

**PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
AMERICAN LOBSTER MANAGEMENT BOARD**

**Webinar
October 19, 2020**

Approved February 2, 2021

Proceedings of the American Lobster Management Board
October 2020

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1. **Approval of agenda** by consent (Page 1).
2. **Approval of proceedings from October, 2019** by consent (Page 1).
3. **Move to accept the American Lobster 2020 Benchmark Stock Assessment and Peer Review for management use** (Page 17). Motion by Dave Borden; second by Pat Keliher. Motion carried (Page 17).
4. **Move to adopt the following reference points as recommended in the 2020 Benchmark Assessment for the Gulf of Maine/Georges Bank stock, abundance reference points for the fishery industry target, the abundance limit and the abundance threshold to be 212 million lobsters, 125 million lobsters, and 89 million lobsters respectively. Then exploitation reference points for the same area, the exploitation threshold, and exploitation target to be the 75th and 25th percentiles annual exploitation estimates during the current abundance regime.**

Then, for the southern New England stock, an abundance threshold for the southern New England stock, which is set at 20 million lobsters and exploitation reference points to be the exploitation threshold, and exploitation target set at the 75th and 25th percentiles of annual exploitation estimates during the current abundance regime. These are consistent with the recommendation from the Stock Assessment Subcommittee and approved by the Peer Review Panel (Page 18). Motion by Jason McNamee; second by Raymond Kane. Motion carried (Page 20).
5. **Move to recommend to the ISFMP Policy Board a letter be sent to New York regarding the implementation of Jonah crab measures** (Page 35). Motion by Pat Keliher; second by Dave Borden. Motion carried (Page 35).
6. **Move to approve the Lobster Fishery Management Review for the 2019 fishing year, state compliance reports and *de minimis* status for Delaware, Maryland, and Virginia** (Page 35). Motion by Cheri Patterson; second by Raymond Kane. Motion carried (Page 36).
7. **Move to approve the Jonah crab FMP Reviews for the 2018 and 2019 fishing years, state compliance reports, and *de minimis* status for Delaware, Maryland, and Virginia** (Page 36). Motion by Cheri Patterson; second by Raymond Kane. Motion carried (Page 36).
8. **Move to adjourn** by consent (Page 36).

Proceedings of the American Lobster Management Board
October 2020

ATTENDANCE

Board Members

| | |
|---|--|
| Pat Keliher, ME (AA) | Emerson Hasbrouck, NY (GA) |
| Sen. David Miramant, ME (LA) | John McMurray, NY, proxy for Sen. Kaminsky (LA) |
| Cherie Patterson, NH (AA) | Joe Cimino, NJ (AA) |
| Ritchie White, NH (GA) | Tom Fote, NJ (GA) |
| Dennis Abbott, NH, proxy for Sen. Watters (LA) | Adam Nowalsky, NJ, proxy for Sen. Houghtaling (LA) |
| Dan McKiernan, MA (AA) | John Clark, DE, proxy for D. Saveikis (AA) |
| Raymond Kane, MA (GA) | Roy Miller, DE (GA) |
| Sarah Ferrara, MA, proxy for Rep. Peake (LA) | Craig Pugh, DE, proxy for Rep. Carson (LA) |
| Jason McNamee, RI (AA) | Mike Luisi, MD, proxy for B. Anderson (AA) |
| David Borden, RI (GA) | Robert Brown, MD, proxy for R. Dize (GA) |
| Eric Reid, RI, proxy for Sen. Sosnowski (LA) | Phil Langley, MD, proxy for Del. Stein (LA) |
| Colleen Bouffard, CT, proxy for J. Davis (AA) | Pat Geer, VA, proxy for S. Bowman (LA) |
| Bill Hyatt, CT (GA) | Allison Murphy, NMFS |
| Maureen Davidson, NY, proxy for J. Gilmore (AA) | |

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

Ex-Officio Members

| | |
|---|---|
| Kathleen Reardon, Technical Committee Chair | Kim McKown, Stock Assmt. Subcommittee Chair |
| Delayne Brown, Law Enforcement Rep. | Sonny Gwin, Jonah Crab Advisory Panel Chair |

Staff

| | |
|-----------------------|-------------------------|
| Robert Beal | Jeff Kipp |
| Toni Kerns | Laura Leach |
| Maya Drzewicki | Savannah Lewis |
| Kristen Anstead | Sarah Murray |
| Max Appelman | Mike Rinaldi |
| Lindsey Aubart | Julie Defilippi Simpson |
| Pat Campfield | Caitlin Starks |
| Dustin Colson Leaning | Deke Tompkins |
| Chris Jacobs | Geoff White |
| Tina Berger | |

Guests

| | |
|-------------------------------------|------------------------------------|
| Pat Augustine, Coram, NY | Jason Boucher, DE DFW |
| Michael Auriemma, NJ DEP | Jeff Brust, NJ DEP |
| Russ Babb, NJ DFW | Bruce Carlisle, MA Coastal Program |
| Richard Balouskus, RI DEM | Matt Cieri, ME DMR |
| Peter Benoit, Ofc. of Sen. King, ME | Barry Clifford, NOAA |
| Dave Bethoney, CFR Foundation | Colleen Coogan, NOAA |
| Alan Bianchi, NC DENR | Jessica Daher, NJ DEP |

Guests (Continued)

Bill DeVoe, Esq. Bangor, ME
Lisa Engler, MA DMF
Catherine Fede, NYS DEC
Marianne Ferguson, NOAA
Allison Ferreira, NOAA
Cynthia Ferrio, NOAA
Rick Frenzel, Black Tree Inc
Zachary Fyke, NOAA
David Gouveia, NOAA
Marin Hawk, MSC
Heidi Henninger, Offshore Lobster
Jay Hermsen, NOAA
Matthew Heyl, NJ DEP
Carl Lemire, NOAA
Charles Lynch, NOAA
Don Lyons, Audubon Soc.
John Maniscalco, NYS DEC
Gregory Mataronas, Compton, RI
Patrice McCarron, Maine Lobstermen
Conor McManus, RI DEM
Nichola Meserve, MA DMF
Brandon Muffley, MAFMC
Gerry O'Neil, Cape Seafoods
Noah Oppenheim, Homarus Strategies

Derek Orner, NOAA
Penelope Overton, *Portland Press Herald*
Rep. Sarah Peake, MA (LA)
Derek Perry, MA DMF
Nick Popoff, FL FWS
Chad Power, NJ DEP
Tracy Pugh, MA DMF
Brandon Raguz, NOAA
Story Reed, MA DMF
Bill Samrau, NOAA
Burton Shank, NOAA
Melissa Smith, ME DMR
Somers Smott, VMRC
Stephanie Sykes, Cape Cod Fishermen
Helen Takade-Heumacher, FL FWS
Corinne Truesdale, RI DEM
Beth Versak, MD DNR
Megan Ware, ME DMR
Anna Webb, MA DMF
Craig Weedon MD DNR
Angel Wiley, MD DNR
Carl Wilson, ME DMR
Chris Wright, NMFS
Renee Zobel, NH F&G

The American Lobster Management Board of the Atlantic States Marine Fisheries Commission convened via webinar; Monday, October 19, 2020, and was called to order at 1:15 p.m. by Chair Daniel McKiernan.

CALL TO ORDER

CHAIR DANIEL MCKIERNAN: My name is Dan McKiernan from the state of Massachusetts; and I'm the Chair of the American Lobster Board for today. Welcome everyone to this virtual annual meeting. I, like a lot of you, wished we were in New Jersey, and not under house arrest as a lot of us are.

Toni has agreed to monitor the speakers for me today, so that if we have multiple hands up Toni will give me your names and in batch, so I don't have to be staring at that as I try to manage the meeting. Thank you for that, Toni. It's been a full year since this Board has met. Last was October of 2019.

APPROVAL OF AGENDA

CHAIR MCKIERNAN: We have a lot of business to attend to. The first is the approval of the agenda. Are there any additions or amendments to the agenda that a member of the Board would like to propose?

MS. TONI KERNS: I don't see any hands.

CHAIR MCKIERNAN: Seeing none, it is approved by unanimous consent.

APPROVAL OF PROCEEDINGS

CHAIR MCKIERNAN: Next the approval of the proceedings from October, 2019. Are there any requested amendments to the minutes of that meeting?

MS. KERNS: I don't see any hands.

CHAIR MCKIERNAN: Having seen none and heard none, it is approved by unanimous consent.

PUBLIC COMMENT

CHAIR MCKIERNAN: Third on the agenda is Public Comment, and at this time we would welcome anyone who would like to speak on items that are not on today's agenda to come forward at this time.

MS. KERNS: I just want to make sure. Aubrey, your hand was just up, Aubrey Ellertson, and I don't know if you got confused on how to raise your hand or not, so I unmuted your line. If you wanted to make a comment, you just have to unmute yourself by turning your microphone green. Aubrey, I see your microphone is now green, I just don't hear you yet. Aubrey, we still can't hear you. Maybe if you could ask your question in the questions box. She hit it by accident, Dan, so we're good.

CHAIR MCKIERNAN: Toni, should we come back to this maybe under other business?

MS. KERNS: Aubrey said that she hit her hand up by accident.

BENCHMARK STOCK ASSESSMENT FOR AMERICAN LOBSTER

CHAIR MCKIERNAN: Oh, I'm sorry, all right thank you. Next on the agenda would be the Benchmark Stock Assessment for American Lobster, and I'll turn it over to Caitlin at this time.

MS. CAITLIN STARKS: Thank you, Dan. Actually, Kim McKown the SAS Chair is going to be giving the presentation.

CHAIR MCKIERNAN: Brilliant.

MS. KIM MCKOWN: Thank you, Kim McKown here, can you hear me?

MS. STARKS: Yes.

PRESENTATION OF STOCK ASSESSMENT REPORT

MS. MCKOWN: Okay, great. This afternoon I'm going to give an overview of the 2020 Lobster Assessment. The Lobster Management unit ranges from Maine to Virginia. There are seven management areas.

Historically three stocks were defined, Gulf of Maine, Georges Bank, and Southern New England.

In the 2015 assessment there was information indicating connectivity between the Gulf of Maine and Georges Bank stock, so those two are combined. We're continued with these combined stocks for this assessment. There is a variety of management measures that are used for lobsters, including min and max sizes, egg-bearing protections, and also in some areas closed seasons.

