to feed on their eggs doesn't that increase the predation rate? So where do you, there has to be a balance as you decrease fishing mortality and increase predation rates we may be at a net loss here or a zero gain.

MR. MILLARD: One thing we should keep in mind I think is that eggs that are eaten by birds are essentially lost to the, were lost to the horseshoe crab population prior to being. They were brought to the surface and essentially are already removed from horseshoe crab production so bird predation is not really an effect on the horseshoe crab population. It's not removing production from the crab population.

CHAIRMAN MILLER: Peter.

MR. HIMCHAK: Yes, thank you, Mr. Chairman. I had a question for Mike and possibly a follow up to Greg Breese. And again the Horseshoe Crab Stock Assessment Subcommittee can go so far in its assessment on the horseshoe crab resource.

And we recognize that there has to be some information coming from the top, meaning the Shorebird Technical Committee which was formed and started meeting in 2001, again to address the surplus production of eggs for the shorebirds.

So, my question to Mike is that at this point with the stock assessment subcommittee do you have a series of specific requests or questions to the Shorebird Technical Committee so that they can tell you at least how close they are to providing the information or if they already have the information?

The need at this point for the two technical committees is tantamount to addressing the second objection of the FMP which is where we're at today is the availability of horseshoe crab eggs for shorebirds. So, could you address that for me, please?

MR. MILLARD: My answer is, no, we do not have that specific set of questions but I will interpret your request as a request to us to develop that set of questions. Of course you know the general question is how many eggs are enough for the birds?

And we keep hearing the term superabundance of horseshoe crabs but that doesn't really mean much to us quantitatively, of course. So that, it will take the form of how many eggs do we need in order for there

to be enough excess eggs that are brought to the surface for a viable shorebird population, a thriving shorebird population.

And that's going to be a difficult answer and it's this interface between horseshoe crabs and shorebirds, as I said, that is a gray area. And it's going to demand I believe some focused, full-time attention from someone to do that quantitative, to model those needs.

It's one thing to say the shorebirds need X number of eggs per day, therefore X number of shorebirds need X number of eggs. It's another thing to say we need Y number of horseshoe crabs spawning to produce that many number of eggs that are at the surface available to shorebirds.

That's a curve in the road as far as traditional fishery population modeling. That's going to demand some serious attention from someone.

CHAIRMAN MILLER: I'll get to you in just a second. Eric, I believe you had your hand up.

MR. ERIC SMITH: Thank you. That was an intriguing interchange and it sounded like there were two questions that need to be answered. One is how many eggs is enough. The second one is how many horseshoe crabs spawning is enough to produce the eggs that are enough.

The unasked question which I think is equally valid is what is the measure of success for the shorebird population? Is it weight gain? Is it just some measure of increase in number of birds?

I mean when do we have a measure of success that says that whatever you did with horseshoe crabs or anything else affecting the red knot subpopulation you know that you're on the trajectory to success and you're meeting whatever the bird resource needs to succeed?

And that's more properly, I mean I like the sound of the interaction, more interaction between the Shorebird Technical Committee and the Horseshoe Crab Technical Committee but my question I guess is more properly a Shorebird Technical Committee and I wonder if the committee has thought about what they use as their matrix for success, measure of success, sorry.

CHAIRMAN MILLER: Greg Breese.

MR. BREESE: Yes, they have. And the

three measures that have been used so far have been percent of birds that are reaching a target weight of 180 grams while at Delaware Bay, the egg abundance which that survey was just started this past year, a bay-wide egg abundance, surface egg abundance, and also the population trend, particularly the Tierra del Fuego wintering population trend.

So I think those will be the three measures that the Shorebird Technical Committee will use to measure success in managing the horseshoe crab harvest.

And I just wanted to add to the previous question, to Paul's question, that the shorebird — or Pete's question, sorry — that the Shorebird Technical Committee has been trying to grapple with some of that and has been working on a population model intended to identify more accurately the egg needs of shorebirds which would include factors of gull interference and competition and bird disturbance and things like that.

But the model is not presently, presently we don't have the model, just the parameters to put the model together. And there has been some discussion over the last month or so about that. But I foresee a real need and a good opportunity at this time to get the two committees working more closely and together to try to come up with some of those questions in a way that moves us forward.

CHAIRMAN MILLER: I believe it was Pat had his hand up.

MR. AUGUSTINE: Thank you, Mr. Chairman. Greg, then I do understand that the gull population in regard to predation on the eggs is definitely one of the items that will be considered at this particular point in time as you go forward with this model?

MR. BREESE: The model that was constructed includes gulls as a factor, yes.

MR. AUGUSTINE: Thank you very much.

CHAIRMAN MILLER: Is that the sum of the board questions and comments? Lance.

DR. STEWART: Yes, thanks, Roy. At the risk of being ludicrous here I just you know have to ask these questions. They've occurred to me since the very beginning of the discussions and specifically the Shorebird Subcommittee. There is no real empirical evidence of the bird stomach content analysis.

It would seem like, you know, that it almost is a very important thing, or studies of the composition of the interstitial fauna at the time of egg laying of horseshoe crabs which is in some you know basic biological studies of beach dynamics is real in the sense that you have predation on the horseshoe crabs eggs by a number of copepods and other you know potential food items of red knots.

And I just wonder if that data or any of that science bank is available? And it should be because they're based on our main decision of correlations with egg abundance and bird health.

And also as just you know a suggestion in terms of the Audubon bank of data, is there any suite of information that shows the hawk predation or hawk deterrent behavioral patterns on red knot flow or migration patterns? Do you understand what I'm saying? The other factors that influence the presence and sighting that are correlations with horseshoe crab?

CHAIRMAN MILLER: Do either of you care to tackle that? Greg.

