PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

HORSESHOE CRAB MANAGEMENT BOARD

Crowne Plaza - Old Town
Alexandria, Virginia
February 6, 2014

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Board Members

Doug Grout, NH (AA)
Dan McKiernan, MA, proxy for P. Diodati (AA)
Jocelyn Cary, MA, proxy for Rep. Peake (LA)
Robert Ballou, RI (AA)
David Simpson, CT (AA)
James Gilmore, NY (AA)
Pat Augustine, NY (GA)
Russ Allen, NJ, proxy for D. Chanda (AA)
Chris Zeman, NJ, proxy for T. Fote (GA)
Stewart Michels, DE, proxy for D.Saveikis (AA)
Bernie Pankowski,DE, proxy for Sen. Venables (LA)
Roy Miller, DE (GA)
Stew Michels, DE, proxy for D. Saveikis (AA)
Tom O'Connell, MD (AA)
Bill Goldsborough, MD (GA)
Russell Dize, MD, proxy for Sen. Colburn (LA)
Rob O'Reilly, VA, proxy for J. Bull (AA)
Louis Daniel, NC (AA)
Bill Cole, NC (GA)
Spud Woodward, GA (AA)
Pat Geer, GA, proxy for Rep. Burns (LA)
James Estes, FL, proxy for J. McCawley (AA)
Mike Millard, USFWS
Derek Orner, NMFS
Martin Gary, PRFC

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

Ex-Officio Members

James Cooper, Advisory Panel Chair

Staff

Robert Beal
Toni Kerns
Marin Hawk
Kate Taylor

Guests

Mitchell Feigenbaum, Leg. Proxy, PA
John Clark, DE DFW
Allen Bugenson, Lonza Walkersville
Aaron Kornbluth, Pew Trusts
Chris McDonough, SC DNR
Benjie Swan, Limuli Labs
Katherine Swan, Cape May, NJ
M. Dawson, Falmouth MA
B. Hoffmeister, Falmouth, MA
Sheila Eyler, USFWS
Wilson Laney, USFWS
Gene Slowinski, Rutgers Univ.
Kelsey Rooks, VMRC
Joan Dize, Tilghman, MD
Ron Berzofsky, WAKO USA
Carl Thurston, Arlington, VA

The Horseshoe Crab Management Board of the Atlantic States Marine Fisheries Commission convened in the Presidential Ballroom of the Crown Plaza Hotel Old Town, Alexandria, Virginia, February 6, 2014, and was called to order at 1:20 o'clock p.m. by Chairman David Simpson.

CALL TO ORDER

CHAIRMAN DAVID SIMPSON: Okay, let's get going with horseshoe crabs. My name is Dave Simpson, and I'm the chair of the Horseshoe Crab Board. The first order of business is to approve the agenda. Are there any changes to the agenda? Seeing none; we will consider it accepted.

APPROVAL OF PROCEEDINGS

Approval of the proceedings from our annual meeting; are there any comments or issues with the proceedings? Seeing none; we will consider those approved.

PUBLIC COMMENT

The next item is public comment for items that are not on the agenda. Does anyone have a comment? Go ahead, please, items not on the agenda.

MS. BENJIE SWAN: Benjie Swan; and I wanted to make a comment on the biomedical aspect of it, so should I wait for the discussion?

CHAIRMAN SIMPSON: That would be great, thanks. Okay, is there anyone else for public comments for items not on the agenda? I don't see anyone; so the next agenda item is to review the transfer request from North Carolina. Marin.

DISCUSSION OF THE TRANSFER REQUEST FROM NORTH CAROLINA

MS. MARIN HAWK: This is a transfer request from North Carolina to Georgia. North Carolina exceeded its quota of 24,036 horseshoe crabs in 2013. Most of their horseshoe crabs are caught in the blue crab trawl fishery. The commercial horseshoe crab fishery closed on August 1st, but the preliminary trip estimates – they closed the fishery on August 1st because preliminary trip estimates showed that the quota was close to being exceeded.

The quota was exceeded by approximately 2,247 crabs. North Carolina has requested the transfer of 3,000 crabs from Georgia. This request was reviewed by the Shorebird and Horseshoe Crab Advisory Panels, the Horseshoe Crab Technical Committee and the Plan Review Team.

The technical members that reviewed this plan just suggested a re-evaluation of the North Carolina quota due to the multiple overages that have occurred. There was a transfer request in 2009, 2011 and 2012. They just wanted to point out that the current quota of 24,036 crabs is based on the 1998 landings; so a directed fishery seems to be developing. They had no other concerns with this transfer request.

In conclusion, the plan review team does not oppose the transfer request given the small number of crabs and the previous transfer precedence; but they did suggest that perhaps North Carolina could return to the 2012 management approach, which was having a trip limit of zero crabs until April 1st and a trip limit of 50 crabs after April 1st. Thank you, Mr. Chairman.

CHAIRMAN SIMPSON: Are there any questions on the transfer request? Roy.

MR. ROY MILLER: Just so I understand the nature of the request, the Georgia crabs are available from what source in Georgia? Georgia is a de minimis state if memory serves, correct, so where do the crabs come from in Georgia?

MS. HAWK: From their quota. It is just a transfer of quota.

MR. MILLER: De minimis states have a quota; refresh my memory on that.

MS. HAWK: Georgia is not a de minimis state, I don't believe, so it does have a quota.

CHAIRMAN SIMPSON: With some other species there is a paperwork process of transfer offers and acceptance; has all that paperwork been filed? That would demonstrate that they have sufficient quota to transfer. Are there any

limitations on transfer between states; are there limitations geographically on transfer?

MS. HAWK: No; there are no such limitations.

CHAIRMAN SIMPSON: Okay, are there further questions? Louis, do you have anything to add on your request.

DR. LOUIS B. DANIEL, III: This has just been an ongoing problem; and we're doing our dead-level best to limit the fishery. We keep cutting back on the trip limits. We've think we've got a handle on it now. There had been discussion back several years ago where we had requested – and I can't remember who we requested the crabs from; but the technical committee did reject our request for some crabs out of I think it might have been Massachusetts.

I can't remember where; but they said we needed to look closer to home for a similar population. That is why we have been begging and pleading with Georgia; and they have been very helpful in granting our request. I would just ask you to – I think I've got it under control; so I would appreciate a favorable vote on my motion to accept the North Carolina transfer request.

CHAIRMAN SIMPSON: Okay; and that was your motion?

DR. DANIEL: Yes.

CHAIRMAN SIMPSON: Do we have a second to that motion; Jim Estes from Florida. Is there any discussion on the motion? **Okay, so the motion is to move to approve the transfer request from Georgia to North Carolina. Motion by Dr. Daniel and seconded by Mr. Estes.** Is there discussion on the motion? Do you need time to caucus? All those in favor please raise your hand, 14 in favor; any opposed; any abstentions or null votes. **The motion passes unanimously**, 14-0. The next agenda item is an update on New England and New York stock trends. John is going to take that.

UPDATE ON NEW ENGLAND AND NEW YORK STOCK TRENDS

MR. JOHN SWEKA: In 2013 and at the last management board meeting Penny Howell, the technical committee chair, presented the 2013 Horseshoe Stock Assessment Update. The majority of that update used ARIMA modeling. That is auto regressive integrated moving average modeling to examine trends and abundance indices up and down the coast.

Ultimately it estimated the probability the terminal year of an index of being below either an index-based reference, which we chose the 25th percentile, or the 1998 index value. The reason why we used the 1998 level as an index was because that's when the first FMP was initiated. Okay, this tables shows the number of indices within a region where the terminal year of the index was below an index-based reference point both for the probability of being below the 1998 index point and then also the 25th percentile.

This compares the 2013 update to the 2009 stock assessment. In the Southeast Region and in the Delaware Bay Region things seemed to be either increasing or at least holding steady in those regions. However, New York and New England we see again a continued decline. We went from one out of five surveys to three out of five surveys, for example, in New York now being below the 1998 index-based reference point. Likewise, in New England things also appeared to be getting worse.