Since 1997 there have been 25 addendums to Amendment 3. Lobsters have a very complex life history. They need to molt to grow. Molting and maturity is linked, particularly for females. They have a pelagic larval stage. They go through four stages before they settle to the bottom. They generally prefer cobble or complex habitat.

Habitat is very vital for many life history parameters, and particularly temperature, salinity, dissolved oxygen and pH. Temperature is a real key environmental driver for lobsters. Temperatures in the northwest Atlantic are increasing, and are predicted to continue to increase. The optimal range for lobster is 12-18 degrees centigrade, and temperatures at 20 degree centigrade is considered a stress threshold.

Research has shown that the optimal temperatures in the optimal range a number of days has been increasing in both the Gulf of Maine/Georges Bank, and offshore southern New England. While the number of days above the stress threshold has increased in inshore southern New England. The graph over on the right show's temperature anomalies, so the days above are equal to 20 degrees centigrade.

What this shows is a deviation from the long-term mean, which is from the early 1970s to present. What you find in the early part of the time series the number of days above this stress

threshold was much lower than the long-term mean, while since the late 90s there has been increasing number of days above the stress threshold, which really indicates that the thermal habitat for lobsters in southern New England in the inshore area is increasing. Temperature impacts a lot of parts of lobster's life history. It affects growth, and we've found some changes in growth, and we updated the growth transition matrix in the model in the 2015 assessment. It affects the size of maturation. New research determined some changes, so we updated the maturation in the new lobster stock assessment.

We found that for Gulf of Maine and Georges Bank there has been a decrease in the size of maturity, and there is research that shows that increased temperature and also increased exploitation can cause a decrease in the size of maturity. For southern New England, on the other hand, we found an increase in the size of maturity, and that is due to the shift of the population to more offshore areas.

We find that temperature drives lobster behaviors from metabolism activity level. That has some implications for survey catchability, and we've explored that through catchability covariates in this assessment. Temperature affects recruitment, so there is a threshold of 5 degrees for egg development, threshold of 10-12 degrees for hatching and larval development.

We found, as I mentioned earlier that temperatures above 20 degrees certainly can cause increased stress and disease. We did some analysis looking at the prevalence of moderate and severe shell disease from the Ventless Trap Survey, and output from this data indicates that there has been an increasing trend in the prevalence of moderate to severe shell disease in the Gulf of Maine.

In the 2015 assessment we incorporated the effects of increased stress in southern New England in the model, with increasing natural mortality after the late 1990s. We've continued to utilize that in this assessment. We use a variety of pieces of information to assess lobster stock, this includes empirical data, such as fishery dependent landings and biological samples, fishery independent survey data from trawl

and ventless trap survey, biological data, parameters such as mortality and growth, and environmental data such as temperature.

In 2006 we introduced model-free indicators, to help assess the stocks. These include mortality, abundance, and fishery performance indicators. For the 2020 assessment we included new indicators of physiological stress, and these include the number of days greater or equal to 20 degrees centigrade, and also the prevalence of moderate to severe shell disease.

Then of course we'll utilize the model results, such as reference abundance, reference exploitation, and the reference points. We utilized the University of Maine models. This was a primary model used in 2009, and the sole assessment model used in 2015 and this assessment. It's a statistical length-at-age model, and it has a variety of inputs, including life history characteristics, commercial information including trends, length and sex ratio.

Survey information, the trends and the lengths, we have information on legal size, escape vent sizes, also discard of ovigerous and v-notched lobsters. This comes from our sea samples. We want to really thank the Atlantic Offshore Lobster Association, and the Commercial Fisheries Research Federation for collecting samples for us in the offshore areas. This is really critical data that we need for the model, and we really thank you. We introduced recruitment covariates in 2015, and we have survey catchability covariates. We have a variety of outputs to the model, including goodness of fits, recruitment into the model, abundance in spawning biomass, population size composition, and reference abundance and effective exploitation. The model can also produce per-recruit reference points, but previous peer reviews have found that these reference points were not really realistic, and so these were not included in this assessment.

As I mentioned, we have utilizing survey catchability covariates, and the catchability just relates the survey relative abundance to actual abundance out in the lobster population. Information from multiple surveys have indicated that we're maybe experiencing changing catchabilities in these survey catchabilities.

We addressed this in the 2015 assessment by using nonlinear catchabilities. This was focused on looking at the fact that we've got limited geographic scales with some of our surveys, particularly our inshore surveys. That might be relating to changes in this catchability. For 2020 we did a further modification, where we developed environmental covariates.

This was to try to quantify specific processes that is causing these changes in catchability. We developed some temperature-based covariates. During the development we utilized information on lobster density to weight the temperature, so that we were trying to get our mean temperature for those thermal habitats where lobsters were inhabiting.

If you look at the graph at the top right, that is the information that is used to develop the catchability covariate, so the dots are the actual weighted temperatures. The green line is the annual mean temperature, and the blue line is the smooth trend over time. That is what information is used as our temperature covariate.

If you look at the graph on the bottom right, this shows how these covariates are used in the model. You can see the black dots are the actual data from the surveys of population abundance. The dark black line is the estimate from the model, survey abundance, including the catchability. While that lighter gray line is the estimated survey abundance with that catchability removed.

That thin line is what we believe is the true survey abundance. The University of Maine definitely developed, you have uncertainty estimates from the model. But we believe that they are underestimated, and that is because parameters such as growth, natural mortality and fishing selectivity are not estimated in the model, but input from outside.

Trends in the model are more certain than the absolute scale. That is important, because we utilize a trends-based reference point. We're using several methods to address model uncertainty, they include sensitivity analysis, and this is used to understand different assumptions, and also a data inputs into the model.

We have 11 sensitivities that are similar for both stocks, and then we have a number of sensitivities that were different for the two different stocks. In general, we found that the trends were much less uncertain than the actual value. We found for the Gulf of Maine/Georges Bank the biggest difference was found in sensitivities where we changed the growth, and used what we felt was slower growth using southern New England growth rate, and utilizing changes in gear selectivity. For southern New England the biggest change was increasing and decreasing natural mortality. We also did historic retrospective analysis, and this is where we compared the base case of the 2015 assessment to the base case of this 2020 assessment. This is to look at historic stability of the analyses. We found for Georges Bank/Gulf of Maine stock that it was very stable, and not much difference between the two stocks.

The trends for southern New England were very similar, except for after the 2000s we found that abundance was declining more rapidly in the 2015 assessment compared to the 2020 assessment. The last year in the 2015 assessment the estimated abundance was approximately 7 million lobsters, while for the 2020 assessment that same year the estimate was 11 million lobsters.

This new assessment, the decline is not quite a shock as the older one. We also did traditional retrospective analyses, where you remove a year and rerun the model, and then remove another year. We did a number of peels, and then you look at how different is that last year compared to what the base case is.

For the Georges Bank/Gulf of Maine stock, we only had a very mild retrospective analysis and estimated trends, and the scales were pretty stable. There was a little bit of an overestimate of abundance found in the retrospective. For southern New England there were similarities in the trajectories. Abundance is more comparable than the exploitation.

We did find there was more variability in the 2020 assessment retrospective analysis in 2015 for southern New England, and some of that might be due to the fact that some of the surveys, especially inshore were in very low level, particularly Connecticut. For several years we collected no females in that survey, and Massachusetts for one year.

Also, there has been a decrease in the size of lobsters, seeing smaller lobsters from the Northeast Fisheries Science Center offshore than we have in the past. Some of these recruitment trends may be affecting the retrospective analysis. This shows the result for the Gulf of Maine/Georges Bank model.

The abundance estimates are on the top left graph. The recruitment is in the bottom left, and spawning stock biomass is in the bottom right. Sex is combined on this dark black line. Females are the dark gray, and males are the light gray. If you look at abundance, recruitment, and spawning stock biomass it's increased pretty much over time, and current levels are the top of the time period.

We did see for recruitment a real striking increase in the last year, and we think that might just be due to some instability of the terminal couple of years of the assessment. For the top right graph is exploitation rate. In early years we saw higher, stable exploitation, and then it declined in the late 80s, and we've seen a lower, stable exploitation rate after that.

As I mentioned before, we utilized a number of different indicators to also look at the stock status. These are model-free indicators if utilizing for abundance we're looking at the survey data. For these graphs we're looking at the annual level to see whether or not it's above the 75th percentile or below the 25th percentile. Values that are below 25th percentile are considered negative, and we've coded

those in black. Values above the 75th percentile are considered positive, and they're coded in white. Anything in between is considered neutral, and that is in gray. The different surveys are the Northeast Fisheries Science Center, over on the left two columns, fall and spring, in the middle is Maine/New Hampshire survey, and on the right is Massachusetts.

We're seeing four different indicators here, the left table is spawning stock abundance, the next one to the right is full recruit abundance, the further one is recruit abundance and the last one on the right is the survey and encounter rate. If you look on the last line of the table that is the 2014 to 2018 mean, and as you can see for all of the abundance indicators, we're seeing positive indicators, which shows the stock is in good condition.

As you look at the survey encounter rate, all but one is positive, and the Maine survey in the spring is neutral. I would like to point out, Northeast Fisheries Science Center, which is the first two columns on the left, there are a number of positive indicators in the last decade indicating that the numbers of lobsters being caught in that survey has been increasing over time.

Now while we saw a lot of positive indicators for the adults and recruits, these are showing the young of the year abundance indicators. This is from settlement surveys in Maine and Massachusetts, and it's going from the northernmost statistical area 511 on the left to the southernmost 514 on the right.

If we look at the 2014-2018 average, we're seeing neutral to negative indicators. The negative, particularly in the southwest area in 513 west and 514. This points out some concerns that we may be seeing declines in the settling lobsters. There has been some research that does indicate there may be some increased thermally suitable habitat for settlement that isn't being monitored by these settlement

surveys. This is particularly true in more northeast Gulf of Maine.

We also examined abundance indicators for the Georges Bank sub-stocks, just to make sure that it wasn't masked by being combined with a larger stock area. For these indicators we're looking at information from the Northeast Fisheries Science Center Survey, and over on the left is spawning stock biomass.

Next one is full recruit, then recruit abundance, and the last table on the right is the survey encounter rate. If we look at the 2014-2018 means, it's positive for spawning stock biomass, full recruit abundance, and for the lobster encounter rate. But we are seeing neutral levels for the recruit abundance.