MR. BREESE: Yes, there, the first question you are asking is, is there good evidence that birds are relying on horseshoe crab eggs as their major food supply? Yes, there is.

In fact there is a paper that is in draft right now based on work using stable isotopes that look at whether the horseshoe crab signature is showing up in the bird's body tissues and also cage studies where the birds have been provided eggs and have been measured to gain as much weight as we are seeing out in the field when you're banding birds.

So, yes, I think the evidence is quite clear and quite strong that the eggs are definitely a major part of the diet if not the dominant, over 90 percent of the diet that the birds are relying on.

In addition there has been a number of studies looking at alternative sources of food, both watching the birds to see what they're feeding on and looking in the sand and other substrate to see what other food sources are available.

Time and again those studies have shown that there is not a lot and there is not enough to support the historically understood population of birds with the weight gain that we understand is occurring.

So I think it's really clear that horseshoe crab eggs, unique as they are for this type of bird, this species to be eating, are the critical factor in their success for breeding and are critical to maintaining that population.

The second question was about raptor disturbance and predation. That has not been well quantified until recently. And there has been some research over the last two years on disturbance in general but including disturbance from raptors, predatory raptors like peregrine falcons.

That has not been fully written up but the information that was gotten from that seemed to indicate that although there is a level of predation occurring it is not particularly significant in terms of changing the birds' success at getting food. In addition to predators like birds it has also looked at human disturbance and at research disturbance in monitoring the birds to see how well they're doing.

And the dominant disturbance that seems to be effecting the birds, the shorebirds success at getting eggs and at being able to utilize the beach seem to be human disturbance, particularly dogs seem to have a much larger effect than most of the other disturbance that was measured.

CHAIRMAN MILLER: It's 15 now after that and to allow ample time for the next item, Addendum IV options, I've had a request that we have a short break to allow those that need to check out to do so, so if I may make this suggestion, why don't we break until 11:30 and then we'll take up the Addendum IV issue as soon as we come back promptly at 11:30. Pat, I'll recognize you before we break.

MR. AUGUSTINE: Thank you, Mr. Chairman, just a point of information. As a follow-on to Dr. Stewart's comment about raptors and predation, I noticed in several of the reports, research documents that I reviewed, it indicates that these birds in some areas are used for hunting purposes, for target practice and I guess for food.

And I'm wondering if any of your assessments relative to that are going to show up as a part of this whole assessment? If we're going to have a complete picture, we need it. Thank you, Mr. Chairman.

CHAIRMAN MILLER: Is there a fast answer to that?

MR. BREESE: Just that that topic comes up

over and over again. It has been looked at a little bit but not quantified. Most of the hunting for shorebirds like red knots is outside of the country. It doesn't seem like it's, from the anecdotal evidence that we've been able to get to that currently it's a major factor although in the past it could have been.

CHAIRMAN MILLER: All right, why don't we take a break until 11:30. Thank you.

(Whereupon, a brief recess was observed.)

#### ADDENDUM IV OPTIONS DISCUSSION

CHAIRMAN MILLER: Are we almost ready? For the sake of keeping to our schedule Commission Chair O'Shea reminded me that there will be a lunch provided for those participating at the afternoon meetings and that will start at 12:45 so that does put us under some time constraints and that will probably be just outside this room that that luncheon will be going on.

So, I'd like to try to move us along as quickly as I can and still since what we're going to be discussing is important I want to allow enough time for that. So, I think in regard to Draft Addendum IV for board review, is there anyone who would like to make a motion at this time? Pat Augustine.

MR. AUGUSTINE: Mr. Chairman, I'm under the impression -- I would like to do that but I'm under the impression that another option is going to be asked to be put in it so with your support in letting me hold back on making that motion I would like to turn it back to you. I can't do that?

CHAIRMAN MILLER: George.

MR. LAPOINTE: **I would make a motion that the board approve Draft Addendum IV to go out to public hearing** and understanding there may be amendments and I'm happy to hear those, too, but this will get the process started.

MR. NELSON: Second.

MR. AUGUSTINE: I would second that, Mr. Chairman. Thank you, George.

CHAIRMAN MILLER: Second by, I believe John Nelson said that. Okay, since it's moved and seconded why don't we have discussion on it. I need to let time to -- Jack Travelstead.

MR. TRAVELSTEAD: Thank you, Mr.

Chairman, I do have a motion that I'd like to offer simply to add yet another option for the public's consideration when this moves forward. Let me start by saying late last year the Virginia Marine Resources Commission took action to I hope begin to address the shorebird/horseshoe crab egg phenomenon that we see in Delaware Bay.

It's our feeling that if we can minimize our harvest of crabs coming from the Delaware Bay region that that would in part help the situation. Of course we also have a fishery in the Chesapeake Bay that we would like to maintain. And I'd like to present an option that I hope does both things.

Late last year our commission did make some adjustments to our regulations to focus more of our harvesting efforts on horseshoe crabs in bycatch fisheries that occur in Chesapeake Bay as opposed to out in federal waters where they're more likely to come from north of Virginia.

We did increase our bycatch allotments that we allow some Virginia fishermen to take. And we did add some additional people to the fisheries that fish in Virginia waters. Our blue crab dredge fishery does have a bycatch of horseshoe crabs.

And our conch fishery has a bycatch of horseshoe crabs. And it seems to us that by focusing those efforts there we take less crabs of Delaware Bay origin and help solve this problem. The option, Brad, do you have that? There we go.

It's a two-part option. It is specific to Virginia. It is something I would like added to the draft addendum for public comment. What we would propose is to prohibit the landing of horseshoe crabs from federal waters not just off Virginia but all federal waters from January 1 through June 7 in any year.

Right now under current regs in Virginia virtually all of our quota could occur in federal waters and as a result take a lot of crabs that are headed for Delaware Bay. The June 7<sup>th</sup> date is debatable. It's there because it's the date we've all been using subject to change following public comment.