This caused the management board to charge the technical committee and stock assessment subcommittee with further examination of trends in the New York and New England regions. This was to include biomedical mortality from these regions. The question is could that be a possible reason why we see continued declines in New York and New England?

However, in trying to use biomedical data to assess mortality from that industry; we run into data confidentiality issues. Within the New York and New England regions, there is only one biomedical company harvesting and bleeding crabs, and the Associates at Cape Cod. So what we did, I got permission to use some of that biomedical data to help examine the trends in New York and New England a little more closely.

We looked at the survey indices from New York and New England. In New England we had eight fishery-independent surveys; in New York, six different indices. These were then combined to develop a composite index of New York and New England indices with linear mixed effects models.

Within these models, the random effect in these models was each survey; so each survey was allowed to fluctuate independently of the other surveys. Then before running this model, we scaled the surveys so that their values were within the same order of magnitude; basically just moved the decimal point on the yearly index from each survey.

For the bait harvest, for New England, this was ASMFC reported landings from Maine, New Hampshire, Massachusetts and Rhode Island; and likewise from New York it was landings from Connecticut and New York. For the biomedical harvest, as I said, we obtained data from Associates of Cape Cod. The kill from the biomedical industry equaled the released horseshoe crabs after bleeding multiplied by – the technical committee assumed a mortality rate of 15 percent mortality on bled crabs, plus any dead crabs that suffered mortality prior to the bleeding.

We did not include any horseshoe crabs that ultimately went into the bait industry; so there was no double counting in our assessment of biomedical harvest. From these data, then given the biomedical harvest, the bait harvest and our composite index of abundance, we calculated an index of relative F.

The relative F for the bait industry was just the bait harvest divided by the composite index for a given year. The relative F for the biomedical industry was the biomedical kill divided by the composite index in a given year. Okay, this graph just shows the bait harvest that is reported to ASMFC and how it has changed through time since 1998.

You can see after 2000 both New York and New England bait harvest has greatly decreased and has bounced around at a much lower level over the past decade. Here we have the composite indices for New York and New England. We went back to 1990. There were a few surveys in the New England Region that went farther back in time than 1990; but we for this analysis just cut it off at 1990 and to the present.

As you can see in the New England Region, you see a big decline from about 1995 onward and the index has bounced around at low levels since the early 2000s. In the New York Region, the index bounced around early in the time series and it shows more variability than the New England index; but since about 1996 there is a general decline downward in the New York Region.

For the relative F, again this was just the bait and biomedical harvest divided by that composite index in each year. For New England, the bait industry has fluctuated through time; it has gone up and down. It was decreasing until about 2011 and then in 2012 went back up. For the New England biomedical relative F, it shows a fairly similar pattern to that of the bait industry with that peak there in about 2008, followed by a decline and then an increase again in 2012.

Now, one thing you will note on the bottom graph for the New England biomedical relative F, I have the Y axis labels off just because of those data confidentiality issues. At a minimum we can say from this is that the biomedical relative F seems to be tracking or showing the same similar trend up and down as the New England bait relative F.

In the New York Region, the relative F for the bait industry decreased in the early 2000's, which would be expected because of the big harvest decline; but it has generally shown a bit of an upward trend since the early 2000's. In the New York Region, none of the crabs that are bled from the Associates of Cape Cod came from the New York Region or least what we're calling the New York Region; so the relative F for the biomedical industry in New York was essentially zero across the time series.

So some conclusions from this further analysis of New York and New England, the composite indices show declining trends, which this was a new analysis that we didn't have in the stock assessment update, but it is nice to see that it also

agrees with the 2013 stock assessment update; that those regions are continuing to decline.

The bait harvest was reduced in both regions after 2000; and trends in relative F for the New England Region are similar between the bait harvest and biomedical mortality. Bait relative F shows some upward trend after 2003 in the New York Region. Again, there was no biomedical harvest from the New York Region.

However, we still have quite a few questions that remain in our assessment of horseshoe crabs. First, how does the biomedical mortality in the New England Region compare to the bait mortality? Like I said, I had to leave the scale in that Y-axis off because of those data confidentiality issues; so it is hard to really get a feeling for how the two compare.

Is total mortality, bait plus biomedical, still too high to allow population growth in both of those regions. Should the bait and/or biomedical take be reduced in those regions? The big question is how does assessment of horseshoe crabs advance given the data confidentiality issues? Coast-wide biomedical mortality in 2012 was estimated at 10 percent of the total harvest of all horseshoe crabs and with the bait and biomedical industries combined.

We're in a situation where there is not a whole lot more we can do in horseshoe crab assessments without having access to biomedical data. In our 2009 stock assessment for the Delaware Bay Region, it was the first year that we could start to do a catch survey model to get some better benchmarks and better estimates of horseshoe crab mortality in that area.

However, we didn't include that in the 2013 update; and the reason why we didn't include it is because we realized the estimated biomedical harvest was approaching a point to where it wasn't negligible anymore. Therefore, since we couldn't include the biomedical harvest for the Delaware Bay Region, we didn't run that catch survey model again.

The confidentiality issue is not just an issue for New York and New England to try to figure out what is going on in those regions. It has implications for a coast-wide assessment of horseshoe crabs. Thank you.

MR. PATRICK AUGUSTINE: It is a great report. Okay, can I have that one back, the last shot up there with your conclusions on it, please? Okay, so let's go to the second point; is total mortality, bait plus biomedical, still too high to allow population growth in both of those regions? The question is does the technical committee see a trend as to how we can improve it?

If you can't see a trend and we continue to see it go down, without the confidentiality information being made available, it forces one to come to the conclusion we have to reduce them both. Now, that is a leap of faith, but that is based on the fact that we don't have adequate information.

The next line; should bait and biomedical take be reduced in those regions; and the answer would be yes. Unless you could answer those questions without more adequate information, I would wait to hear all the questions around the table. But, boy, it raises a real big red flag. If you can't get the information and we can't determine it is one or the other, then we have to reduce them both.

We have a high level of poaching in the state of New York; and I don't want to get off the main subject. Jim's staff is attacking that, but it is still very high. You have seen reports and our trend is continuing down because of the value of those animals. If you can address those questions, I would appreciate it.

MR. SWEKA: Yes; that is a very difficult one. We know what the bait is because that is reported. We still have this declining trend. In the New York Region, given that there was – at least from Associates of Cape Cod there are no horseshoe crabs harvested for the biomedical industry from the New York Region. All the mortality is associated with the bait industry. But in the New England Region, because of that confidentiality issue, it is hard to tease apart – we can't say the relative effects of each.

CHAIRMAN SIMPSON: I had a quick question or two, and then I need to get to Mike. Did you

report – I missed it if you did – the harvest in comparison to the quota for each state; what proportion of the quota are we taking?

MR. SWEKA: I didn't report that in this presentation. It is something we could easily look up. I don't know it off the top of my head.

CHAIRMAN SIMPSON: Okay, that would be a starting point. If our quota is too high to achieve rebuilding, then that is probably where we want to start is to address it through that approach. Marin.

MS. HAWK: Just off the top of my head; I don't think any of the states are that near to that quota, but I can easily look on my computer and let you know.

CHAIRMAN SIMPSON: The other observation I made from your presentation was that the relative F value was pretty volatile for the New England Region; and for a relative F that seemed a little bit surprising. I wondered if you felt that was more due to the variability in the survey indices or in the harvest removal side of the equation.

MR. SWEKA: I would say it is both; probably more the survey indices than the harvest. From that graph, the graph of the survey index went back to 1990, but our relative F calculations were only from 2004 onward. Because of that big reduction in the composite index, there is still quite a bit of fluctuation that you don't really notice just because of the scale of that graph.

DR. MIKE MILLARD: I think Pat touched on most of my issues, but I guess I do have a question for John; a fairly simple question, but I would like to get it on the record. From the technical committee's standpoint were we not bumping up against this confidentiality issue; do you feel that we would in fact have a better management or we could move forward and manage the harvest better, in a more efficient or effective way?