We also looked at stock productivity. The graph over on the top left shows the spawning stock biomass on the X axis, and the recruitment on the Y axis. The straight line is the long-term estimate, and the actual data points are plotted on that line. Over on the bottom left are the early years of the assessment, and over on the top right are the later, current years of the assessment.

You can see that there has been an increasing trend in both spawning stock biomass and recruitment over time. The graph on the lower right is looking at productivity to the steepness in the stock recruitment curve, and we see that early in the time period there was increase in this steepness value. Starting in the 90s there seems to be a leveling off, and then in the mid-2000s we saw an increase again. This graph suggests that reproductive success is sufficiently high, to allow increase to the population. One thing I want to point out in this graph is that spawning stock biomass has been lagged to match up with recruitment, so the last year of recruits in this class, 2018, corresponds to 2013 spawning stock biomass. Therefore, the recruitment of current spawning stock biomass is not in this graph.

Now, I would like to go to the southern New England model results. Again, we have the abundance on the top left, recruitment bottom left, and spawning stock biomass bottom right. You can see for all three of

these there has been an increase into the mid to late 90s, and then a consistent decline after that period.

Currently all values are at the lowest in their time series. If we look at the top right that is the exploitation rate. Early in the time series we had a higher, stable exploitation rate. We saw a decline around 2003, and now we're in a lower, again stable exploitation. That year of decline is right about the time that we changed to increase the gauge size to 3 and 3/8, over several years during that time period.

Again, we would like to look at the abundance indicators. On this graph we have the spawning stock biomass, full recruit abundance, and recruit abundance. We're looking at Northeast Fisheries Science Center on the left, Massachusetts the next one, Rhode Island, and then Connecticut surveys.

As you can see for all of these indicators, the majority of them in recent years are negative, neutral to negative. The 2014-2018 average in all of them, six out of the eight surveys are negative. This shows the lobster encounter rate on the left, and the young of the year indices on the right. For lobster encounter rate, all but one survey is negative.

We look at the young of the year abundance, this shows the young of the year settlement surveys, for Massachusetts on the right, Rhode Island, and then larval surveys of Connecticut, eastern Long Island, and then western Long Island on the right. The western Long Island larval survey that ended in 2013, so we don't have recent data.

If you look at the other data, the Rhode Island young of the year settlement and eastern Long Island larval survey is showing us negative abundance. If you look at the Massachusetts, it's neutral, but in fact the last four years of that survey were actually zeros, so that neutral is rather misleading.

Looking at the abundance indicators, it corroborates what we saw with the model results that this stock seems to be at low levels. Looking at productivity for southern New England, we look at the top left graph, again at spawning stock biomass on the X axis, recruitment on the Y, and the straight line is a long-term average.

The data is plotted, the data on the top left are the early years, and the data on the bottom left are the current years. There has been a clear shift in recruitment over time. We found that in early years there was sufficient recruitment to allow the population to increase. That occurred until about the mid-90s. Then we started to see a period of time where recruitment was decreasing, but spawning stock was increasing. Starting about 2000, we saw a real shift in recruitment, where recruitment levels were declining enough that the stock was not productive enough to continue to produce FSC, and that started to decline, and that has continued into the current day. If you look over at the productivity graph on the right, you could see that steepness was pretty flat in the early part of the time series.

It declined in the early 90s, and then sort of flattened off in the early 2000s, and then we've seen a decline again since 2007. This indicates that recruitment is not sufficient enough to sustain a stable population at current exploitation rates. There are some issues with the current reference points, which is looking at the time period from the mid to late 1980s to 2003.

We've seen some regime shifts that indicate some changes in drivers to lobster survival. Current conditions are not comparable to that reference period, and we've certainly seen a large change in abundance in both stocks since that time. The environmental conditions we've seen have changed, and will continue to change in the future.

We are going to recommend new reference points. These have been developed with a regime shift analysis. The analysis determines two breakpoints for Gulf of Maine and Georges Bank that indicate three different regimes, one occurring in 1996, and the other in 2008. For southern New England the analysis

noted one breakpoint. This occurred in 2002, indicating two reference periods.

We also examined a number of different environmental datasets, to see if there was any consistent time period of regimes for what we thought might be drivers for lobster abundance. For Gulf of Maine/Georges Bank, a number of the datasets indicated strong support for a regime shift starting in 2010, and this showed a couple of pieces of data up on the top right is Gulf of Maine/Georges Bank area wide, basin wide temperature, and this indicated a real strong regime shift both spring and fall in 2010.

The bottom left graph shows the abundance of the copepod *Calanus finmarchicus*. This too indicated very strong regime shifts in 2010 indicated much lower levels of *Calanus* in recent years. For southern New England over on the right, we looked at the annual degree days over 20 degrees from the Millstone Power Plant, and that showed strong regime changes in 1998 and 2012.

Some of the other data we saw did indicate some regime shifts, but the data generally showed an increasing trend in time such as the temperature data, temperature anomaly data from the Mid-Atlantic which is shown on the bottom right.

We are recommending three new reference points based on these regimes. The first is the fishery industry target, and that is recommended for Gulf of Maine/Georges Bank only. Calculated as the 25th percentile of the high abundance regime. The feeling is if current levels go below that it's probably not biological concern, it potentially could be just occurring capacity correction, since we're at such high levels at this point. But it certainly could be an economic concern, and we strongly recommend a post-assessment economic analysis to determine if and what sort of management should be implemented if we went below this level.

The next reference point is called the abundance limit, and again this is for the Gulf of Maine/Georges Bank stock. Calculated as the median of moderate abundance regime, the stock would be considered depleted if the three-year current average reference abundance was below this limit, and recommended action to halt this decline.

The final recommended reference point is the abundance threshold, and that is recommended for both stocks. This is the average of the three highest years during the low abundance regime. The stock would be considered significantly depleted if the current average was below this threshold, and significant management action to halt the decline of abundance and increase reproductive capacity, such as a moratorium.

We're recommending an exploitation target, which would be the 25th percentile of the exploitation estimates during the current regime, and exploitation threshold, which is the 75th percentile of exploitation during the current abundance regime. If current levels went below this, we would recommend to initiate additional research to better understand the cause of this increasing exploitation.

The next few slides I'm just going to show these reference points, and they will be set up very similarly. The shaded areas, the dark gray on the left is the low abundance regime. The light gray in the middle is the moderate abundance, and the white on the right is a high abundance. The dotted black line on the top is the proposed fishery target.

The dashed line in the middle, the black one is the proposed abundance limit, and the solid black line on the bottom is the proposed abundance threshold. Just for comparison, we've also plotted the old target, which is the red dotted line, and the old threshold, which is the solid red line. You can see the dot over in the top right-hand corner is the average of the last three years. That is our current estimate of abundance. That is above both the limit and the fishery targets.

This slide has the exploitation rates. The dotted black line is the proposed target, and the solid black line is

the proposed threshold, with the red line being the old target threshold. We realize that there is a much narrower window for exploitation in these new proposed targets, but we have found that exploitation is pretty stable over time.

The management measure, our recommendation if we go below, or actually go above this target is for further research, and not taking management action. For Gulf of Maine/Georges Bank, the current level is below both the threshold and the target. This has the abundance reference points for southern New England.

Only two regimes were indicated for southern New England. On the left in the dark gray is the high abundance regime, and on the right in the white is the low abundance regime. Only one reference point is proposed for southern New England, and that is the abundance threshold. As you can see, the new proposed threshold is below the old threshold, but our current estimate, the black dot on the lower right-hand corner, is below all of the reference points.

These are the exploitation reference points. You can see that the newest reference points been developed from the new regime period, the black being the threshold and the dotted being the target, and the current level is above the target but below the threshold. The old reference points, due to the time period that they were developed, certainly coincide with the, looks like the older regime for exploitation rate. This slide shows the stock status for the Gulf of Maine/Georges Bank. On the X is the reference abundance, and on the Y-axis is effective exploitation.

The vertical black solid line is the proposed from the threshold, and the vertical dashed line is the proposed limit. The horizontal line is the reference exploitation. If we look in the right-hand bottom box, the dark circle there is our current estimate of where the population is. That dot is to the left at higher abundance levels than the threshold and abundance limit.

Therefore, the stock is not depleted, and it's also below the exploitation threshold, so overfishing is not occurring. No management action is recommended for the Gulf of Maine/Georges Bank stock. We have some considerations for Georges Bank/Gulf of Maine. Stock wide a recruits and abundance is at an all-time high, so these trends differ at a smaller spatial scale.

Encounter rates indicate the distribution is expanding in offshore waters, so it remains important to determine catchability, and be able to estimate true abundance through overall trends. Fishery efficiency of exploiting legal abundance without clear respect to abundance and catchability changes, makes interpretation of exploitation time series difficult.

Young of the year trends, particularly in the southwest portion of the stock is concerning, and we need to monitor that subsequent to the assessment. We have seen concerning trends in shifts of effort, particularly southern New England effort may be shifting to the Georges Bank, and we'll need improved effort data that will track this trend. The new stress indicators remain relatively low for this stock, but they are trending upward, particularly in the southwest portion of the stock.

This shows the status of the southern New England stock. We have the abundance threshold is the vertical solid line, and exploitation is horizontal. The current estimate is the black dot in the lower-left corner. The abundance is below the abundance threshold. Therefore, the stock is significantly depleted. Exploitation is below the threshold, so overfishing is not occurring. Due to the depleted condition of the stock, significant management action is necessary to provide the best chance of stabilizing or improving abundance and reproductive capacity.

Considerations for southern New England, stock abundance is at all-time-low levels, and the stock is in recruitment failure. Encounter rates indicate distribution is contracting both inshore and offshore. Landings have continued to decline to its time series low in 2018. Stress indicators indicate stressful environments that may be having lethal and sub-lethal effects, and mechanisms have resulted in decreased

recruitment rate that will pose significant challenges to stock rebuilding.

We have recommended that the assessment be updated in five years, but in between we feel that we should have an annual update process. Due to this changing environment, we think it's really important to be able to track recruitment for future abundance. What we're recommending is annual reviews of trawl survey recruit abundance and encounter rates, ventless trap survey abundance indices, and young of the year settlement indicators.

New for this assessment, we developed simulation-based projections. We developed three sets of projections; one projects the base-case model ten years in advance. The next we're projecting all the different sensitivity runs ten years in advance. That is to get an idea on the uncertainty of these projections. We also did a prior projection, where we projected the base case from the last assessment and compared it to the 2020 assessment. For these projections we have three sets of recruitment, based on the assessment model recruitment from the current regime.