The second part is that you could divide Virginia's quota such that 60 percent must be taken in Chesapeake Bay, well away from the Delaware crabs, and that only 40 percent could be harvested east of the COLREGS line -- the COLREGS line is the line that connects the various capes to capes across the mouth of Chesapeake Bay and all the other inlets along the eastern shore -- and that further that

horseshoe crabs harvested east of those lines would have to be landed such that it's a two-to-one male-to-female ratio.

If you do the math on that, Virginia's quota is about 150,000 crabs. If you do the math on this option the maximum number of female crabs that could be landed potentially from above Delaware/Maryland, where they're more likely to be of Delaware Bay origin, would be about 20,000 crabs.

And I think it's likely to be less than that because of the other actions we've taken to sort of focus our fishery more in Chesapeake Bay and less in the ocean. So I would move that we add this option to the addendum.

CHAIRMAN MILLER: Is there a second to the motion? Pat Augustine.

MR. TRAVELSTEAD: Mr. Chairman, Joe wants me to read the motion. **Move to add the following option to the public hearing draft of Addendum IV: A, prohibit the landing of horseshoe crabs from federal waters off Virginia from January 1 through June 7 in any year; B, divide Virginia's quota such that not more than 40 percent may be harvested east of the COLREGS lines; horseshoe crabs harvested east of the COLREGS line and landed in Virginia must be comprised of a minimum male-to-female ratio of two-to-one.**

CHAIRMAN MILLER: George.

MR. LAPOINTE: A question and a comment, a question to the maker of the motion. Prohibiting the landing of horseshoe crabs from federal waters off Virginia, is that to harvesters licensed in Virginia or all harvest in federal waters off Virginia?

MR. TRAVELSTEAD: That would be all harvest in federal waters could not be landed in Virginia.

MR. LAPOINTE: Okay. And then they couldn't be landed in Virginia so they could be landed somewhere else based on other state law?

MR. TRAVELSTEAD: That's up to the other states.

MR. LAPOINTE: And then my, I guess just a comment. I don't, I like the idea of an option being put forward that can achieve a conservation objective

and then achieve the needs of an individual state.

If it went into the public hearing document could we add a statement that said it hasn't undergone technical committee review so that in fact when you go out to public hearing people know that the public hearings are current with the technical committee review so we don't either lower or raise expectations about the review of that option compared to others in the document?

CHAIRMAN MILLER: To that point, Jack.

MR. TRAVELSTEAD: It certainly would be my hope that the technical committee would evaluate the option and provide us with some guidance on it at the May meeting where we will be voting on this.

And having said that, earlier I mentioned the Virginia Tech data and the reevaluation of the new corrected data on that. I would hope also that the technical committee would reevaluate that as well and report their findings to us at the May meeting as well.

CHAIRMAN MILLER: I think Ritchie White was next and then Pat.

MR. WHITE: Thank you, Mr. Chairman. I think the technical committee looking at it as well as the law enforcement committee because it seems to me that this might create some difficulties for law enforcement. And I guess in that vein to ask Jack, if you would allow, Mr. Chairman, if Virginia's law enforcement has commented on this.

CHAIRMAN MILLER: Jack.

MR. TRAVELSTEAD: We have had some discussions with our own law enforcement division, obviously. They didn't view it as a tremendous problem. It's no different than, you know, trying to enforce minimum size limits in trawl catches where you have lots of fish landed.

It does take an extra effort but it wasn't something that they thought was insurmountable. Recognize that most of the catches you know are not that large. And we're trying to really focus away from trawl catches in the ocean and more toward the much smaller bycatch amounts in Chesapeake Bay.

CHAIRMAN MILLER: Thank you, Jack. Pat.

MR. AUGUSTINE: Thank you, Mr.

Chairman. That was my question of Mr. Travelstead. If this were to be adopted, if it goes out to the public and it were adopted, it would, versus having a full moratorium any of these animals that were encountered in those fisheries out in federal waters would then be useable and would become discard bycatch?

MR. TRAVELSTEAD: I'm not sure I follow your question, Pat.

MR. AUGUSTINE: Well, if you were to, if your fishermen were to encounter them out in federal waters as a part of fishing for other species of fish, we would have a full moratorium, they could not be landed in your state as bycatch could they?

MR. TRAVELSTEAD: No.

MR. AUGUSTINE: Okay, that's the answer I wanted on the record. Thank you.

CHAIRMAN MILLER: Are there any more questions or discussion among the board members on the amendment to the main motion? Pat.

MR. AUGUSTINE: A final one, with what Mr. Travelstead has just said and what I think this motion appears to accomplish, plus the comments from our technical committee, it appears that to put Option 4 out in this public document at this point in time for Maryland/Virginia, might not be necessary.

So with your indulgence I would move that we remove Option 4 from Maryland/Virginia and approve the remainder of the document. Oh, I'm sorry. We haven't voted on it. That will be another motion. Thank you, Mr. Chairman.

CHAIRMAN MILLER: We need to vote. John Nelson.

MR. NELSON: Thanks, Mr. Chairman. I think just for clarification I understand what Jack said as far as his intent but I think the language in A needs to reflect prohibit the landing of horseshoe crabs in Virginia from federal waters from January 1<sup>st</sup> through June 7<sup>th</sup>. I think that's what I understood Jack's intent was and I would just ask if that helps do the clarification.

MR. TRAVELSTEAD: May I respond, Mr. Chairman?

CHAIRMAN MILLER: Yes.

MR. TRAVELSTEAD: Yes, let's remove "off Virginia" from Part A so that it's clear that we would prohibit landings of horseshoe crabs from federal waters. Prohibit the landing in Virginia I guess it should say.