MR. SWEKA: I would say yes at least from a more transparent perspective. Like I said, the biomedical harvest coastwide has gotten to the point where we can't ignore it any longer. It is upwards of 10 percent and it is showing an increasing trend through time. In order to do scientific management of horseshoe crab, we have to be able to account for that in any stock assessment models that we would like to run into the future.

For example, the catch survey model in the Delaware Bay, we didn't run it in the 2013 update because we knew we're missing a good portion of the total kill of horseshoe crabs. In the New York and New England Region, our data isn't quite as good as what it is in the Delaware Bay, but there are some other methods that we'd like to be able to run, but we still don't have that full harvest or full fishery mortality component to include.

CHAIRMAN SIMPSON: I will just observe that data confidentiality is something that we live with in every state and at the commission because the data are protected. We've run into this issue trying to examine alternative management strategies for lobster, for example, and we couldn't look at landings by state and month because the data might be confidential.

I think one of the particular aspects of horseshoe crabs is that we have a reported time series of bait landings and then a more recent introduction of this biomedical component; so even reporting the landings in a composite fashion, by simple subtraction from old documents you could determine what someone's individual level of participation in the fishery will say was. That would violate our confidentiality rules both at the commission; and certainly if you were in Connecticut, I could release the data by state law. Are there other comments or questions? Tom.

MR. THOMAS O'CONNELL: I know that the next agenda item is on biomedical and confidentiality, but just an observation for a number of years now we've kind of seen this decreasing trend in the New York Region at least. I am wondering does the technical committee have some suggestions on what action should be needed.

We know that this species is long-lived, late maturing, low fecundity. The longer we wait and if it gets to a serious situation, it is going to be a long time to try to get that population to recover. I'm kind of curious are we looking for the next

steps? Do we need to charge the technical committee with coming back and giving us some recommendations or are they looking for some guidance from us? What are you looking for today I guess my question is?

MR. SWEKA: Penny is actually the technical committee chair, but I guess on her behalf I would say the technical committee would probably be looking for some guidance on how to proceed from here on out. I know at least from a stock assessment subcommittee perspective, that is what we're looking for; what more can we do?

CHAIRMAN SIMPSON: And the greater decline was in the New York Region, wasn't it?

MR. SWEKA: The greatest decline is in the New England Region, but New York is also trending downward.

CHAIRMAN SIMPSON: So, yes, we are probably looking to provide the technical committee and the stock assessment subcommittee with some guidance on what we'd like to see so that we can make decisions about our quota management system. Having said that, I think Marin has some details now on how our harvest has compared to the quota in the last year or in recent years.

MS. HAWK: Yes; Kate is hopefully going to help me here and put up just a very quickly put-together graph of the quota in Massachusetts and New York because are the two states with the highest bait landings versus their bait landings since 1998. Keep in mind both of these states have elected to have a quota that is lower than the commission put forth for them.

For Massachusetts the commission quota is 330,377 crabs and they have chosen to implement a quota of 165,000 crabs; and for New York, their quota is 366,272 crabs and they have chosen to implement a quota 150,000 crabs. These quotas that are on this graph are the state-chosen quotas, so they are about 200,000 crabs below what the commission plan indicates these states should have. Again, I put this together very quickly.

Massachusetts is the blue line and the Massachusetts quota is the green line. This graph kind of indicates that it is pretty much below that quota. New York is a little bit closer to New York's quota but still not really going over it. Again, they're very far below the FMP quotas for both of these states.

MR. JAMES GILMORE: Thanks, Marin; that was some of the things I was going to bring up. I want to make sure that John has got a notation on his harvest chart that we had voluntarily dropped our quota, so some of those harvests drops you see were just from a voluntary harvest reduction.

We've had a great deal of difficulty even managing that because of a couple of things. We did have a much higher harvest and actually we're concerned now because we're about to put regulations and limiting Asian horseshoe crabs to prevent them. The first thing we got back from our fishermen was that, well, you need to increase the quota back to 360, which we're reluctant to do because we've been watching this and we're concerned about it.

I don't know what all the reasons are, but one of them – and I will put this out and maybe following Tom O'Connell's idea before about maybe something the technical committee could look at – part of this is because of the moratorium to the west of us. We really have a poaching problem and it has driven the price up and we can't keep up with it.

Harvesting horseshoe crabs, you need a pickup truck and a freezer, and it is not really difficult to get into this fishery, and it is very difficult for our law enforcement guys to really stay on top of it. I know New Jersey has had their issues and I understand what they're doing, but it really gets down to that Fisheries Management 101.

It is like putting a moratorium on a healthy stock is a bad idea, and I think we're starting to see that. Is there any way that we could maybe from a technical standpoint evaluate that this moratorium could really be having part of the problem of the overharvest. It is actually backfiring. If you're doing a moratorium to the west that is actually increasing price to the east and that is causing

more harvest, then you're having now an effect on the population. If there is anything that could be done on that; that would be great. Thanks.

MR. DAN McKIERNAN: We've done a number of things in Massachusetts that keep our landings constrained. We've adopted, similar to Rhode Island, the lunar closures; so we don't allow any harvest in the spring during the five days around the new and full moon. We're in the process of reducing the mobile gear limits down to 300 crabs a day. It is mostly a Nantucket Sound Fishery.

We've been aggressive, but by and large these are localized stocks. We have horseshoe crabs in Barnstable Harbor and Wellfleet Harbor. These are areas north of Cape Cod that have no relationship to those that are off Nantucket. We talk about a regional decline, but these are really localized stocks; so it really falls upon us to manage this not at the local level but more or less on the local scene. It is not a locally managed species in Massachusetts; it is something under our purview.

I did want to point out that the early years that keep being shown – and I brought this up at the last meeting – the 1998/2000 time series; that data is bogus. The information that was brought forward was back-of-the-envelope calculations. It was not based on any signed catch reports by individual fishermen. I hope that going forward we more focus on, say, the 2002 onward trends because that is when we really had valid catch reports.

As far as poaching goes – Pat mentions poaching – maybe it will be useful to ask the Law Enforcement Committee to address this or at least describe what efforts each of the state agencies has done. I don't think my state's law enforcement group has made this a priority because, frankly, it hasn't been.

Maybe that would be a worthwhile effort for the Law Enforcement Committee to bring forward some report as to how much effort they've put into that and recommendations to how to improve that. My last comment in response to Jim, two meetings ago we started talking about this whelk fishery that is proliferating, but most of us around the table don't have an aggressive effort control plan on the whelk pots.

That is where most of the demand is; so it makes sense if we're trying to control the harvest of horseshoe crabs, to try to look at the demand for this bait. I think that some of the rules or the lack of rules allowing the growth of in the whelk pot fishery is somewhat irresponsible and is probably going to collapse those stocks.

Maybe we don't have that far to go before the stocks have collapsed. The last point is I know Delaware has been working really hard and some of the manufacturers to come up with a substitute bait. Maybe we all ought to consider requiring either the pucks, the artificial bait, or put some limits on how much horseshoe crab you can put into a pot.

Granted, it is not an easy thing to regulate, but neither are a lot of the other rules we have. I think there are a whole lot of issues here that we should be taking up. I think on the demand side, that is probably something we should address because I don't think horseshoe crabs are going to last. Of course, the ex-vessel price is going up so high, it is constraining. Those are my comments.

CHAIRMAN SIMPSON: I think it is a good suggestion that we get some feedback from the Law Enforcement Committee on what they're seeing and how high a priority there is and what their issues are; because as we know with every FMP it only as good as the enforcement that is applied. That is an important component not to be overlooked. Pat.

MR. AUGUSTINE: That was a good conversation and I'm glad you brought that up, Dan. Do you recall back in Philadelphia – I guess it was three or four years ago – when we talked about what the other options were that fishermen could do; and there were bait bags made available. That was a pitch to reduce the usage of horseshoe crabs. Instead of using the whole horseshoe crab, cut it in half or quarter it, we still have guys doing that.