For both southern New England, 2003-2017, and Gulf of Maine/Georges Bank, 2009-2017. We didn't include the 2018 or '19 data because of concerns that they were unstable, and weren't well estimated. The three sets of recruitment were no trend, current trend, and the covariate trend. I'm just going to show you the base-case projections.

This one is for Gulf of Maine and Georges Bank, and the top graph shows the recruitment with no trends. Middle is the projection with the recruitment with continuing trends, and the bottom is recruitment with the covariate trend. We can see for the no trend and the current trend that it's got a little bump in abundance, but then it levels off.

For the bottom one, the covariate trend abundance continues to increase all through

the projections, which may be overly optimistic. This is the southern New England base case. Again, no trend on the top for recruitment, current trend in the middle, and covariate trend on the bottom.

For southern New England the current trend and covariate trend shows similar projections with a decline in abundance through time, while the no trend shows a potential increase in abundance. I don't know if we're going to take questions now, or if we're going to have Mike do his presentation first, and do questions for everyone after that.

CHAIR MCKIERNAN: Kim, I think the plan was to have Mike give his presentation next, and then both of you could take questions, especially if many of the questions that people may have about your presentation may be addressed in Mike's presentation.

MS. MCKOWN: Yes, that's wonderful, thank you.

CHAIR MCKIERNAN: Mike Celestino, take it away.

PRESENTATION OF PEER REVIEW PANEL REPORT

MR. MIKE CELESTINO: I'll give a brief bit of background information. I'll get to the substance of our review. The peer review of the lobster assessment was conducted via webinar from August 10-13. The Review Panel met on the 14th to do some (feedback). The review focused on data inputs, model results, the overall quality of the assessment, and the outcomes were assessment and review reports that will be available at the link on the slide.

The Peer Review Panel was comprised of myself and three additional technical reviewers with expertise such as lobster biology, population dynamics, stock assessment modeling, and climate change effects on marine populations. I want to extend a note of gratitude to the other reviewers, Dr. Adam Cook with Fisheries and Oceans Canada, Dr. Bill Hartford with Nature Analytics, and Dr. Rebecca Selden at Wellesley College.

It was a terrific group of colleagues to work with, very engaged. I'll also take a second to thank the Assessment Team, who were all very responsive to

our questions and additional tasks. The Review Panel was very complementary of the work that the TC and others had done on this assessment. I'll also take a second to thank Pat Campfield, who was also very helpful as we worked our way through this review.

I'll touch quickly on the overall findings. The Panel thought that the Assessment Team thoughtfully completed all their terms of reference, and that the assessment was suitable for management. The overall major finding was that the University of Maine model should be used as the basis of stock status, and Kim just covered actual status determinations, so I won't recover those.

This concludes kind of big picture background items. I'll move on to some of the particulars, but I'll just note quickly though that we covered a lot of ground during the review, and in the interest of time I'm going to paint with pretty broad strokes, and really just discuss some of the larger takeaways.

But at the end of the presentation and questions, I'm happy to go into more detail on the event. To review our first term of reference was to evaluate the thoroughness and treatment of data used in the assessment. We thought that the breadth and range of data examined for the assessment was extensive, and commended the Assessment Team for their efforts.

Regarding the various surveys, inshore and offshore trawl surveys, the ventless trap survey, for example. The Panel thought that having those multiple lines of evidence to describe trends in biomass was the overall strength of the assessment. We did recommend a couple of avenues of further exploration for the ventless trap survey, how the effort regarding that survey is treated, for example, and the potential for substrate to effect catchability.

The Panel thought that inclusion of the environmental catchability covariate was a

really strong addition to the assessment, and helped resolve some of the uncertainty in the relationship between survey index and true population abundance. We noted there was room for some further refinement that could be done in future assessments as well.

In terms of data considerations and decisions, the Panel thought that the Assessment Team's judgments were all generally appropriate. For example, where sufficient biological samples weren't available to characterize the length composition data, the gap-filling protocol was followed, and that gap-filling protocol was an improvement over the previous assessment.

That protocol also highlighted to the Panel the importance of adequate sampling to minimize the need for gap filling. Pooling data for example, might mask changes in fishing mortality, and could be contributing to some of the stability that we see in exploitation rates from the model. The Growth Transition Matrix, a key component of the model hasn't been updated in a number of years. The Panel considered the Growth Transition Matrix a weakness, and needed an update. Our next term of reference was to evaluate the methods and models used to estimate the population parameters and reference points.

We found the use of available life history information all to be appropriate. We did recommend that an important additional feature for future assessments would be to allow for time-varying life history parameters directly in the model. For example, allowing for time-varying growth, was identified as a high research priority for future assessments.

The current model is to no discard mortality, or mortality rate at 0 percent. But we noted that given that shell disease exists on the shell, it's possible that shell disease may be increasing discard mortality, and that might warrant some additional investigation as part of future updates and assessments.

We discussed natural mortality in southern New England with the Assessment Team a reasonable bit during the review. We found that the approaches to

estimate natural mortality where reasonable, but noted that the value of natural mortality in the second time stanza in the late nineties to the present, was based on an analysis from the 2015 assessment.

We felt that natural mortality should be based on the current assessment. The Assessment Team did explore an additional time-varying natural mortality scenario during the review. But the Panel thought that this exercise merited a concerted effort to see how M is changing over time, particularly as it might relate to inferences to a level of exploitation.

Survey CVs are not directly incorporated into the model, and the Panel recommended evaluating the effects of that on model performance, model preference. Ultimately, one of the large Panel conclusions was that we agreed with the Assessment Team's choice of the University of Maine model as the preferred model for stock status.

The broad, thoughtful range of sensitivity runs were generally insensitive to various inputs, though we acknowledged that as Kim just did, there is less uncertainty in trends than the absolute scale. Our next term of reference was to evaluate identification and characterization of environmental or climactic drivers.

Here again, the Panel thought the breadth of potential environmental and climactic drivers was thoughtfully considered by the Assessment Team. We thought the variables considered likely captured the full set of environmental variables thought to be important for lobster population dynamics.

The Assessment Team used a particular analysis to determine when there were substantive breaks in the time series. Kim showed some of those slides earlier. We recommended that support for those breakpoints could be bolstered with some complimentary analyses that provide the probability of change across those various breakpoints, and we made some

recommendations in that regard. We saw during the review that specific years in which regime shifts were considered, or have occurred was sometimes variable. We recommended that perhaps an improvement to the analysis would be to formally assess the correspondence in time across those different environmental variables. Here again we provided a technical analysis in that regard. The Assessment Team examined changes to productivity through the use of dynamic linear modeling, so this was the productivity plots that Kim showed earlier.

Those were designed to examine changes to the steepness or productivity parameter over time. The Panel thought those analyses were a real positive advancement for the assessment, and will likely lead to very useful hypotheses to further exploring and understanding the drivers to changes in productivity that as an example could inform the recruitment covariates in the future.

The assessment document summarizes the strong evidence for ocean warming, leading to the idea again that suitable settlement habitat might be increasing in the Gulf of Maine, and the Panel recommended interpreting the young of year indices in concert with an index of predicted settlement habitat.

In other words, sort of expanding the young of year index with an appropriate extended habitat. We were also asked to evaluate estimates of stock abundance and exploitation. One of the main themes that the Review Panel and the Assessment Team commented on were the trends in abundance and exploitation for lobsters are less uncertain than their scale.

The two plots at the bottom sort of show the range of sensitivity runs that were explored, all sort of resulting in the same trends. But since reference points are based on percentile, sort of putting everything on a relative scale, the Panel thought that the reference points compared to the corresponding model outputs were appropriate for management.

The Panel concluded that the suite of model diagnostics suggested reasonable fits to the data. There were some exceptions that might be related to the growth transition matrix, so here again the Panel

supported the Assessment Team's recommendation that updating and appropriating time-varying growth matrices is a high research priority.

Then finally, the Panel thought the projection methodology used in the assessment was sound and helpful advancement with the assessment. We were asked to evaluate the methods used to characterize uncertainty. Kim touched on this. The Panel agreed with the Assessment Team that standard errors coming out of the model are underestimates of uncertainty, but that the suite of sensitivity runs is an appropriate approach for characterizing uncertainty.

One of our terms of reference was to evaluate the diagnostic analyses that were performed. We felt that the sensitivity analyses included a thorough set of alternative model configurations that were appropriately contrasted against the base-case model. The main Panel recommendation coming out of this term of reference was for the Assessment Team to formally evaluate the sensitivity of model results to starting values.

In other words, we're ensuring that the model always converges to the same solution independent of the model's starting values. We were asked to evaluate the indicator-base analyses. The Panel was very excited with the model-free indicators and consider its inclusion in the review a strength to the assessment. We found the system very useful. In terms of deriving percentiles from the full time series, the Panel commented about a potential for shifting baselines. For example, as additional years are added on to a time series, the absolute values associated with a percentile break where that 25th or 75th percentile fall, as an example, can potentially lead to blocks being labeled at neutral in some years, and then positive or negative in another. So we just recommended further consideration as to how that time series would be updated. In terms of the subset of indicators, the Assessment Team

proposed to update on an annual basis. We recommended providing some additional details on a justification for the selected subset.

The Panel asked during the review for a preliminary analysis of the relationship between some of the indicators and some of the model outputs. Those early results were really promising. We recommended further exploration for potential development of either indicator-based management, or a science-based rule that would trigger an earlier than scheduled stock assessments, so for example, if three of four indicators change from positive to neutral that might trigger the earlier than scheduled assessment.

In terms of communication, the Panel was very supportive of the stress indicator that was new for this assessment, but recommended reconsideration of some of the terminology. For example, the Panel questioned whether a moderate stress time period of shell disease, where shell disease might be between 25 and 75 percent.

We questioned whether that was sort of appropriately characterized at neutral, it might be more appropriate to relabel some indicators as low, medium and high versus good, neutral or bad. A similar logic carried over to the effort indicator. We sort of discussed whether a low effort indicator should be considered positive if that low effort is a result of fishery collapse, for example.

Then finally, without wandering into the weeds, I'll just note that the Panel offered some suggestions for some additional indicators that might be explored in the future to help communicate stress, stock distribution, and even some survey catch rates. We also suggested re-categorizing some of the fishery performance indicators as economic indicators. We were asked to evaluate the current and recommended reference points, and recommend stock status.