MR. NELSON: Right, it should say landings of horseshoe crabs in Virginia.

CHAIRMAN MILLER: Is the seconder of the motion comfortable with that? That was you, Pat.

MR. AUGUSTINE: Yes, Mr. Chairman.

CHAIRMAN MILLER: Are there any additional comments on this amendment? Two, Pete and then Erling.

MR. HIMCHAK: I think we have the same comment just for clarification in the first part of the motion that by reading that you would still be able to harvest horseshoe crabs in the state of Virginia waters during that January 1<sup>st</sup> through June 7<sup>th</sup> time period. Okay.

MR. ERLING BERG: That was my question, too.

CHAIRMAN MILLER: That covers, yours as well?

MR. TRAVELSTEAD: The answer to the question was yes.

CHAIRMAN MILLER: All right, I'm going to call for any public comments on this specific motion, the motion that is before us on the screen, the draft amendment. Any public comments on this? Rick.

MR. ROBINS: Thank you, Mr. Chairman, I will be brief. I think this option is carefully crafted in such a way that it will substantially and effectively mitigate any potential impact that Virginia's horseshoe crab fishery has on crabs that are of Delaware Bay origin.

And I think it's supported by tag return data and other factors. And I think it will be a very effective way to address that. Virginia's fishery is already primarily a Chesapeake Bay fishery. This will further codify that and will minimize any risk I think in the federal water areas. Thank you very much.

CHAIRMAN MILLER: Any other public comment on this? Seeing none, I would suggest that,

well, I'll wait and see the result of the vote and then we'll decide where to put this in the addendum.

Okay, the motion has been moved and seconded. Let's take a moment. Do we need a moment to caucus on this? I'm seeing some heads nod so let's take three minutes for that. Are we about ready? All right, could I call for a show of hands in support of the amendment?

Do we need to have it read again, Joe? Okay, does everyone understand what the amendment says? All right, can I have a show of hands of those in favor of the motion; those opposed; any abstentions; any null votes. Seeing none, the motion carried unanimously. Mr. Augustine.

MR. AUGUSTINE: Thank you, Mr. Chairman. I was out of turn. I spoke out of turn when I suggested we move forward with removing an option. And that would be I would recommend or move that we remove Option 4, a full moratorium, under Maryland and Virginia and once we get a second I would like to have an opportunity to speak to that.

MR. VITO CALOMO: Second.

CHAIRMAN MILLER: All right, we have a motion — incidentally I should probably state where it's reasonable to put the amendment that we just made. Without any objections from the board I would propose that that become Option 5 under the Maryland and Virginia section of the draft addendum if everyone is okay with that. I don't see any objection so this new motion from Mr. Augustine and seconded by Vito Calomo, go ahead, Pat.

MR. AUGUSTINE: And to support that, Mr. Chairman, again our concern is that New York is now going to be another one of those accessible places for the likelihood of our horseshoe population, horseshoe crab population being put in further or under further duress.

There is no question there is a definite need for this animal as bait and we have restricted harvest to the help of a gentleman back there by the name of Bill Cook in the state of New York from something in the order of 350,000 horseshoe crabs a year to 150 to be consistent with all the other states.

Our fishermen have responded accordingly. We are watching that population very closely and the harvest, but to imagine we're faced with a moratorium as I understand there is some legislative

action underway in New Jersey and possibly Delaware. I just don't know where these horseshoe crabs are going to come from other than further north which would be out of our population.

And so I would hope that with what Mr. Travelstead put up there as now Option 5 that would control what happens down there. We will not see a further hit on our fishermen for export purposes for bait for conch and so on. So, thank you for that, Mr. Chairman.

CHAIRMAN MILLER: Other discussion on this particular motion to amend. Pete Himchak.

MR. HIMCHAK: Mr. Chairman, I have two concerns I'd like to voice, first of all the inclusion of, if you remove the moratorium including Maryland also it is hitting closer to home on the Delaware Bay origin horseshoe crabs.

If their fishery were to be a Chesapeake Bay bycatch versus ocean, that that weighs heavily in which way you would decide on this motion. The other point I'd like to make is that we would prefer to see it stay in the public hearing document and at least go out for public comment.

CHAIRMAN MILLER: Thank you, Pete. If the chair may follow up with a question of the delegates from Maryland, the bulk of your horseshoe crab harvest is from the ocean as opposed to Chesapeake Bay, am I correct in that?

MR. KING: You are correct. Chesapeake Bay is a bycatch fishery.

CHAIRMAN MILLER: Other comments or questions, thank you. Hearing and seeing none I'll call for public comment on this particular motion. Rick Robins.

MR. ROBINS: Thank you again, Mr. Chairman, members of the committee, Maryland's fishermen this year have already agreed to go to a voluntary two-to-one male-to-female sex ratio. I think that's a very proactive measure they've taken and I think that ought to be affirmed rather than penalized.

Furthermore, given the fact that we do have a male-only option still on the table for these states and given the fact that Virginia has just put forward and you've approved a very strong option that will enable Virginia to control its impact on Delaware Bay origin crabs, I think there are several points to be made in support of removing this option.

The first is that it's inconsistent with the technical committee findings in October when the technical committee specifically concluded that outside the Delaware Bay no additional harvesting restrictions were warranted.

Additionally, this option when the technical committee met in January to discuss options in response to the plan development team's request they did not put this option forward. They did not support it.

A specific request for a coast-wide moratorium was made by an audience member at that meeting and was withdrawn after a lack of support by the technical committee. Furthermore a motion at this last board meeting was made for a moratorium from New York to Virginia and that was withdrawn after a lack of support.

It appears that this is a resurrection in a sense of that failed motion or that motion that was withdrawn for consideration so I think given the fact that you've got other very strong alternatives on the table, including male-only harvest and the option that Virginia just put forward and the fact that Maryland is already doing a two-to-one ratio I think this option is superfluous. Thank you.