But then there was also a bait on the market that was being developed, a piece of leather of some

sort that seemed to last pretty well. We don't hear anymore about that; and it just seems as though those initiatives have kind of fallen by the wayside or maybe they're being used and we don't know it. It would seem to me we should bring some more attention back to that. Again, we can't let that slip through the cracks.

MS. HAWK: If you recall, I think it was back in the August meeting, we discussed the artificial bait from that study in Delaware. The technical committee has kind of been pursuing that to determine whether it is cost effective, so we are pursuing that.

MR. O'CONNELL: Maybe to just try to move us along here and maybe mostly for New York and New England but the entire board; given what we have seen for a while now, does anyone feel like we should just not be doing anything? If people have that opinion, I would like to hear it. Otherwise, I think we need to figure out an approach to further evaluate some of the ideas that were put on the table and come back in May to look at those ideas more thoroughly.

CHAIRMAN SIMPSON: Yes, I would agree, Tom. I think one of the things is that my recollection of the history of this plan and adoption of quotas was we were taking our best guess – to Dan's point – of what the landings were and set a quota based on that. It wasn't a really rigorous process that we went through to set those quotas; and maybe in retrospect they were set too high.

I think the fundamentals are right now we're not hitting – our management would say we have no problem in overall harvest because we're staying under the quota. Maybe it is time to do a little bit of work to identify a more appropriate harvest cap and then restructure our management to that. Being a board chair, I can't make any motions. Bob.

MR. ROBERT BALLOU: I certainly do feel that we do need to move forward and respond to what we've been hearing both at this meeting – and thank you for the technical report just provided – as well as at the prior meeting. I remember now, having just looked back on the minutes as to what sort of prompted this report from the technical committee; and that was the sense that the assessment having just been duly adopted at the last meeting spoke in very specific and substantive ways to the status of the stock down south and only more vaguely spoke to the issues in the New England and New York area.

That prompted me to request the technical committee to report back on the issues of characterizing data collection, monitoring and assessment work needed to address the population declines in the two regions. Where I'm trying to figure out – what I'm trying to figure out now is are we still at the stage of trying to figure out what additional data and monitoring do we need to do to enable us to take the appropriate management actions or do we have what we need; is it as good as it is going to get; and are we now at the point where we should start to develop some management options? It is either one or the other or both, but I do feel like we need to move forward given what we have been hearing. Thank you.

MR. SWEKA: I think we can always use more data. All the surveys that we have from the New England Region, none of them are specific to horseshoe crabs. The numbers that we get for crabs in those indices; they come from surveys that are targeted for other species. It would be nice to have horseshoe crab specific surveys. It would also be nice to have more biological data, sex ratios from within those surveys. Perhaps that data does exist in the raw data when it is actually collected, but it just hasn't come forward to the technical committee and the stock assessment subcommittee.

Ultimately, in the Delaware Bay Region with the Virginia Tech Trawl Survey, we are headed towards to the use of catch survey model where we had information by sex and also by primiparous and multi-parous maturity of crabs. It would be nice to have that information. But at the same time, the other thing, with what we have now we could do some simpler sorts of stock assessment models if we also had and could freely disseminate the biomedical harvest in that, too.

One method that I've had in mind for a while is to use within the Northeast Fisheries Center toolbox

– it is called an Index Method. It is a relative F method that allows you to come up with some benchmark relative F values; and then you could manage according to those; but even something as simple as that we currently can't do.

CHAIRMAN SIMPSON: Okay, so at this point, as I understand it, you have the technical committee and the stock assessment subcommittee has been given access to all the data that we have, removals including biomedical estimates; so you do have all that data and it is a matter of how you conduct the assessment and report the results and still retain the required confidentiality?

MR. SWEKA: Yes.

MR. MILLER: The comment I have, Mr. Chairman, is not directly related to your discussion. If you want to come back to me, it is in regard to horseshoe crabs, of course.

CHAIRMAN SIMPSON: Well, I think along the lines of what we need to do, you're on a path of doing an assessment. I think we need to do that and hopefully the outcome of that ultimately will be a basis for evaluating our current quotas and what levels are appropriate. If we can't do that, then maybe as a board we need to think about a different kind of approach to management other than quotas. Again, as I said, in that process find a way to maintain the confidentiality we're required to maintain.

MR. SWEKA: Yes; I would just say that right now given the confidentiality issue right now, I don't see us being able to do anything better than the simple trend analysis that we've done. Like I said, coastwide we have acknowledged that the biomedical kill isn't negligible anymore; and without incorporating that into any real assessment, I don't know that we can get any farther than our simple trend analyses that we have been doing.

MR. GILMORE: Mr. Chairman, your suggestion on the Law Enforcement Committee; is that something that we would need – can you just include that or do we have to do a motion? I think that's a good idea to essentially have them take a look at this, because, again, it may not be the entire problem, but I'm sure it is a good part of it. If they could, for the May meeting, put together an evaluation of their efforts and their take on this, I think it would be helpful.

CHAIRMAN SIMPSON: I kind of just made eye contact with Bob and he sort of nodded at me that is a done deal when we were talking about it; so I think we will get that. We're getting the nod that that is a done deal. Yes; having come up against this confidentiality issue a few times, I think we do need to – you know, the technical people do have access to the data and I think can do work.

I would think, Bob, we could retain the confidentiality if we were to get that report back – Bob, I'm trying to run a concept by you of getting an assessment done from the technical folks and reviewing it internally first, perhaps with myself and Marin and yourself, Toni, internally for those results and how we can package those results to balance the need for full disclosure for peer review purposes but also retain confidentiality and then maybe find a path there to move it out to the more public arena for the board and the general public.

EXECUTIVE DIRECTOR ROBERT E. BEAL: There are two parts to that. One, are you requesting that the assessment schedule be increased? I think it is on 2016 now; is that what it is, John? Are you saying when that is finished to have sort of an internal group look at the results or something different?

CHAIRMAN SIMPSON: No; within its own scheduled timeframe, let's do this work, share the results within the group to retain the confidentiality and try to figure out a report-out process that finds the balance between the competing needs for openness and retaining confidentiality. We would do that as a group, the five of us perhaps, to do that and develop a publicly accessible document.

EXECUTIVE DIRECTOR BEAL: I think that's fine. If we have data confidentiality clearance, we can look at the data and then we can ensure that it is packaged in a way that doesn't violate any of those provisions. Anyway, we're going to have a discussion here in a little bit with the industry on those provisions.

Depending on what those results look like, maybe there is an opportunity to work with the industry on the packaging of moving forward. Maybe there is a comfort level of exposing more trends and different things to the general public rather than specific numbers. We might be able to have a little more description without – with the approval of the industry, we might be able to be a little bit more descriptive than we are under the current provisions I guess is what I'm trying to say.

CHAIRMAN SIMPSON: Okay; does that sound like a workable way forward for the group?

MS. HAWK: Can we clarify that this is just for the New York and New England Region still?

CHAIRMAN SIMPSON: Yes; I think that's what we're talking about right now. If there is nothing else on the stock trends – Bob.

MR. BALLOU: A clarification on the timeframe because I heard 2016 for the next assessment, but then I'm not sure that we're talking about waiting until 2016 with this. Could you just clarify what we're looking at in terms of rollout of the process that you just described?

CHAIRMAN SIMPSON: Well, I wasn't suggesting changing the work plans that we've already laid out for the various stock assessments. Within that schedule, when we get to it, we want to see that work done on the schedule and then we will work to make sure that we balance the need for confidentiality and sufficient output results to base management on.

MR. BALLOU: I just would express concern that means we're looking at a two-plus year timeframe, if I'm correct. I see different responses from Marin and you. I'm trying to get handle on whether we can do anything or should be doing anything sooner rather than later with regard to the New England and New York trend decline issue.

MS. HAWK: I think we can continue to pursue investigating the New England and New York Regions using this method in the upcoming year. It wouldn't be a coast-wide assessment or a benchmark assessment by any means. It is just investigating trends further.