The Panel concluded that the development of regime-based reference points and use of multiyear averages to determine stock status was a commendable advancement and appropriate. We agreed with the Assessment Team's position that the reference points

from 2015 assessment were no longer appropriate, given environmental and abundance changes that had occurred during that previous time periods, the '80s through the early 2000s.

In terms of stock status determinations and related to comparing the three-year average abundance exploitation to the relevant reference points. We recommended the Assessment Team investigate alternate averaging or smoothing techniques that are robust to trends. It pointed out that for example, a running average results in values that are systematically higher than the terminal year estimates from decreasing trends and vice versa over increasing trends. We also supported the Assessment Team's recommendation for an economic analysis to provide advice to stabilize the fishery when or if the Gulf of Maine abundance falls below its target, and again Kim has already described the stock status and the Review Panel concurred with those determinations. We were asked to review the research recommendations. We thought again that the Assessment Team developed a really well thought out list to prioritize research items.

We did identify what we view as the three highest priority items, which we grouped into all aspects of growth, time-varying natural mortality in southern New England, and issues related to the stock structure. Then in terms of the final term of reference, review recommended timing of the next benchmark. There again, the Panel agreed with the Assessment Team's recommendation of a benchmark in five years.

This would allow the Assessment Team to address some important research recommendations. The Panel also supported the SAS proposal to initiate annual data updates. We supported updating all indicators on an annual basis. Again, as I commented on earlier, supportive of the idea of investigating further the potential development of a science-

based rule that would trigger an earlier than scheduled stock assessment. With that I am happy to take any questions.

**CONSIDER ACCEPTANCE OF BENCHMARK STOCK
ASSESSMENT AND PEER REVIEW REPORT FOR
MANAGEMENT USE**

CHAIR MCKIERNAN: I think at this time we could take questions to Kim, and to you Mike as well. For the Board, we are going to try to get a motion today to accept the assessment and the peer review, so I hope folks have questions, so that you can vote with confidence. Toni, do we have anyone who has questions?

MS. KERNS: Yes, to questions. There are some people that got muted over the course of the presentation, because we weren't sure what some background noise was, and I just want to unmute their lines. In case their lines come open, I want them to see that so that they can unmute themselves. All right, now we have a question from Jason McNamee.

CHAIR MCKIERNAN: Jason. Toni, do I need to unmute him, or do you do that?

MS. KERNS: He is muted by himself, and David we hear you, so you can mute yourself now. Your sound does work, and now Jason needs to also.

DR. JASON McNAMEE: Sorry, Mr. Chair. I think I was momentarily muted by the organizer as well, but it seems to be fixed. Thanks for the time to ask a question. Kim and Mike, awesome job. That was a ton of material, and my complements. The lobster assessment is a beast of an assessment, so that was a nice job presenting all the information, and good job to the team of pulling the assessment together. It's an enormous amount of work.

I have a question for you, Kim, and it has to do with the reference points, so I'll start by saying I love what you guys did with the reference points. I think it's a big leap forward from what was in place for using that change-point analysis. I just wanted to note that up front, so you don't think I'm being critical of that at all. But what I was curious about kind of will help inform some of what happens, at least for me later on in this

meeting is. I know that, I'll call them biological-based reference points, have been tested previously, and I'm talking about things like MSY, but more likely things like SPR approaches, like F40 percent and things like that. I'm wondering, it wasn't clear to me if those were tried during this assessment process, or if not, if you could give us a little bit about the history there of why when we tried these last time, we weren't giving you reasonable management advice, or whatever it was. I would just like to know a little bit more about whether those were tested and reviewed this time, and if not a little bit of information as to why.

MS. McKOWN: They were not reviewed in this assessment, but they were reviewed in the 2015 assessment, and what we found there is we looked at F-10 percent, I believe. Using that as the reference point, it indicated that the Gulf of Maine stock, which was at that time at peak abundance and low exploitation that overfishing was occurring.

Meanwhile, for southern New England, because of the low size at maturity, so the majority of lobsters are mature before they hit legal size, but the increase in the legal size since the early to mid-2000s, it found that no matter how hard you fish the stock it wouldn't be overfished. Overfishing would not be occurring.

It just continued to be unrealistic, the information we were getting from the biological reference points. One of the concerns was that part of the problem might have been the growth transition matrix. It certainly, as things changed it's probably becoming more problematic that we have one static growth transition matrix, because growth has been different in the early part of the assessment than it is now. That may be causing some of that change.

DR. McNAMEE: Thank you very much, Kim. That was my hunch, but I appreciate you just clarifying that for me.

CHAIR McKIERNAN: Toni, any other Board members with questions?

MS. KERNS: Bill Hyatt, Dan.

CHAIR McKIERNAN: Okay, Bill.

MR. WILLIAM HYATT: A question for Kim. I think this has to do with either your next to the last or third from the last slide, it was projection scenarios for southern New England. In that slide you had the top three graphs. The top graph was a projection assuming no trend, and it was markedly different from the one dealing with current trends and the bottom one, which I believe was covariate trends. If you could just explain why, I mean it's a marked difference, just I might have missed something. But what was behind that difference?

MS. McKOWN: The difference, the one that has no trend, it took the information for recruitment from the current regime, and that is from 2003 to 2017, and it just randomly selected any of those recruitments. It could be selecting them from 2003, where recruitment was much higher, as you saw from the model output than it was in 2017.

By just randomly selecting it was saying, recruitment might not be as bad as it is now, so the population might start increasing. Meanwhile, the other two graphs were using the actual linear trend and projecting that trend into the future, so it's been going down, so it would continue to go down. It worked, and that's why you're seeing such a difference in those graphs. Does that make sense?

MR. HYATT: Yes, thank you.

CHAIR McKIERNAN: Toni, any other questions coming from the group?

MS. KERNS: David Borden, followed by Colleen, followed by Roy Miller.

CHAIR McKIERNAN: Thank you. Okay, David Borden.

MR. DAVID V. BORDEN: I guess this is a point for Kim. First of all, Kim, I think you guys collectively and the Peer Reviewers did an excellent job. This is one of the best pieces of work that I've seen in my career on the issue. I think it's really comprehensive and useful. Having said that, could you just go back to the southern New England abundance reference points figure, please? Could you put that up? Not the exploitation, the abundance, next one. Okay.

I just want to make a quick point. I think as most people on the call know, I was working for the state of Rhode Island in 1998, and still actively engaged in, well lobster management. I just want to use this as an example, and express a concern about it. In 1998 we had a number of discussions, the department did at that time with the industry, about the need to what we now call resiliency, add resiliency to the stock.

The reaction at that point basically was, everything is going great. We don't need to change anything. I'm sure that Commissioner Keliher occasionally hears the same points from his constituents. But if you look at that at that one figure. That one figure is a really powerful figure, because in a period of basically five years we went from being on top of the world, where people were buying new boats and investing heavily in new traps and so forth, to the point where people thought it was the end of the world.

I just want to say that for the reason that at some point we're going to accept this, and then we'll get into a discussion of how to react to it. What we need is a mechanism that starts to work on some of the issues in advance of there being a crisis. Once you go over that edge, and the fishery starts to decline.

Then if the industry is losing 10 percent due to stock decline, you want to impose management measures that adds another 10 percent to that. It's a big burden on the industry. One of the ways that we can address this is try to get

ahead of it, instead of waiting until it's in place. Keep that in mind, and I would also add, Mr. Chair, at the appropriate time I'm happy to make a motion to accept the assessment and the peer review, so thank you.

CHAIR MCKIERNAN: Next on the list is Colleen Bouffard, Justin Davis's proxy.

MS. COLLEEN BOUFFARD: Thank you, Mr. Chair. Kim and Mike again, I would like to just reiterate the sentiment with what a great job this assessment was. I think looking at the regime shift is a huge step forward for assessing the lobster stock. The question that I had kind of goes back to the slide that Bill Hyatt alluded to earlier, with the projections for southern New England. There was a bullet on there that said an additional projection was done, where fishing mortality was removed. I'm just wondering, was that included in those graphs that we saw, or was that another analysis that wasn't in that slide?

MS. MCKOWN: I'll be honest, Colleen, I don't know. I would have to get back to you on that.

MS. BOUFFARD: Okay, thanks, Kim.

CHAIR MCKIERNAN: Roy Miller, you're up next.

MR. ROY W. MILLER: Kim and Mike, nice job, very impressive. I have a question concerning something Kim said. Specifically, she said that significant management action would be necessary to stabilize the southern New England stocks. My question is, did the Assessment Team formulate what those specific significant management actions would be, or is that something else we're going to get to this afternoon?

MS. MCKOWN: The only thing we threw out there as an idea is possibly a moratorium, but we felt that management measures really isn't what the Technical Committee should be doing.

CHAIR MCKIERNAN: All right, thank you, Kim. Is there anyone else?

MS. KERNS: We've got Emerson Hasbrouck, and now Jason McNamee.

CHAIR MCKIERNAN: All right, Emerson.

MR. EMERSON C. HASBROUCK: Thank you Kim and Mike for your presentations. For the slide that is on the screen right now that shows that precipitous drop off. How much of that was caused by the collapse of the Long Island Sound fishery? That is the first part of my question, then I have a follow up.

MS. MCKOWN: We actually ran sensitivity runs where we excluded, first off one just excluded the Connecticut Trawl Survey, and then another one we excluded everything from 611, the Connecticut Trawl Survey plus all of the landings. It gave similar trends. I have to actually look at my notes. I think the abundance was a little bit lower in the terminal year in the run without southern New England, but it shows the same trajectory, so it's not Connecticut and Long Island Sound driving this.

MR. HASBROUCK: Okay thank you, and my follow up then is in terms of possible management measures. If we're seeing this decline in abundance that you're showing right now, and in terms of changing ecological conditions. You mentioned a few minutes ago a possible moratorium. Is there any indication that reducing fishing effort by some amount, even including a moratorium, is going to change that trend in abundance? You know are the environmental conditions such that no matter what we do we may not gain anything?

CHAIR MCKIERNAN: Kim, do you want to take that or call it a rhetorical question?

MS. MCKOWN: I can say I was just thinking this assessment. I don't remember if we did this, but I know we looked from the last assessment. We feel natural mortality has increased in southern New England, but fishing mortality was still higher than natural mortality, and that's something I guess we should look again at this assessment. But I know from the last one. Yes, it would help to reduce fishing mortality.

CHAIR MCKIERNAN: Jason McNamee.