CHAIRMAN MILLER: I'll go back to the board again for one comment. Pete. And I'll be back to the public.

MR. HIMCHAK: Yes, Mr. Chairman, as far as, I disagree with Mr. Robins' interpretation of the technical committee's feelings on the Delaware Bay resource management, etcetera, that the entire history of this FMP and its addenda have always considered Maryland you know, to their chagrin or whatever, as enveloped in this Delaware Bay horseshoe crab/shorebird phenomenon and all the restrictions from the inception of this plan have always therefore included Maryland and have been very restrictive on Maryland for that purpose.

CHAIRMAN MILLER: Any additional comments from the audience before we take a vote? Is that a hand, Perry? Go ahead.

MR. PLUMART: I think what we're looking for here is options that states have to take and that the public have an opportunity to give their input to the various options that are out there.

It's fine that Virginia added one but I still think that

the technical committee was trying to look at reducing the take of Delaware Bay horseshoe crabs and there was a lot of discussion about the fact that crabs off the coast of Maryland are frequently, many of them are of Delaware Bay origin. So I think it's prudent for the Horseshoe Crab Management Board to allow this to go forward to public comment.

CHAIRMAN MILLER: Any further comment? Seeing and hearing none we'll consider the motion. Do we need to caucus on this before we vote? Is that a head nod yes? All right, again take three minutes maximum, please, two minutes would be better.

The discussion seems to have lulled so why don't we go ahead and consider the motion. Does anyone require me to read the motion? It is before you on the screen. Are we all clear on the wording of the motion?

I'm assuming we are, therefore we'll take a vote by show of hands. All those in favor of the motion raise your right hand, please; those opposed, same sign; any abstentions; any null votes; one null, two null votes. The motion passes or the motion fails, sorry. We're back to the main motion. Pete.

MR. HIMCHAK: Mr. Chairman, I have a question on the development of the options dealing with the biomedical industry in Addendum IV for public hearing. And I reference back to when we passed Addendum III and we developed a questionnaire for states' responsibilities to monitor the mortality associated with bleeding of horseshoe crabs.

And at the November 2005 board meeting it was reported that these questionnaires that assessed full mortality on the utilization of horseshoe crabs by the biomedical industry, that the range of estimates did not exceed, we have a number in the FMP of I think it's 58,000 horseshoe crabs, a threshold number of mortality.

So with the thinking that no, the recommendation was that the current mortality associated with the utilization of horseshoe crabs by the biomedical industry did not exceed the threshold level and no further management actions were warranted at this time, I was surprised to see the inclusion of the biomedical status quo or full moratorium options in Addendum IV.

CHAIRMAN MILLER: Anyone have any comments in response to that? It was just a question



or a statement Pete posed. Any redirect on the statement? Hearing and seeing none then we'll take up the item of approval of the public hearing draft. Mr. Adler.

MR. WILLIAM A. ADLER: Thank you, Mr. Chairman. I just was wondering if the proposal by the Chesapeake Bay Packing Company, is that sort of incorporated in one of these options already?

CHAIRMAN MILLER: I'm going to address that to the Virginia delegates. Did you hear the question, Jack?

MR. TRAVELSTEAD: No, sir.

CHAIRMAN MILLER: Bill, would you repeat the question, please.

MR. ADLER: I was wondering if the Chesapeake Bay Packing suggestion was sort of incorporated in one of the options that we have before us so that if after the public hearings it was determined that their idea was good.

MR. TRAVELSTEAD: I think Mr. Robins' motion or option that was presented to the technical committee is Option 2 under New Jersey and Delaware.

MR. ADLER: All right, that's what I just wanted to make sure if it's incorporated that if that turns out to be an acceptable thing that we won't run into, well, it wasn't in the public hearing.

MR. TRAVELSTEAD: No, I think it's there.

MR. ADLER: It is there?

MR. TRAVELSTEAD: Yes.

MR. ADLER: And I would like to ask Mr. Robins if he feels that what is worded in here does more or less cover that suggestion that they made.

MR. LAPOINTE: Ask that to the chair.

MR. ADLER: Ask that to the chair, I'm sorry.

CHAIRMAN MILLER: Bill, my impression and to follow up on Jack's response is that Mr. Robins' suggestion was incorporated in Option 2 under New Jersey and Delaware and also under Option 3 of Maryland and Virginia. But I

don't want to speak for Mr. Robins. I would like to give him that opportunity to respond to that question. Rick.

MR. ROBINS: Thank you, Mr. Chairman. I appreciate the question. The option is basically embodied there as Option Number 2 under the Delaware Bay states. The only thing that's not included is the fact that I proposed as a safeguard a monitoring provision to monitor the male-to-female sex ratio over time.

But the proposal is for a limited male-only harvest that's delayed until after June 7. And that is embodied in Option 2. I think the detail of monitoring the sex ratio is something that could be worked out in a final detail through the technical committee but it is embodied and I appreciate your question. Thank you.

CHAIRMAN MILLER: Pete Himchak.

MR. HIMCHAK: Mr. Chairman, I've got a terrible microphone here. Mr. Chairman, I'd like to go back to the biomedical industry and I'm a little disappointed at the lack of discussion thereof.

Maybe I should have been more forthright with my point is that at the board meeting the board in the motion regarding Addendum IV specifically exempted the biomedical industry and in context with what I know about the questionnaires and you know the targets in the plan I again stress my confusion over why it's included in Addendum IV and would like to make a motion that the options that are listed in Addendum IV for the biomedical industry be removed from Addendum IV for public hearing purposes.

CHAIRMAN MILLER: Is there a second to that motion? Robert. Discussion on the motion. Robert.