MR. ROB O'REILLY: Mr. Chairman, I heard John say the biomedical is about 10 percent and has been growing. Is that relative to changes in quotas for the bait as well or is that just relative to the way quotas are now; because we also heard a couple of states have taken lower quotas. Where does that start, that trend for the biomedical?

Then another thing is there are bait quotas; and there doesn't seem to be biomedical caps by region. One thing to think about – not very popular, I'm sure, but one thing to think about is there is a cap for a region. Does that help the analysis to go beyond what you can do now; because if you assume that the cap is being taken, then you use that value, and it is a conservative value. Does that move anything forward as far as you can see?

MR. SWEKA: Well, the first question about where the 10 percent came from; the 10 percent estimate for 2012 was just the estimated biomedical kill, assuming the number of crabs coastwide that were bled, assuming a 15 percent mortality on those, and then dividing that by the total kill from the biomedical plus whatever was killed in the bait industry.

That changing percentage, if the bait industry is declining, that is one thing that could make that percentage increase. At the same time, though, just for the absolute numbers of bled crabs has gone up through time as well. The second question, if we just assume – well, there isn't a quota for the biomedical industry coastwide.

In the original FMP there was a 57,000 coast-wide recommendation; and if that was exceeded, it was stipulated in the plan that the board may consider taking action. That has been exceeded for a number of years now. Now, from an assessment standpoint, if we just assumed – you know, if the board developed regional quotas and then we just assumed that the biomedical industry hit those quotas, personally I would say that is not very informative. That is not real scientific data to use in any sort of assessment model.

CHAIRMAN SIMPSON: I think more fundamentally than whether a sub-corner of the fishery hit really an arbitrary cap that we set on them, more fundamentally it sounds like the initial quotas that we set may not have been adequate to achieve the conservation you need for stock rebuilding.

I think we have a more fundamental problem of taking a closer look at what are sustainable harvests that would allow for the stock to grow to more healthy levels. I think we have pretty well transitioned into a discussion of the biomedical mortality and confidentiality, and Marin has a little bit on that and we have a couple of people here that want to speak to that.

BIOMEDICAL WORKING GROUP REPORT

MS. HAWK: This is the Biomedical Working Group Report. If you recall back in October of 2013 when we first discussed this, the board put together a working group because they were concerned with the increase in the number of dead crabs which are attributed to the biomedical sector and also the lack of ability to use these data in the stock assessment, as John has discussed.

The board formed this working group to facilitate the discussions. It consisted of representatives from each of the biomedical companies as well as the board members from each state with a biomedical company. That was Massachusetts, Virginia, Maryland, New Jersey and South Carolina. This working group held a conference call in December to provide solutions and recommendations to the board.

The topics of discussion were the confidentiality of data and the increased mortality in the biomedical sector. These are two separate issues. The confidentiality of data deals with the fact that we would like to look at the data by region; and if there are less than three biomedical companies in a region, it prevents that data from being included in the assessment.

The increased mortality is perhaps partially due to an increased harvest, but is not an increased mortality rate. I just wanted to make that very clear. The rate of mortality in the biomedical sector has stayed consistent; and it is just now it is a larger part of the coast-wide mortality. It used to be about 2 percent of the coast-wide mortality; now it is up to about 10 percent of the coast-wide mortality.

We first discussed the confidentiality of the biomedical data; and as I just mentioned, horseshoe crabs are assessed by region. There is the New England Region, the New York Region, the Delaware Bay Region and the Southeast Region. The confidentiality of these data prevents it from being used in the assessments.

Due to the increased contribution to the coast-wide mortality, the stock assessment subcommittee feels that excluding the biomedical data, harvest and mortality does not provide an accurate assessment, as John has discussed. We came up with two possible solutions. The first was to release all the biomedical data to the public; and the second was to release biomedical data to the stock assessment subcommittee but require that it remain confidential.

I'm just going to outline the pros and cons of each. The first is to release the data to the public. The benefits of that would be that the data are available to the stock assessment subcommittee and would be included in the assessment. The data would be published in a report which promotes transparency. However, the cons of this are that it could expose the data for misuse by interest groups. There are also some potential issues since the production could be determined among the different biomedical companies. The biomedical representatives strongly opposed this option.

The second is to release the data to the stock assessment subcommittee, but the data would remain confidential. The benefit of this would be the data would be available to included in the stock assessment; and it also avoids potential business complications from releasing those records.

The cons would be it is unclear how useful this information would be for management; and it clouds the transparency of the stock assessment process because the public would not understand how the stock status was obtained. The stock

assessment subcommittee and the technical committee strongly oppose this option. I thought we might want to pause and discuss this first issue before moving on to the increase in biomedical mortality.

CHAIRMAN SIMPSON: Are there any comments on this? Pat.

DISCUSSION OF BIOMEDICAL MORTALITY AND CONFIDENTIALITY

MR. AUGUSTINE: I'm going to be very bold and you may be very upset with me about what I'm going to say. If I had a monopoly on something, I wouldn't want anybody to know what I was doing either. Questions about confidentiality; we're managing horseshoe crab that has many, many values; and this biomedical value is absolutely essential. I'm alive because of it.

I also look at the status of the stock. The question is, are the states going to limit any use for horseshoe crabs other biomedical? If that's true and let's assume we will, then can we only assume that ASMFC will manage horseshoe crabs for the benefit of the biomedical industry only and there will be other purpose?

If there is no limit on how expansive the biomedical industry can be or get, what is to keep them or what is to prevent them from wiping out the status of the stock completely and put us in a depleted state? We're talking about a series of possible things that could happen. The real question here is who are we protecting the animals for and should a particular group or any individual group have total use of that animal?

Somewhere along the line in your report you did say that they preferred not to have this information made available. I thought the way you presented it or we presented it was the data would be confidential within the staff and be totally self-contained, to be combined together to show the board and have our stock assessment folks know what that total number was so we can make some better decisions as to what we're going to do. I just made some hard statements and I'm not sure you can respond to those; but taking the approach they're taking, it doesn't give us as managers much of a choice; does it, Mr. Chairman?

CHAIRMAN SIMPSON: Well, Marin had some comments, but first I think the concerns about a complete flip-flop and who is approaching their exclusive use of the resource, I think we're a long way from that. In terms of confidentiality, I believe a hundred percent that a public resource, the information should be publicly available.

My income and the income of every state employee in Connecticut and every retired individual, that information is public knowledge; but the law on fisheries says it is confidential. The commission policy is it is confidential. What I believe in this case doesn't really matter; the law is different than we would like it to be.

The only way you're going – so we need to respect that aspect of our plans. I wish I had marked it. Preparing for the meeting, there was at least one table where I think it was state by state landings on another species, every state was reported except for one and that could not be provided because it was confidential. Now that could have been a hundred times what everyone else landed, I don't know, but that is the world that we live and we have to – so those are the constraints that we have to work in. Dan.

MR. McKIERNAN: I'm not sure that the problem is as bad as it is perceived, because these are really localized stocks; and I think we're going to wipe the Southern New England and East Coast stock of horseshoe crabs with rules or without rules. I just don't see it. Furthermore, the biomedical firms have a bleed-and-release policy; so obviously there is no way they're going to wipe out the stocks.

Presumably for every hundred animals they bleed, 85 are going to live; so I don't see it. Pat makes some good points but I think it is that drastic. I really think that we all have to go home and manage these things based on our local knowledge. That is a much bigger challenge. We all know what our fisheries need, but we also know the uniqueness of these embayments.
A lot of the biomedical crabs in Massachusetts are coming from a single embayment that wouldn't be

detected through trawl surveys. It is one that is east of the Cape in Pleasant Bay. We have made it biomedical only. That particular industry is going to affect that embayment; and we haven't seen any crashes of that stock in that little embayment.

MS. HAWK: Just to address I think Pat was kind of suggesting that if you release the – that we could get a little bit further by investigating what is happening in the stock if you released the data to stock assessment subcommittee but have it remain confidential; but I just wanted to clarify that is what we've done with New England and New York. This is what we have gotten from that.