DR. McNAMEE: I'm going to send this one to Mike, to give Kim a break. I think either of them could probably answer. The statement was made a couple of times during the presentations, it's also in the peer review that the trends are less uncertain than the scale. I agree, certainly with the sentiment.

What I was wondering is what I didn't see, my review is evidence that there is a scale issue with the assessment. My first question is, have you found a scaling issue, like when you rerun the model you get a change in the scale of the population that you can't quite explain, and if the answer to that is yes, my follow up is, are the reference points that are proposed robust to that scaling issue?

MR. CELESTINO: Thanks for that question, Jay. I don't know if, Maya are you able to put up Slide 8 from my presentation? Yes, that's the one. Perfect, thank you. Those two plots at the bottom are the trajectories and trends of all the model runs. The darkest line is the base case scenario, and all the sort of thin gray lines are the variety of different sensitivity runs.

The Gulf of Maine on the left and southern New England on the right. I think the thing that jumped out, at least from the Review Panel's perspective is that reassuring that with respect to the Gulf of Maine, all the transfers start at low abundance and trend upwards. Ditto with the southern New England there is this sort of parabolically unimodal shape.

But there does seem to be enough wiggle room amongst the different runs that it gives a bit of caution, in terms of relying on any one individual run. But the reassuring thing also on the Review Panel perspective, with respect to determining stock status and utilization of reference points is that the percentile system puts everything on a relative scale. Even if the absolute values change, we had a good bit of confidence that the ultimate conclusions regarding stock status would not, because we start using this percentile system. Does that help?

DR. McNAMEE: That's perfect, Mike, thank you very much.

CHAIR MCKIERNAN: Toni, are there any others?

MS. KERNS: No other hands, Dan.

CHAIR MCKIERNAN: All right, thank you. Well, why don't we take a motion? I think David Borden had proposed a motion to accept the stock assessment and the peer review. David, do you have a motion?

MR. BORDEN: Yes, sir. Move to accept the American Lobster 2020 Benchmark Stock Assessment and Peer Review for management use.

MS. KERNS: You have Pat Keliher as your seconder. Dan, did we lose you?

CHAIR MCKIERNAN: Okay, yes. At this time. I'm sorry, I must have muted. We got the Peer Review and the Assessment approved, right? Did that record?

MS. KERNS: We didn't hear you, if you were asking.

CHAIR MCKIERNAN: Yes, all right. I was muted. If there are no objections to that motion, and I assume there is not. **Then, the motion by David Borden to accept the peer review and the assessment is passed by unanimous consent.** Thank you.

MS. KERNS: No hands.

CONSIDER MANAGEMENT RESPONSE TO THE ASSESSMENT AND PEER REVIEW

CHAIR MCKIERNAN: Now at this time on the agenda is a possible discussion about management response. As one of the states with southern New England fisheries, I would like to recommend we postpone that until February. Personally, I would like to take a fresh look at fishery performance, you know take stock of the actions that this Board and each of our states have taken, in terms of regulating the fishery before we tackle that. Is

there any objection to not taking this discussion up at this time, but taking it up in February?

MS. KERNS: You have Pat Keliher, then Jason McNamee and Tom Fote.

CHAIR MCKIERNAN: Okay, you said Pat Keliher first? Okay, Pat.

MR. PATRICK C. KELIHER: I don't have any objections to that at all. I do want to bring attention to a recommendation within the assessment as well as by the PRT around engaging the Economic and Social Science Committee, in regards to some possible reviews of different types of triggers associated with the lobster fishery. I should be better prepared to have something a little more specific than that.

But if you all are thinking around reengaging on this issue this winter on southern New England, maybe I could do some additional work on what that might look like, and bring something forward at the next meeting. I think this kind of fits right in to the resiliency addendum that we have continued to delay, because of right whales. I think that Addendum needs to start moving forward, and I think we need to include some additional thinking around economics and social science side of that work.

CHAIR MCKIERNAN: Yes, I did not mean to dismiss the items that were brought up in the recommendations of the assessment or the peer review about the Gulf of Maine/Georges Bank stock, so I appreciate that. We can take both up at the February meeting. Next is Jason.

DR. McNAMEE: I also am in general agreement of deferring the majority of this discussion until the next Board meeting, with one exception, and that is at least. What I would like to do is make a motion about the reference points, and the reason I think that is important is that we get at least, even if we defer our action on it, if we get a motion on the table for reference points, I think it will help with some of that subsequent discussion to kind of know what we're aiming at. If you feel it's appropriate, I have a motion ready to go.

MS. KERNS: Dan, we're not hearing you.

CHAIR MCKIERNAN: I have one more hand up, Jason that would be Tom Fote. Can I come back to you after Tom?

DR. McNAMEE: Absolutely.

CHAIR MCKIERNAN: Okay. Tom, go ahead.

MR. THOMAS P. FOTE: Yes, I'm thinking about so far today we did winter flounder and now we're doing lobster. Winter flounder; we basically in the southern New England part of that stock we basically did extreme measures. We basically put almost a moratorium in place, as far as the recreational one fish, and we put a short season in.

Then we also put a small in-state catch in. I'm sitting here 10 years later and it really has had no results, because there are only certain things you can effect on that. I look at the same thing we've done on our weakfish, and I look at what we basically say we could basically rebuild. The question when we did bluefish last week, actually and I asked the same question.

You're giving me tables that project that this is what will happen if we do such and such. How confident are you in the tables when you basically admit that it doesn't depend on this, it depends on things that we don't control? I'm happy to postpone it to February, because we've been down this road many times before in the last 10 years.

But my concern is, we can't change the weather. We can't change climate. I also thought in the discussion today as we were going through this, that the presentation we had at the Maine annual meeting, which I found very enlightening, which I had never thought about before, is that when we basically lose a fishery in an area that the whole ecology of that area changes.

It might not support, it might take years to bring this back, because of the prey/predator relationship, or what replaced that when those species were no longer there. I don't know if anybody is looking at that. But that is my concerns when we start doing things like this. I've watched this. I also have surf clams that have moved offshore and further north. How important was the surf clam fishery for in-state waters in New Jersey? It is no longer in existence. I don't care what we're going to do about it, we're not bringing it back until the water cools off. I've just got my concerns there, I just wanted to express it. I didn't want to comment, and I thought there was no plan to winter flounder to bring this whole discussion up, because I just shake my head and cry over the facts. Sorry about that.

CHAIR MCKIERNAN: Yes, I agree, Tom. It is pretty depressing when you look at the number of stocks at the southern end of the range that appear to be failing. Jason, I think your motion is ready to be brought up at this time.

DR. McNAMEE: I'll read the motion in, and then if I get a second, I have a little bit of rationale. The motion is to move to adopt the following reference points as recommended in the 2020 Benchmark Assessment for the Gulf of Maine/Georges Bank stock, abundance reference points for the fishery industry target, the abundance limit and the abundance threshold to be 212 million lobsters, 125 million lobsters, and 89 million lobsters respectively.

Then exploitation reference points for the same area, the exploitation threshold, and exploitation target to be the 75th and 25th percentiles annual exploitation estimates during the current abundance regime.

Then for the southern New England stock, an abundance threshold for the southern New England stock, which is set at 20 million lobsters and exploitation reference points to be the exploitation threshold, and exploitation target set at the 75th and 25th percentiles of annual exploitation estimates during the current abundance regime. These are consistent with the recommendation from the Stock Assessment Subcommittee and approved by the Peer Review Panel.

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CHAIR MCKIERNAN: Jay, do you feel that you need to make this motion because the acceptance of the stock assessment doesn't accomplish that?

MS. KERNS: Dan, acceptance of the stock assessment does not accept the new reference points. The Board needs to do that explicitly through.

CHAIR MCKIERNAN: All right, well then thank you, Jason. Can we get a second on Jason's motion?

MS. KERNS: You have Ray Kane.

CHAIRMAN MCKIERNAN: Thank you, Raymond. Any discussion on the motion?

MS. KERNS: Dan, you had Colleen, and then Cheri, then Pat Keliher and David Borden.

CHAIR MCKIERNAN: Colleen, you're up.

MS. BOUFFARD: My hand was raised from before Jay made the motion. I don't have any issue with the reference points. I think they make good sense moving forward. Do you want me to hold off on my comment until after this is discussed?

CHAIR MCKIERNAN: You're in favor of the motion as written?

MS. BOUFFARD: Sure, I just had discussion about postponing the management talks until February. I don't know if you want me to hold off on that.

CHAIR MCKIERNAN: Yes, why don't you hold off on that and we'll try to get this motion approved. Cheri Patterson.

MS. CHERI PATTERSON: I am fine with this motion. My hand was raised to second it, thanks.

CHAIR MCKIERNAN: Pat Keliher.

MR. KELIHER: I think I'm fine with this motion. I just wanted to make sure, and Jay can just verify this for me. These are all the points that were consistent within the document, correct? There are no changes.

DR. McNAMEE: Yes, thanks, Pat and that is correct.

MR. KELIHER: Great, thank you.

CHAIR MCKIERNAN: David Borden.

MR. BORDEN: Yes, thank you, Mr. Chair. Would somebody on the staff remind me? We have a fishery industry target abundance limit developed for Maine, but we don't have one or any kind of recommendation for southern New England. Is there a reason for that?

MS. STARKS: This is Caitlin. I can take a first stab, and then if Kim has anything to add she can. But my understanding is that the SAS only put forward the one abundance reference point for southern New England, because of where the stock is in comparison to that. They didn't feel it was really appropriate to put forward any other targets at this time. Kim, if you have anything to add to that.

MS. MCKOWN: No, that's correct.

CHAIR MCKIERNAN: Toni, any other hands up?

MS. KERNS: Jason's hand is still up. I'm not sure if that was on purpose or not.

DR. McNAMEE: It's on purpose.

CHAIR MCKIERNAN: Okay, go ahead, Jason.

DR. McNAMEE: I was just going to offer a little bit of rationale, and I'll try to be quick. First, thanks to Ray for the second, I appreciate that. Just a little bit of rationale. As Toni noted, it seemed appropriate to get the reference point discussion explicitly on the table. I wanted to make sure we did that. Also, I had asked a couple of questions during these presentations, and so I understand that SPR and MSY reference points have been tried in the past, but they basically don't seem to produce defensible management targets or thresholds. I think we should continue to look, to try

to link these reference points back with the biology specifically. But in the meantime, I really appreciated the change point analysis and the work done by the Stock Assessment Subcommittee, as well as the points made by the Peer Review Panel.