MR. BOYLES: Yes, sir, thank you, Mr. Chairman. Another question that I had on that, I'm a little unclear because the state of South Carolina does have biomedical harvest; however, we, as far as I can tell we do not have an established quota.

And so if you look at the wording of that Option 1 on status quo regarding mortality made available to the bait industry and then count against the state quota, I'm a little concerned that if we're got a zero quota and yet we do have this biomedical harvest that it's unclear to me where that leaves South Carolina with respect to compliance.

CHAIRMAN MILLER: I don't have an answer to that, Robert, does anyone else? John.

MR. NELSON: Thanks, Mr. Chairman. I thought the options that we were looking at for the addendum referred to New Jersey and Delaware and Maryland and Virginia and that was the geographic extent of the, and I think the options that refer to the biomedical then reflect that geographic range.

CHAIRMAN MILLER: I'm not entirely sure I have that same understanding just looking at how it's arrayed in the document we have before us. Both paragraphs are indented all the way to the left, thus implying that they have separate standing but I would certainly entertain any comments from the board on this. Brad.

MR. SPEAR: Just to clarify, John, that was the intent to limit those options to the geographical range of Maryland through or excuse me, New Jersey through Virginia. I mean it's open for discussion for the board but depending on your discussion it will be made clearer in the document that goes out for public comment.

CHAIRMAN MILLER: Does that satisfy you, John? If I could summarize, Brad said the intent was to limit the biomedical option to the New Jersey to Virginia portion of the range of the species. Is there any discussion on that?

MR. NELSON: Well, that's what I think I said, Mr. Chairman, that in regard to the question that came up about South Carolina, that this addendum is a geographic range and it's only from New Jersey to Virginia. That's the intent of the area that are looking at the proposed regulations that we would be considering. It's not beyond that geographic area.

CHAIRMAN MILLER: Thank you. Robert.

MR. BOYLES: Mr. Chairman, thank you. I believe I'd asked this question back last fall and John, thank you, I think that was my understanding of this discussion as well. I just wasn't clear the way it was structured in the document.

CHAIRMAN MILLER: Pete.

MR. HIMCHAK: Roy, again, going back to the discussion at the November '05 meeting of the board the focus on the Delaware Bay population of horseshoe crabs and further restrictions specifically

excluded the biomedical industry in that area so to see it again, to reinterpret this and say that it's under consideration for a moratorium in the Delaware Bay area, I don't think that's appropriate.

CHAIRMAN MILLER: Eric.

MR. SMITH: Thank you, Mr. Chairman. Let me ask the question this way. If Pete Himchak is correct about the previous action, could it be that this section, biomedical harvest restrictions inadvertently is in here as an error?

And if it's not inadvertently in there as an error then I'm missing a beat also as to if Pete is correct that curious why it's here. And I guess I need Brad to explain that to me and then I'll be satisfied. Thank you.

CHAIRMAN MILLER: Brad.

MR. SPEAR: Thank you, Mr. Chairman. Normal practices for the plan development team is to create options and one option that was included in the motion at the November meeting was to exempt the biomedical companies from the restrictions faced by the bait industry.

Conversely, well the plan development team included the other option which would be to not exempt them, again, to present options for the addendum. So if it is not the desire of the board to include those, it's you know within your power to take it, to strike it.

CHAIRMAN MILLER: George.

MR. LAPOINTE: It took me a little while to get my head around this particular issue. And I think in the long-term the concern is that if biomedical harvest becomes significant in the future in the Delaware Bay area, the area which we're considering and actually beyond that, that we may need to take action.

And if this was the last addendum we foresaw in the horseshoe crab management process we would need to include it. But because I suspect we'll take action through additional addenda when those additional addenda come up I think we can then reexamine whether in fact we need to take additional action on the biomedical harvest so I'm going to support the motion, of course if I can get the concurrence of my Senator.

CHAIRMAN MILLER: Any further discussion on this from the board? Comments from

the public. Benji. Please put your mic on.

MS. BENJIE SWAN: Yes, my name is Benji Swan. I've come before the board at other meetings and I really always thank you for your consideration. I was just informed of this option about maybe ten minutes ago.

I attended the November meeting as did other biomedical manufacturers and we came away from that meeting that we would not be included in this addendum. I think that right now you're trying to you know seriously put you know further restrictions on the horseshoe crabs which affects the livelihood of people.

The birders want the horseshoe crabs further protected for their eggs for the food for the migratory shorebirds. I think that is really what we need to focus on, that as Pete, Mr. Himchak, said that we haven't approached the threshold yet and I'm sure we are going to have other addendums so you can look at that.

Right now the biomedical companies are tracking from the point of capture to the point of release the mortality rates. And we are all focusing on the survival of our horseshoe crabs that are bled.

And also if this is just in the Delaware Bay region I am the smallest company that manufacturers the product. I do not make a finished product. And it would be a real burden on my company. It would probably put me out of business also.

And I think that if I had to get horseshoe crabs from other areas it would increase the mortality rate from the bleeding process and subsequently affect the horseshoe crab population. Also the research that I conduct on the horseshoe crabs could not longer be conducted if I don't have the horseshoe crabs to work with. And if you have any questions I'd be happy to answer them.

CHAIRMAN MILLER: Thank you. Additional public comments, Charles.

MR. GIVENS: My names is Charles Givens and I'm from Cape May. And I would just have a question for Mr. Himchak from the New Jersey delegation. How many crabs are harvested biomedically in New Jersey?

MR. HIMCHAK: Well, the question should be more appropriately be how many horseshoe crabs are utilized? They are not harvested. They are taken

and bled and released. That's a major distinction from your question.

MR. GIVENS: How many horseshoe crabs, then, Mr. Himchak, are utilized in New Jersey for biomedical purposes?