MR. STEWART MICHELS: Marin, I'm pretty naïve on this stuff. Can you try and help me understand how it is a competitive advantage to protect the number of crabs that you harvest for biomedical purposes?

MS. HAWK: I'm going to turn to the industry and perhaps someone would like to help me answer that.

CHAIRMAN SIMPSON: Does someone here from the industry want to take a stab at explaining that? I heard it in our workgroup that knowing the number of crabs tells you the size of your business and reveals the size of your business; and that is something that they feel is important to preserve what market share they have. This isn't one fisherman in 10,000.

This is one of a few companies in the world; so by quick subtraction and by the math of how many crabs, you know what your competitor is doing. That is one of their business concerns. I think this might be a good time – we have a couple of people from the industry who wanted to make some comments. I think I will go to them now and that may help us a lot to understand this business and this fishery. Okay, Jim, do you want to take the public mike.

DR. JAMES F. COOPER: Yes, thank you, Mr. Chairman. As a disclaimer, I'm usually here representing the advisory panel for the horseshoe crab; but actually I'm here to give my own statements since I haven't gotten their approval or we haven't formally met for this purpose although I've discussed this matter with them.

I'm just here to provide hopefully some information that will help you understand the situation here. I do think the confidentiality issue has been overstated and that we've also then had some other comments particularly from Massachusetts that have put our considerations I think more into balance and perspective. Realize that from the very start the biomedical community has been in the business of conserving horseshoe crabs. It started in 1973.

Now, it is true that I founded one of the companies. I have retired now so I really can't speak for management, but I began this process in '69 and '70. It makes me look old, but actually I was only seven years old at the time, but, of course, that is not the case. From the start we have had the return-to-sea policy.

Secondly, we have educated the public and watermen as to the value of the horseshoe crab. It used to be treated as a nuisance and was destroyed. Of course, when we started the FMP initiated in 1998, the FMP continued to recognize the fact that there would be return-to-sea policy.

By the way, we have the fellow who led us on that FMP sitting over here, Tom O'Connell. It was 15 years ago that we got the FMP through; and Tom was able to manage this in two ways. First of all, he provided good leadership; and, secondly, just as we convened for the meeting, he called in a 20-inch snowstorm and we were confined to the hotel until we finished the FMP and then finally the snow melted. Yes, we did get it through.

This 57,000 mark that was written into this was not written to be a level where it was thought to be a threshold, where there would damage should that be considered, or nor to be a level that would be – if you exceeded that, it would be punitive. At that level we were supposed to re-evaluate the possibilities as was discussed over here a few minutes ago.

The response has been to that is that a few years ago I suggested that we could come up with some best management plans, BMP, where the

biomedical community could get together and communicate along with our state agencies that regulate us and come up with good management practices so that we could do all we could do to minimize the mortality in conducting our business.

As you can well imagine; we're not going to have a zero mortality in conducting this business. Even the 15 percent mark that we think represents what happens to crabs once they come into our possession, this is not really hard evidence. You see, it is very difficult to create an environment for the horseshoe crab and treat it as a laboratory animal.

You can do this with mice and rats and things like that, but this is a very difficult creature to manage in a laboratory or experimental evaluation setting; so this is not a hard number. I think I would like for you guys to ask yourself this question; is the LAL industry and the valuable product that we make available to the healthcare system; is it worth let's say 75,000 crabs sacrificed in the process of doing this business?

75,000 crabs; that is roughly 15 percent of what is being collected these days. I think we're making a valuable product. If you want the answer to that, don't ask me or just yourselves; ask physicians and surgeons, folks in the healthcare system, ask the pharmaceutical industry as they're making these drug products what is the value of that?

Let's say that the number is 75.000 a year. Carl Shuster, of course, is here today. We were talking about this a little bit earlier of how many horseshoe crabs are there out there on the Atlantic floor? Probably 50 million! Okay, so if we're taking 75.000 out of 50 million; is that about 1 in 500 or 1 in 1,000; so isn't that a valuable use of the resource to produce this reagent. I would like for you all to think about that and keep all this in perspective.

In response to exceeding the so-called threshold, I think let's realize that this threshold has sort of outgrown its usefulness. I would like to see you replace that with what we're already doing in the biomedical industry, and that is we adopt something that I would borrow from the radiation industry, the ALARA concept, which is we would keep the mortality as low as reasonably achievable and not be worried about caps or worried about limits.

Our goal is just to keep that number as low as possible. How do you do that? Well, in our industry it means that we have – because we're in the highly regulated drug industry, we have a lot of written procedures all throughout the industry. We have written procedures that are dedicated to the handling of horseshoe crab specimen.

We have procedures for how they would be handled, how they will be transported. We have procedures for training the people that bring them to them to try to make sure that they take the same care in bringing them to the facility and use the same care in taking them back to the ocean. Come up with practices where we try to not just dump on a beach but put them back into fast-moving waters where they can spread out begin to forage and live their normal life.

Also, I want you to appreciate the fact that the mortality in the horseshoe crab industry doesn't come from the bleeding. When the creatures come in, they're handled carefully. Only those that are very, very vigorous and show no signs of injury or illness; those are the only ones that go further on in the process.

When they come out, they have same kind of vigor associated with that. They're not like humans that often faint when they're being bled. We can tell that there is nothing wrong with them. What are the ones that die? Well, as you can imagine we capture a lot of creatures because they can't be culled. They're being captured night and we can't sort them out at that point in time.

We catch a lot of creatures that are injured, are ill, are near the end of their lifespan; and with the stress of the capture and so forth, we're going to lose some creatures, but that is what becomes the mortality. It is not the bleeding itself. In fact, Carl Shuster told me one time that 10 percent of the females that come on the beach at spawning time would not make it back. They're either stranding or whatever.

So, yes, there is not zero mortality during spawning or collecting for the horseshoe crab

industry; and we haven't gotten to some of those other things that cause sharp mortality. If you look at the riprap on many Delaware beaches, you will see thousands of crabs trapped, that come in with the high tide and can't get back out; so you have that issue.

You have the poaching issue; and some of the estimates are they may equal to the amounts that are being reported in harvest to the states. Just the last meeting; again you were introduced to the artificial bait; and can you just think how this discussion would change two years from now if indeed the scientific study showed that the – the efficacy study showed that there was no significant difference between the horseshoe crab bait and that from the artificial bait.

Wow; that needs to be followed up on. Can you imagine what a difference that would make here, potentially greatly reducing the harvest because of an ineffective artificial bait. I would like for you to accept the fact that our current mortality number – I don't want to mention rate because we don't know what that is, but total mortality; I hope you would feel that this is a good use of the resource and it is an acceptable one; and it is time to put away the 57K as a monitor.

By the way, the horseshoe crab collection is about 600,000 right now; and I really see nothing that would drive that up. As Marin has pointed out, that seems to have leveled off at about that point. Like I say, there is nothing on the horizon that would lead me to think that there would be a change at that.

I would hope that you would realize that we're going to continue doing the ALARA concept, so to speak, doing our best to keep those numbers low. You know, there is a way for you to get an answer to how well we're doing. You can ask the representative state agency and you can try to get answers to two questions.

One; do they have written procedures in place that guide them toward low mortality; and, secondly, are they following those procedures. The state agencies know what is going on in these laboratories. They are a part of it; they're part of the team. They both have a vested interest. Thank you very much.

CHAIRMAN SIMPSON: I appreciate your input, Dr. Cooper. I think it was very helpful. Stew.

MR. MICHELS: Is it all right to go ahead and ask a question of Dr. Cooper? Do you have time for a question?

CHAIRMAN SIMPSON: Yes; go ahead.

MR. MICHELS: You made mention of the alternative bait; is there an alternative to LAL and where are we in that process?

DR. COOPER: There is a recombinant Factor C, which means this is a recombinant non-horseshoe crab source. In the industry it is not the same. Well, let's call it maybe the recombinant product doesn't behave the same way. One of the problems is that the FDA does not license it so that users in the pharmaceutical industry, which are really heavily, heavily handed when it comes to regulations, are reluctant to go forward and use the recombinant product because it is not regulated the same way that LAL is regulated.