Bringing in this change point analysis or the regime analysis, as it's talked about in the presentation. Having that done to get at the notion that the productivity has changed in each of these stock areas, I think is really important. I think it is much more reflective of the productivity. They seem like much more reasonable targets. Therefore, I support the reference points created by the Stock Assessment Committee, and supported by the Peer Review Panel. I hope that there is support for this motion.

CHAIR MCKIERNAN: All right, thank you, Jason. We've had four comments in favor. Is there anyone on the Board who would like to speak against this motion, as a way to telegraph that there might be some opposition?

MS. KERNS: I don't see any hands, Dan.

CHAIR MCKIERNAN: All right, is there anyone opposed then? Is there anyone opposed on the Board to this motion? Seeing none, it is adopted by unanimous consent. Toni, before we start the next section of the meeting, shall we take a five-minute break?

MS. KERNS: Dan, I didn't know if you had deferred Colleen to after this was discussed. I didn't know if you needed to go back to Colleen or not.

CHAIR MCKIERNAN: Certainly. Colleen, why don't we come back to you at this time? Thank you, Toni.

MS. BOUFFARD: I just wanted to get back to the discussion about postponing management talks until February. I'm certainly for that. I'm just kind of hung up on that bullet that I saw

where there were projections done that removed fishing mortality for southern New England, and I think it would help to inform the discussions that we're going to have in February, and get back to the point that Tom and Emerson made.

When we start throwing words like moratorium into the arena, it would be great to have some kind of information that there would be some assurances that reducing fishing mortality further would be successful in helping the southern New England stock. I know Kim had mentioned that fishing mortality rate is currently higher than natural mortality.

I'm not sure if there can be projections or runs done to help again inform that discussion about what happens to stock abundance if fishing levels are reduced to the levels that natural mortality is at. I'm not sure if it is appropriate to task the Technical Committee to do those projections, if they haven't already been done.

CHAIR MCKIERNAN: Kim, can you help us with that?

MS. MCKOWN: We did one run, and I was going to find it, probably in this break, and e-mail it to Colleen so that she can see it.

CHAIR MCKIERNAN: All right. Okay, well thank you Colleen. At this time, I would like to propose a five-minute break, and that would allow us to resume at 3:15, and get a report on data collection requirements.

MS. STARKS: Dan, this is Caitlin. I'm totally fine with taking a break now. I just have one question for the Board or clarification on that last bullet on this slide. We can take it up when we come back, if you prefer.

CHAIR MCKIERNAN: Certainly, why don't we come back? We'll take that up first, and then we'll go to Data Collection Requirements. We will resume at 3:15.

(Whereupon a recess was taken)

CHAIR MCKIERNAN: All right Lobster Board. Caitlin, I think we can resume.

MS. STARKS: I just wanted to get some clarification or guidance from the Board on the last bullet on this slide about Addendum XXVII, which was related to resilience in the Gulf of Maine and Georges Bank. If discussions on management response are going to be held off until February, I would like to just clarify whether I should work on this Addendum at all before then, or wait until after those discussions occur in February.

CHAIR McKIERNAN: Yes, that is a good question. Board members, would you like to weigh in?

MS. KERNS: I don't have any hands raised, Dan.

CHAIR McKIERNAN: Okay, in my recommendation to postpone the discussion until February, I was extra focused on the recommendation coming out of the stock assessment that Gulf of Maine/Georges Bank, they weren't recommending management actions. In southern New England they were. But Caitlin, you bring up a valid point that we do have the postponed resiliency addendum, and certainly that can slide forward on its own. I think we've heard some rational reasons today why that should. Is there anyone who would like to weigh in on that?

MS. KERNS: Pat Keliher.

CHAIR McKIERNAN: Pat.

MR. KELIHER: Yes, as the maker of that resiliency motion to initiate an addendum, I certainly don't want to lose sight of that. You know I think Dave Borden kind of teed it up for me a little bit here this morning, talking about the timeframe of which the collapse in southern New England happened, before the Board even finalized any management actions. I certainly don't want to be delaying too long here, but again just to danger repeating myself, but I want to make sure that we are thinking about other potential economic triggers, and that is

why I brought up the issue of engagement of the Economic and Social Science Committee.

CHAIR McKIERNAN: David Borden.

MR. BORDEN: I am supportive, as Pat just indicated, moving forward with the resiliency addendum. In support of that I would just simply note, state the obvious, that if we start an addendum today and it takes us two or three years to finish that addendum, which it usually does. Then we adopt it, and then it takes another two or three years for NOAA to do about federal waters. It's a long period of time.

If you factor in the point that I made about southern New England, I think there is some urgency here to deal with some of the issues that the Board attempted to deal with before. In terms of the southern New England issue, I think there is going to be a whole discussion that is going to kind of focus on the points that Emerson raised about what you can do, what's effective, and that Tom Fote also raised about what you can do for southern New England.

It doesn't mean you don't take any action in southern New England, but there may be quite a range of management measures we need to look at and examine. All of that is going to take time. I ask people to kind of factor that into their (word garbled) between now and February, and then come prepared to deal with those process delays that we know are going to invariably take place.

Make suggestions so that we can kind of coalesce around some kind of position for the Gulf of Maine and also a position for southern New England. The other big advantage is this will give the industry in southern New England an opportunity to get their own dialogue going on the issue.

CHAIR McKIERNAN: Can I ask a point of clarification from Caitlin or Toni? Addendum XXVII, was it officially tabled? I remember that we had the meetings to deal with some of the specifics, but at that point the Large Whale Take Reduction Plan became quite an occupying issue for many of our staff, so we put it on the shelf. Can you remind the Board where that

Addendum is, and if we need to resume progress on it with a vote?

MS. STARKS: I don't think we need a vote. You're correct that it was basically just stalled or postponed. There was a draft document that the PDT had drafted, but it did not get presented to the Board, and the focus at the time was really on standardizing measures between the different LCMAs in Gulf of Maine and Georges Bank, and addressing some different issues related to those.

Based on what's coming out of the stock assessment and this discussion, I think there might be an interest in expanding the things that this Addendum could address. I think we would need just agreement from the Board to move forward, have the PDT kind of discuss what has already been drafted, and potential areas for adding some other considerations like socioeconomic analysis and things like that.

CHAIR MCKIERNAN: To David Borden and Pat Keliher, is that what you had in mind at this point, just getting consensus that Addendum XXVII should be resumed, and the PDT reconvened?

MR. KELIHER: Yes, I was still thinking, based on your earlier comments around southern New England that we would kind of reengage this conversation. But David Borden's comments on urgency is certainly not lost on me. I'm reluctant to say we should have a formal subcommittee maybe start working on this.

Looking at these issues, maybe both of the issues, both the resiliency addendum as well as southern New England. But at the very least, maybe informally Commissioners can interact between now and the February meeting, so we're coming to the table ready for a full discussion on both of these issues.

CHAIR MCKIERNAN: That's well put, Pat.

MR. KELIHER: Then we can reengage the PDT.

CHAIR MCKIERNAN: Okay. Is there any objection to that as a strategy?

MS. KERNS: Dan, you have Tom Fote and Cheri Patterson with their hands up. They were up before you asked.

CHAIR MCKIERNAN: Tom, go ahead.

MR. FOTE: I was just thinking about what the implications are a moratorium. When you shut it down in a state like New Jersey that only have, we've lost a lot of the permits that we had in the '90s, and we're down to a small number. When you put a moratorium, when we start losing the areas where we can even come back, even if the stocks ever came back. That is my concern when I'm looking at that. I think we do need the economics of it, and the impacts that it will have on the total community. Yes, I'm willing to go along with what you guys are proposing.

CHAIR MCKIERNAN: Cheri.

MS. PATTERSON: Yes, I am definitely in favor of this. I also just wanted to mention that once we get to the approving the fishery management plan review and such. It's actually the PRT is recommending that the Board engage CESS to consider socioeconomic data and such, so he's coming at it from two different directions.

CHAIR MCKIERNAN: Consistent with Pat Keliher's comments, I would ask all the Board members to be prepared to come to the February meeting, having discussed with their staff and their industry and with one another, strategies for getting traction on Addendum XXVII, and dealing with the southern New England challenge as well. I think I would like to move on at this point, unless someone has a burning desire to keep discussing this. All right, let's move on to the report on data collection requirements.

MS. KERNS: Dan, Jason's hand went up.

CHAIR MCKIERNAN: Sorry Jason, go ahead.

DR. McNAMEE: No, I'm sorry, Mr. Chair. It's not related to Addendum XXVII; it's going back to the

comments that Colleen made earlier. I like the comment that she made, but I started thinking about there was, so we're going to look at the results of some projections that look at a moratorium.

I just wonder what the context is for those. I'm wondering if we need to provide a little more guidance. For instance, you know look at a moratorium versus a v-notching program or a moratorium versus a change to minimum size. I think if this work is going to occur between now and February, the team is going to need a little bit more guidance. I'll just offer those two off the top of my head. But they may wish to come up with some other potential management strategies with which to compare the moratorium to.

CHAIR MCKIERNAN: Certainly. Caitlin. I need a lifeline on this one, so what is the preferred strategy here, something more formal, in terms of convening, or formally meeting with either the Stock Assessment Committee? How do we fast track this, Jay, if that is what you're suggesting?

MS. KERNS: Can I ask a question about this, Dan?

CHAIR MCKIERNAN: Yes, go ahead.

MS. KERNS: Sorry to butt in on Caitlin, but I thought Colleen was just asking for the projection of southern New England with 611 in, and with 611 out, and that Kim, I thought they had run that and she was looking for it to send it to Colleen. If they hadn't done that then, I said over the break that I could work with the Assessment Team to provide the answer to the question she was looking for. I'm not sure we would want to start without specific instructions to the TC to run different management measures yet. Now you have Colleen and David Borden.

CHAIR MCKIERNAN: Colleen.

MS. BOUFFARD: Toni, just to clarify. I wasn't looking for projections with Long Island Sound removed. I was looking for projections with fishing mortality removed. Then I had made the suggestion based off a comment Kim had, to request the runs that could be done if F was reduced to the level of M. Again, I was just looking for some kind of information that we could review prior to the February meeting, to have some reassurances that any management measures would have positive results on stock size.

MS. KERNS: You have Kim to respond and then David.