MR. HIMCHAK: Mr. Chairman, is the dialogue at this table appropriate for Mr. Givens and myself?

CHAIRMAN MILLER: No. I would have to suggest that perhaps the dialogue might be better pursued after or outside the meeting, that particular dialogue. George Lapointe. That was the point George was going to make as well. Thank you. Other public comments. Charles, are you finished?

MR. GIVENS: No. I'd just like to assert my right to ask questions and receive answers and to have them broadcast into the public. And if I cannot have the answers to my questions I would like to suggest to the board that you include the biomedical companies into the moratorium because you don't have any idea how many crabs they are catching. Thank you.

CHAIRMAN MILLER: Thank you. Eric Smith.

MR. SMITH: Thank you, Mr. Chairman. I guess we all knew horseshoe crabs was going to be a sensitive point this week and I would like to clarify where I think we ought to be. Unfortunately you were in a sidebar and I don't think captured what was really going on.

I'd bet the majority of this board agrees that it's not appropriate for a member of the audience to come to the microphone and ask questions of a member and start to engage in a back-and-forth debate. That's never appropriate.

What is appropriate is for a member of the audience that the chairman has called on to ask questions through the chair and the chair can derive the place to get the proper answer. In fact it might be staff, it might be the chairman of the technical committee or it might be one of the members of the board.

But debate between a member of the audience and a member of the board one-to-one is never appropriate. That is the kind of message that I think Commissioner Lapointe and I were both looking for and I hope the member of the audience appreciates that for his future comments. Thank you.

CHAIRMAN MILLER: Thank you, Eric. I appreciate that and thank you, George, in that regard as well. Any additional public comments on this motion before we take a vote? All right, do we need a caucus on this?

Two minutes. Okay, take two minutes. Are we ready? I would like to call, before we take this vote I would like to call on Brad Spear to offer just a little bit of an explanation I think may be important in your vote. Brad.

MR. SPEAR: Okay, thank you, Mr. Chairman. If this option is approved by the board or if this motion is approved by the board, it does not replace any prior action from the board through the FMP or Addendum III which provides the exemption for biomedical harvest. So any action on this -- if this does pass it does not affect the existing exemption already in place, status quo.

CHAIRMAN MILLER: Any questions on that? Howard, do you have a question?

MR. KING: I have a comment but it's not direct to that question. May I speak it?

CHAIRMAN MILLER: Go ahead, Howard.

MR. KING: Yes, we're going to vote to leave the option in there but the reason is that we do support the medical use of horseshoe crabs but I think there is a public utility in leaving the options in there to inform the public of that important use of horseshoe crabs. You know I think it's worth it to leave it in there so we're going to vote to do that.

CHAIRMAN MILLER: Any other comment from the board prior to the motion? All right, are we ready for the motion? Those in favor of the motion raise your right hand, please; those opposed, same sign; abstentions; two; null votes. The motion fails.

All right, we will take up the main motion again. I don't believe that I provided, well, let me first address the board. Has the board provided any comments they wish to on the main motion?

Seeing no hands I'll provide the public an opportunity to comment on the main motion. Are there any hands? Seeing none, I'm assuming we're ready for the vote. Do we need to read the main motion, Joe? He is shaking his head no. Everyone understands what the main motion is now? Pete.

MR. HIMCHAK: Mr. Chairman, we had a request for a roll call vote on this motion, please.

CHAIRMAN MILLER: All right, we'll take a roll call vote. Brad, if you will help me with that. Do you need to caucus? Eric.

MR. SMITH: Actually we've just gotten into one of those unfortunate little mental lapses here. Please clarify for us, are we voting on this which is on the screen or had we done that previously?

MR. LAPOINTE: The full addendum to go to public hearing.

MR. SMITH: That's what I thought.

CHAIRMAN MILLER: That's what I thought, too.

MR. SMITH: We need to see that one so we know what we're voting on. Oh, I'm sorry. I'm sorry. The first line, always the first line.

CHAIRMAN MILLER: Are we clear on what we're voting on? We're voting on the addendum with the addition that you see before you. Everyone okay with that? All right, do we need to caucus? I'm not seeing any yeses so I assume we're ready for the vote on this. Is everyone okay with that? All right, all those in favor -- I'm sorry. That's right. We'll take a roll call. Are you ready, Brad? Maine.

STATE OF MAINE: Yes.

CHAIRMAN MILLER: New Hampshire.

STATE OF NEW HAMPSHIRE: Yes.

CHAIRMAN MILLER: Massachusetts.

COMMONWEALTH OF MASSACHUSETTS: Yes.

CHAIRMAN MILLER: Rhode Island. Connecticut.

STATE OF CONNECTICUT: Yes.

CHAIRMAN MILLER: New York.

STATE OF NEW YORK: Yes.

CHAIRMAN MILLER: New Jersey.

STATE OF NEW JERSEY: Yes.

CHAIRMAN MILLER: Pennsylvania.  
Delaware.

STATE OF DELAWARE: Yes.

CHAIRMAN MILLER: Maryland.

STATE OF MARYLAND: Yes.

CHAIRMAN MILLER: D.C. Virginia.

COMMONWEALTH OF VIRGINIA: Yes.

CHAIRMAN MILLER: Potomac River  
Fisheries Commission is not on this board, right?  
Okay. North Carolina.

STATE OF NORTH CAROLINA: Yes.

CHAIRMAN MILLER: South Carolina.

STATE OF SOUTH CAROLINA: Yes.

CHAIRMAN MILLER: Georgia.

STATE OF GEORGIA: Yes.

CHAIRMAN MILLER: Florida.

STATE OF FLORIDA: Yes.

CHAIRMAN MILLER: National Marine  
Fisheries Service.

NATIONAL MARINE FISHERIES  
SERVICE: Yes.

CHAIRMAN MILLER: U.S. Fish and  
Wildlife Service.