I really don't want to say much more on that because I don't know a great deal about the recombinant product; but it has not made much headway into the industry. As I'm concerned for testing certain simple materials, I don't know why it wouldn't be as good as the LAL. The industry, for their reasons, has not elected to make that a great part of their usefulness.

In terms of artificial approaches, your artificial bait might be the best chance at this point. By the way, Allen Burgenson is here, and he is with the company that makes the recombinant product and he could give you I think perhaps a fairer explanation about the status of the recombinant product in the industry. You remember the pharmaceuticals are so heavily regulated, they're not going to make changes easily.

DR. MILLARD: Mr. Chairman, I have a question and a comment. I thank Dr. Cooper for that report. I would like to make clear, though, that I don't think anyone around this table is questioning

the value of your product or the worth of your product to society. The question before us was the use of your data to help us make better decisions.

Now, Mr. Chairman has pointed out that is the law. We may not like it, but that is the way the law is written. I understood Bob's discussion to say that in fact it doesn't mandate that; that the industry can relax that or waive that if they care to to some intermediate level or fully. That is the frustration in front of us is I still haven't heard an answer to Stew's question what competitive advantage do they give us by sharing that data in a transparent way with us; and is there in fact any opportunity for them to move to the middle with their data to help us make better decisions?

DR. COOPER: I would give you an answer to that if I were in marketing, but I'm not and I'm no longer part of management of any one of the companies. I guess one of the things that strikes me is that the biomedical mortality is not a huge number. Let's say it is 60,000 – all right, make it 75,000 and you divide that by three and put 25 in the north and 25 in the middle and 25 in the south, you've basically got a number for your stock assessment. Again, that is a number that you calculate on the back of an envelope because we really don't know whether it is 8 percent or 12 percent or 5 percent or 15 percent mortality. You know what it is in the bait industry because they report it every month.

CHAIRMAN SIMPSON: I think that has been helpful, and I'm mindful of the time in large part because I have to be on a plane fairly soon; so I think what we'll do is – Rob, go ahead because I did have you on my list, and then Marin has one more piece to report, and then there is another industry member that had some input for us.

MR. O'REILLY: My question is still on the issue of confidentiality. I guess there was a slide there on the pros and cons of if the data were made available and the stock assessment process – that the stock assessment subcommittee would feel the public would not know what was going on or the board or however that was looked at.

In fairness my question would be since data confidentiality surrounds with many different species; are we in that position with other assessments. I know there is a focus here right now on horseshoe crabs, but is that also part of what we face with other assessments or is this to an elevated degree?

CHAIRMAN SIMPSON: I think most of this group is on several boards; and I have shared a few times the personal frustration I had with lobster management, which was a pretty high-profile species for the commission, that we couldn't even look at data that would show effects of the season closure state by state.

Monthly landings state by state could not be shared in Addendum XVII because it might be confidential for someone. It has posed some obstacle even in the most abstract way. I have said at home to know who landed what that February 2011 Connecticut landing was, to know what somebody landed, you'd already have to know so much about the industry, you'd probably already know what the guy landed. I know what I landed and I know what you landed so I can figure out what Pat landed, that sort of thing. It is a common problem.

I know for menhaden that would be the extreme example. If Omega just decided they wouldn't share their landings with Virginia and the commission, we would be in quite a fix on menhaden management. It exists in some fisheries and not in others. I do want to keep moving so Marin is going to help us do that.

MS. HAWK: This is just the second half of the Biomedical Working Group Report dealing with the increase in total number of crabs killed by the biomedical sector. As I mentioned, in 1998 this is approximately 2 percent of the coast-wide mortality; and in 2012 it is now about 10 percent of the coast-wide mortality.

This might be partially due to constraints on the bait harvest. As John has mentioned, this increased number of dead crabs may be having an effect on the population, which is why it has come to our attention. There are two possible solutions for this issue well that the working group discussed.

The first was to mandate the use of bled biomedical crabs in the bait industry. For example, Massachusetts harvests crabs for bait, gives them to the biomedical industry to bleed and then uses those same crabs in the bait industry; so all biomedical crabs would enter the bait industry under this option.

It would increase the mortality in the biomedical sector to a hundred percent, but it would reduce the overall mortality along the coast. The potential issues with this, as I'm sure you can imagine, the short seasons for harvesting horseshoe crabs commercially would impede the biomedical industry's ability to meet their demand. They need a steady flow of horseshoe crabs year-round.

It is unclear how the bleeding impacts the effectiveness in the bait industry, and so some further discussions and investigations will be needed for that. Using bait crabs in the biomedical industry may present challenges that need to be explored that we haven't even come up with yet. There are a couple of states, South Carolina and New Jersey, that do not have a bait harvest; so those biomedical companies would need to continue harvesting from the ocean. That's all I have for mortality. Thank you, Mr. Chairman.

CHAIRMAN SIMPSON: Are there questions for Marin? Seeing none; I did want to hear from Benjie, if you want to come up.

MS. SWAN: Benjie Swan from Limuli Laboratories. I work in the state of New Jersey. I passed around the letter so you can all follow along. I am actually going to read the letter so I don't make any mistakes; because my biggest critic is in the audience. That would be my 17-year-old daughter, Catherine.

Dear Members: I do not support the use of biomedical crabs for bait. I am proud to be an American manufacturer of Limulus Amebocyte Lysate, the only product other than the archaic rabbit test required by the United States Food and Drug Administration to test the safety of vital drugs, solutions and medical devices for humans.

I am equally proud to manufacture the product with a renewable resource, the horseshoe crab. Dr. Cooper, along with others, recognized the value of maintaining this renewable resource and protected the horseshoe crab with a return-to-sea policy at the onset of the industry in 1973, more than 40 years ago. I attached a short paper that I wrote in 2009 discussing the history of lysate and also the return-to-sea policy, which you may read at your leisure.

In the manufacturing process a huge majority of the horseshoe crabs survive, although a small number may perish. Biomedical companies continue to strive to keep this small number as low as possible. In fact, 15 years ago when the Horseshoe Crab Management Plan was enacted, a threshold number was inserted to address the number of horseshoe crabs that do not survive the process. This number ensured that the biomedical use of the horseshoe crabs was documented and monitored.

The number is calculated by assuming a 15 percent mortality of the total number of bled horseshoe crabs. Thus, the number increases as the biomedical collection of horseshoe crabs increases. For the last several years we have exceeded that threshold number, which is not surprising as the health industry is advancing and expanding as our population grows and new drugs and medical implants and devices are discovered.

It should be mentioned that the increased demand is countered by technical improvements in the use of the product. The threshold number was not meant to limit the availability of horseshoe crabs to manufacture this critical human health product; but to trigger a closer look at the industry's effect on the ecology of the horseshoe crab population.

Since exceeding that number, biomedical companies have responded by discussing and formalizing best management practices to guarantee that the number of horseshoe crabs that perish remain as low as possible. Eradicating our renewable resource has the potential of destroying our industry and negatively impacting advances in human health and medicine.

Also as an aside, I just wanted to mention that what the biomedical companies are concerned about with the confidentiality issue is that the information can be published any which way; and it can be put out there for other groups to use to harm our market. I do want to say that all biomedical companies supply extensive data to their state, and it is forwarded to the Atlantic States Marine Fisheries Commission.

I took this off some of the information that I report to my state. The information supplied includes but is not limited to fishing collection data; name of the collector; the boat name; the date of collection; method of collection; area of collection; estimated number of horseshoe crabs rejected on board the vessel due to mortality, severe injury, minor injury, small size and other reasons; number of crabs collected and transported to bleeding location; number of males; number of females; number of trawls; duration of trawls; number of males each trawl; number of females each trawl; size of net; foot rope mesh size net; and cod-end.

The bleeding information includes number of horseshoe crabs transported to the bleeding location but not selected for bleeding due to mortality, severe injury, minor injuries, small size and other reasons; number of horseshoe crabs accepted for bleeding; disposition of the crabs rejected at the bleeding facility; date of release; area of release; number of released horseshoe crabs which are dead or severely injured.

We supply extensive data and to think that we are not supplying data is just wrong. The different groups look at the information, and we have no problem with that. It is just where that information is going to be publicly put out and in what form. I would take any questions if you would like.

CHAIRMAN SIMPSON: I appreciate that. I will offer your daughter the first shot at critiquing your presentation. It looks like she is declining; so does anyone on the board have any questions for Benjie? Pat.

MR. AUGUSTINE: I do, and you will think I'm off the wall and being facetious, but rabbits grow a hell of a lot faster than horseshoe crabs and there is a byproduct. They taste good. I'm not being smart-alecky about it, but this advance from rabbit to horseshoe crabs is a great one. The product is great. I'm here because of that product, but we're back to reality.

If the other producers do exactly what you do and supply that information, then I have to ask our technical committee why do they not have it? Now, why don't you have access to it? If they don't have access to it, apparently that is the problem. We need the total number so that they can do what they have to do and we can make our hard decisions.

It is awful difficult for us sitting here around this table pulling numbers out of the air or guesstimating. Dr. Cooper, you're right, it could be 50, it could be 60, whatever that number is, and you could tell us that; but unless there is verification here, it is not that we don't trust your word. It is that they need verification; and we, the board, have to go back to our states and talk to our people and tell them we made a decision based on what.

Sometimes the data we have is very poor, but it is the best we have. When we have inadequate data, we try to get enough so that we can make an honest, reasonable decision. Again, one bad decision here, it rolls and it gets bigger and bigger; and the next thing you know you're making an addendum to an amendment to another addendum to another amendment and you've got a monster on your hands; and then you've got the public on you.

We've got 15 states around this table that are affected differently by every decision we make. I'm very passionate about the process. I'm very passionate about sharing with industry. Every person around this table is very passionate of our user groups; and we're very passionate about the impact that we have.

When we raise our hand or we take a no vote, it means we couldn't come to a consensus, but it is on the record forever. All we're asking here is a solid piece of information that the technical committee can get their arms around to do a great

job with the stock assessment, which will be the driver probably for the next five or ten years.

I don't mean to pontificate, but I always do. I'm the old guy and I'm the oldest one in the room and I can do it. I would hope that you folks would supply that information. Whoever is withholding that information could help us and we want to help you.

DR. COOPER: Well, remember, that horseshoe crab number is a speculation, a very soft calculation. It is not a hard number like reporting a harvest.

CHAIRMAN SIMPSON: Okay, Pat, you've made your point and that was perfect; not at all vague or obtuse. Allen, did you want to comment? Then I think what I'll do is promise that we will continue to work with this issue of access to the data that clearly has been provided in great detail.

MR. ALLEN BURGENSON: I will keep it very brief. My name is Allen Burgenson. I'm with Lonza Walkersville. I can confirm everything that Benjie said regarding the numbers and types of data that we report to the state of Maryland. We report exactly the same thing even up to the coordinates to where the horseshoe crabs were dropped off the coast.

My company is the one that makes the alternative assay so if anybody has any questions about. What Jim said is pretty accurate; but it is not so much that it is not regulated by the FDA; it is that it is not in the United States Pharmacopoeia. Companies are required to use this assay because it is in the United States Pharmacopoeia to release their perennial drugs and implantable medical devices.

There is no choice; so companies choose to use what in the United States Pharmacopoeia. To use the recombinant product is an alternative assay; and there is additional validation and cost that goes into that. Unfortunately, the pharmaceutical industry is reluctant to spend that extra money to use an alternative test.

CHAIRMAN SIMPSON: I think that helps a lot. As I said, I think one of our issues to work on between this and the next meeting is to get input from the Law Enforcement Committee. As you acknowledged in your state, there may be a significant level of unreported harvest on the bait side. There are a lot of unknowns here.

Horseshoe crab management started at a time when we had very little data. In fact, I'm remembering that my agency didn't even have statutory authority to manage horseshoe crabs, and we had to get it to implement the commission plan and begin to collect data. When we started, we started where we were and I think we're looking to take that next step to a little higher level, more quantitative assessment and management.

If there aren't anymore comments, I think that is what I would say is the point we're at. We'll get more information from law enforcement. We will work on – myself as the chair and with staff – and talk with industry about how we manage this confidentiality thing and still get a really useable stock assessment that we can then roll into management to make sure that we do turn this resource around as we're obligated to do. Pat.

MR. AUGUSTINE: Mr. Chairman, can they report back in May of what progress they made from this meeting to that meeting?

CHAIRMAN SIMPSON: Absolutely, yes. Dan.

MR. McKIERNAN: Could I ask Marin to maybe communicate to the technical committee a request to do some field trials with the artificial bait this year? Maybe we could make some progress on substitution.

MS. HAWK: Yes, I will communicate that.

MR. MILLER: Thanks to David for bringing up the very topic I was going to bring up; and that is just something to be thinking about in the future. Dr. Cooper alluded to the artificial bait and the potential utility of it. Maybe we ought to consider – and this may be a heretical suggestion, but just consider taking a more proactive step, you know, what if – and this is just theory; what if the states collectively decided that you couldn't use more than a fifth or a tenth of a horseshoe crab as bait.

In other words, almost mandating the use of the artificial bait which had a 12th to a 15th of a horseshoe crab, if my memory is correct, as one of the attractant components in the artificial bait. But thinking along those lines; what if we took that step proactively, if that is within our purview, and thereby driving the fishery towards the use of artificial bait, something of that nature. Maybe we could get around some of the problems associated with the New York and New England harvest and that kind of thing. Thank you.

CHAIRMAN SIMPSON: Yes; I think it is a good thought for when we get into that mode of responding to whatever we learn from a stock assessment, how many crabs are a safe level to remove. Dan was suggesting a different angle of managing the demand – a different angle of managing the demand, as you are, and that would be how many traps are being fished in the other fisheries we manage, whelk and eels, for example. Those are two kind of innovative approaches to in this case horseshoe crab conservation. I think they will be on the table for that day. Tom.

MR. O'CONNELL: I will try to make it quick for you, Dave. I guess a couple of things. As we go forward, I think that the board should give some serious thought to Dr. Cooper's idea about that 57,000 may have outlived its life and whether or not it needs to be bumped up to another level so we evaluate in the future or just remove it and trying to accept the policy of trying to get the least amount of mortality, recognizing the world-wide benefit of this product.

With that, I'm not certain but it would be interesting to see if the PDT can identify any best management practices that the board may want to consider being mandatory. I'm not sure I would expect that most companies are doing the best they can. But if there are lessons learned, I know we have adopted some pretty stringent BMPs in Maryland; but if there are some standards that we should consider making mandatory and being enforced at the state level, that could help with this mortality issue as well. Thanks.

MS. HAWK: I wasn't really a part of the development of the best management practices; but from what I understand, they have been developed to their furthest extent. They have been recommended to each of the companies. Each company has such different practices that having mandatory practices would be a little bit too stringent on them. That is how I understand it.

CHAIRMAN SIMPSON: But from the information they have provided, it does seem that they have developed the best management practices and have implemented it, but I think it would be good for the board to see those and understand those clearly.

If you have those fisheries in your states, I'm guess states that do already are better tuned in; but it strikes me that in terms of proactive suggestions, that maybe it is time for us to send some stronger signals to our industry that you need to find ways to reduce your demand for horseshoe crabs because it is becoming a concern and there are things that can be done and kind of put those ideas out to them and help them anticipate what the direction we might be going in here in management. Are there any other thoughts from the board on this? Is there any other business to come before the Horseshoe Crab Board? Pat.

MR. AUGUSTINE: Move to adjourn, Mr. Chairman, and that you all for the kind words. I'm going to miss you.

CHAIRMAN SIMPSON: Thanks, Pat. We stand adjourned.

(Whereupon, the meeting was adjourned at 3:00 o'clock p.m. February 6, 2014.)