U.S. FISH AND WILDLIFE SERVICE:  
Yes.

#### **ELECTION OF ADVISORY PANEL MEMBER**

CHAIRMAN MILLER: The motion carries.  
Under the topic of other business we have a  
nomination for the advisory panel. Is there  
something to be passed out in that regard? We'll take  
a moment until that handout occurs.

All right, you have before you the name of David  
Keilmeier. Did I pronounce that right, David?

Thank you. The delegates from New Jersey, do you  
have any comments for the board concerning this  
nominee?

MR. HIMCHAK: We would like to make a  
**motion to have David Keilmeier approved for the  
Horseshoe Crab Advisory Panel.**

CHAIRMAN MILLER: Is there a second to  
the motion? Vito Calomo. John Nelson.

MR. NELSON: Thanks, Mr. Chairman.  
The paper that was handed out to me has a, it says,  
"recent nomination" and I don't have anything with it  
so I would request the information from New Jersey  
on the background of the individual.

CHAIRMAN MILLER: Pete.

MR. HIMCHAK: Yes, Mr. Chairman.  
David Keilmeier is a horseshoe crab harvester in  
New Jersey. He participates in a number of  
commercial fisheries as well. He has been an advisor  
to our Marine Fisheries Council for the last couple of  
years. And the council has worked very well with  
him. He is representing the remaining permittees of  
the horseshoe crab fishery.

CHAIRMAN MILLER: Ritchie White.

MR. WHITE: Has he filled out the  
application form and signed it?

MR. HIMCHAK: Tom McCloy will  
respond to that.

MR. TOM McCLOY: I believe we gave  
Tina all these forms on Monday. And it has two  
signatures, both the agency and our governor's  
appointee. We're in limbo right now regarding the  
legislative appointee so there is only two signatures.  
But there should be forms. Can you concur, Tina?

MS. TINA BERGER: Yes.

MR. McCLOY: Thank you.

CHAIRMAN MILLER: Are we satisfied,  
then? Are we ready for a vote on the nomination?  
All those in favor raise your right hand; those  
opposed, same sign; abstentions; one abstention; any  
null votes? Thank you. Sorry, Joe, the motion  
carried. Under the topic of other business does the  
board have any other business for our consideration  
today? Jack Travelstead.

MR. TRAVELSTEAD: Real quickly, Mr. Chairman, Bob Fischer at VIMS is going to be getting back out in the field to continue his investigations of alternative baits for the conch pot fishery. And so if any of you or any of your fishermen have items that you want tested as a potential alternate bait, please let us know. We'll be glad to include those in the experiments. Thank you.

CHAIRMAN MILLER: Thank you, Jack. Dr. Nancy Target at the University of Delaware has been working diligently on artificial baits. And the last time I met with her which was just less than a week ago she said that she would like to do some field trials within a year and I'll give her the, I'll make sure that she's aware of Bob Fischer's offer. Thank you. All right, there was a hand in the back concerning the possibility of other business. Would you come forward, sir.

MR. BOB BLUMENTHAL: I just received this addendum.

CHAIRMAN MILLER: Sir, could you identify yourself.

MR. BLUMENTHAL: Oh, sorry. I'm sorry. My name is Bob Blumenthal. I'm with Cambrex Bioscience. And looking at the Horseshoe Crab Advisory Panel and a memorandum that just was passed out I just wanted to point out that one of the people who is advisors, a good friend of mine, William McCormick, is really no longer with Cambrex, hasn't been for many years.

He is actually with the FDA. His interest in horseshoe crabs at this point is probably just, well, just from background. I suggest perhaps that we may want to replace that advisor and wonder how we go about doing that.

CHAIRMAN MILLER: That's Maryland's jurisdiction, am I right? That would be up to the state of Maryland and the delegates from Maryland to replace that particular person if they so desire.

MR. BLUMENTHAL: Okay, well, who would I speak to outside of this meeting?

CHAIRMAN MILLER: Howard King.

MR. BLUMENTHAL: Very good. Thank you.

CHAIRMAN MILLER: Any other business before the board, either from board members or from

members of the public? Seeing none, I'd like to thank the board for their diligence. I'd like to thank the plan development team for doing a very credible job of putting together a draft addendum with options. Again, I'd like to thank Greg Breese for his service.

And I'd also like to take a moment to acknowledge my predecessor Bruce Freeman who has gone on to better things, namely retirement. I appreciate his guidance and all the fine work he did for the commission on both this species and many other species over his long and illustrious career. Anyone care to move to adjourn? Pat.

MR. AUGUSTINE: **Move to adjourn, Mr. Chairman.** And, by the way, you did an excellent job in taking us through a series of minefields today that were exciting to go through and I move that we adjourn to lunch.

CHAIRMAN MILLER: Just before I send us away we have to have a public hearing schedule. I assume staff will be working on that shortly. Do you anticipate those public hearings would be held in the month of March?

MR. SPEAR: March and April.

CHAIRMAN MILLER: March and April. Of course we invite the public to provide us additional information and we will take up the issue of this addendum at our next meeting. Vince O'Shea.

EXECUTIVE DIRECTOR JOHN V. O'SHEA: Thanks, Mr. Chairman. You've accepted a motion to adjourn. We have a catered lunch outside. The lunch is for the members of the ISFMP Policy Board and commission staff.

There is restaurant right next door. There are other places for members of the public to have lunch and I ask you to respect that buffet line. And we could, you could take your lunch outside and come back in here and eat it. And as we wrap up on eating we'll convene the Policy Board. Thank you.

CHAIRMAN MILLER: We're adjourned. Thank you.

(Whereupon, the Horseshoe Crab Management Board meeting adjourned on Thursday, February 23, 2006, at 12:35 o'clock, p.m.)

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