CHAIR MCKIERNAN: Go ahead, Kim.

MS. MCKOWN: I just wanted to let you know, I did send Colleen those runs that show the response of the population if you remove F, and abundance does increase even in those runs that are trends and recruitment trends runs.

CHAIR MCKIERNAN: Could the whole Board get copied on those as well? That would be useful.

MS. MCKOWN: Sure, I'll send it to Caitlin and she can send that out.

CHAIR MCKIERNAN: All right David Borden, you're going to be the last one on this issue.

MR. BORDEN: I'll make it quick. I just encourage everybody to discuss southern New England in the context of the prior discussions we've had, when some of the scientific members recommended a moratorium. You had a fairly extensive discussions about how you enforce this, particularly in areas like Massachusetts, it has borders on four, I think, LMAs.

Then you've got the whole issue of, it's really a mixed crustacean fishery at this point, where a lot of the participants, they are earning the bulk of their income from Jonah crab fishing, not lobster fishing. Now we have to have the other consideration of, how do you enforce?

Lobsters are very easy to transport, and the enforcement community is concerned about at-sea enforcement, which we all know is not terribly

elaborate. We need a broader discussion on this whole issue of what we can do, what's going to have a positive impact. But it shouldn't all focus on a moratorium. I'll predict if we do that, we'll waste a lot of time on the subject.

CHAIR MCKIERNAN: I think it's a good idea to dust off some of that old script that we did struggle with five and ten years ago. Thank you everyone.

REPORT ON THE DATA COLLECTION REQUIREMENTS FOR 2021

CHAIR MCKIERNAN: I'm going to move on to the next item on the agenda, which is the Report on the Data Collection Requirements. Is Anna Webb presenting?

MS. KERNS: I'm actually going to do it, Dan.

CHAIR MCKIERNAN: Okay Toni, thank you.

MS. KERNS: Anna and Renee as my backup for when I need help. We're going to move on to the next slide, Maya, please. As everyone knows, Addendum XXVI put in place new requirements for lobster and Jonah crab reporting. Not only did it add new data elements, but it also moved the fishery to 100 percent harvester reporting by 2024.

There were some new data elements that were added that were supposed to be implemented two years ago, but we determined that some of those measures were not able to be collected, either through the paper or more notably the electronic reporting systems. While reporting systems were advanced, we delayed the implementation of those elements.

All of those data elements are going to be ready for collection from both state and federal only lobster permit holders in January of 2021. The federal lobster permit holders, some of those data elements are not collected directly, they may be calculated or estimated. It is important to understand that there is a distinction in how data elements are gathered, and a data element

can be either collected directly, so a specific question looking for an answer. You can also calculate a data element by using the responses from two directly collected data elements, to come up with the value, or it can be estimated.

An element is estimated when you use an element that is collected with an assumption around that element, in order to come up with the value. We have found, through a group of wonderful folks from all the states and GARFO and ACCSP that have been working very diligently over the last year and a half, to make sure that everything is ready for 2021.

That there are some inconsistencies between the states as well as NOAA fisheries, and there are five specific data elements that we are requesting consistency from NOAA Fisheries for the VTR, in how they are gathering the data for these five elements. I'm going to go through each one and the specifics around it.

For the first data element, it's the number of trap hauls in an effort. An effort is a statistical reporting area. This piece of information is really important for the stock assessment, it is an effort metric in the assessment. We want to make sure that this element is being collected by all of the partners in the same way, so when it's put into the assessment, we don't have any additional uncertainties around specific indexes from one jurisdiction versus another.

Currently GARFO calculates this value from two different data elements, the first being the number of strings hauled by SRA, and then the average number of pots per string hauled by SRA. The average number of pots per string is the same as traps per trawl hauled in an effort, which is Number 3.

As I said before, we directly collect this value, and we really would like NOAA to directly collect this value as well. We are not telling them that they can't ask those other, you know the two questions that they are currently using to calculate the value, but we're just wanting them to ask an additional question, in order to get this value directly.

The second element is the number of traps in the water for the statistical reporting area. This value is important for knowing information for Atlantic Large Whale discussions. We're asking GARFO to directly collect this value. In particular the Large Whale discussions, it is important to determine the number of end lines.

It is very important for those fishermen that are fishing in multiple areas. GARFO currently estimates this value, and the states ask for the total number of traps in an effort at the beginning of each trip, so we are asking GARFO to do the same for the state share. As I said earlier, GARFO currently already asks for traps per trawl hauled in an effort.

If they decide to change the questions, because we've asked them to directly calculate Number 1, and they no longer ask this question anymore, then they would need to just calculate it just like the states. It looks like somebody is not muted, if staff could mute them, great. Number 4, the number of buoy lines in an effort. We're asking GARFO to directly collect this. They currently estimate it, and the states directly collect it. It's also very important in the determination of the number of end lines in the fishery. The last element is the number of buoy lines in the water. We're asking GARFO to directly collect this data element. Right now, it's partially estimated, partially calculated from the average number of pots per string hauled, and total gear in the water.

NOAA assumes that the average number of pots and strings hauled per effort is the same for all kinds of gear, so they take an average across the year across all areas. We know that when you fish in multiple areas that that average is not always the same across the board for all fishermen, sometimes they move their pots, and move the number of pots that are being hauled.

It's really important to have this value for determining the end lines in the fishery for Atlantic Large Whale discussion. We are making a recommendation to the Board that a letter is sent to GARFO to request changes for how the data is gathered from these five data sources. I will take any questions.

CHAIR MCKIERNAN: I was remiss in not doing a better job introducing this topic, but you know we've worked very hard at the state level, trying to interface with NMFS and their data collection. I want to say that the working group that has been meeting on this weekly has done a great job.

Especially Julie, who is the model of patience and diplomacy, to try to get this done. This is so important for issues of Right Whale conservation, and also for offshore wind development. The lobster fishery really needs to do what it can to better define the footprint and the times and places that fishing is occurring, more than ever.

Toni, we're looking for Board feedback on a letter being drafted to GARFO, with request for these five parameters to be collected in a way that is consistent with the traditional way the states have done it, or in a compatible way, so that we can all collect it together in a more uniform manner. Are there any questions on this issue to Toni from the Board?

MS. KERNS: You've got David Borden.

CHAIR MCKIERNAN: David Borden.

MR. BORDEN: Thank you, Mr. Chair, are you ready for a motion?

CHAIR MCKIERNAN: Well, are there any questions before we take the motion? Then sure, I'll take the motion.

MS. KERNS: Dan, really quick, Ali Murphy has her hand up.

CHAIR MCKIERNAN: Okay, go ahead.

MS. ALISON MURPHY: I too wanted to thank the participants of the weekly data calls. As you said,

there is a lot of value in this work, and there is a lot of value in having all of the jurisdictions kind of gain a better understanding of what's being collected and how, and by the different groups. The timing of this discussion before the Board is good. We are working on including the additional data elements that were included in Addendum XXVI in our ongoing rulemaking that will also propose mandatory harvester reporting, as well as the Area 2 and 3 ownership caps and the Area 3 active trap cap reduction. I wanted to see, Mr. Chairman, if you would be okay with perhaps kicking this over to some of my colleagues in our data group, to see if they have any additional comments or perspective that they can offer.

CHAIR McKIERNAN: Certainly. Are they a part of the call today?

MS. MURPHY: Yes, I believe Dave Gouveia and Barry Clifford and Jay Hermsen are all on. I don't know if any of them want to take a minute to respond to some of these (broken up)...requests.

CHAIR McKIERNAN: Why don't I recognize David first? David Gouveia.

MS. KERNS: David, if you could raise your hand it would make it much easier for me.

MS. TINA L. BERGER: He's unmuted now.

CHAIR McKIERNAN: David Gouveia, go ahead.

MR. DAVID GOUVEIA: I just wanted to echo the comments Ali had made. We're not opposed to any of the changes that are suggested or additions, I should say, that are suggested that Toni had provided. We would definitely consider those. It would be under the auspices of eVTRs, we certainly could make any changes to the paper collections that we do.

If we were to consider adding those additional questions that were outlined by Toni, we wouldn't be replacing existing questions we

would ask, it would just be to complement the questions that we already ask. Short of that, I think that whatever folks decide they want to send forward to us formally in a letter, we'll definitely put that forward and try and do the best we can with that.

CHAIR McKIERNAN: Thank you, David. David, Ali mentioned two of your colleagues. Would you like them to speak on this issue, or do you think you've got it covered?

MR. GOUVEIA: I think we've pretty much got it covered, but if there are some questions that are posed to us, we would be happy to help answer those.

CHAIR McKIERNAN: Okay, are there any questions from the Board on this issue? I guess not, all right. Toni, that letter will be drafted for Bob's signature?

MS. KERNS: It needs to be a recommendation to the Policy Board to send the letter, Dan, this is just for clarification purposes. As long as there are no objections from the Board, then we can have that letter discussed at the Policy Board, and it could be either under your signature or Bob's.

CHAIR McKIERNAN: All right, so that letter would be drafted in time for this week's Policy Board meeting?

MS. KERNS: Probably not in time for the Policy Board meeting, but just the concept. The Policy Board can decide whether or not Pat and Bob and you can use your discretion to send it to NOAA pending any edits.

CHAIR McKIERNAN: I'm not hearing any objection to us drafting that letter in concept, so we'll move forward with that. Thank you, Toni, thank you Dave Gouveia.

REPORT ON ELECTRONIC TRACKING PILOT PROGRAM

CHAIR McKIERNAN: And we'll move on to the next item, which is a Report on Electronic Tracking Pilot Program. I'll kick it back to you, Caitlin.

MS. STARKS: Bill DeVoe is going to be giving the presentation on this, and Maya, could you pull that up, please? Bill, you are free to take it away.

MR. BILL DeVOE: Good afternoon, this is Bill DeVoe, Marine Resource Scientist to the Maine Department of Marine Resources, and Story Reed and I were the primary investigators on this Electronic Pilot Program just over the last year or so. I think Story is on the line as well for questions after. Proper save of the presentation.

The Pilot Project was initiated under the adoption of Addendum XXVI. It established a one-year pilot electronic tracking program. The beginning of this was established under the Lobster Electronic Tracking Subcommittee. The Subcommittee determined that we should test multiple tracking devices, and a variety of geographical environments from southern New England all the way up to the Gulf of Maine, specifically targeting federal lobster vessels.

When this Subcommittee was first convened, we invited various tracker companies to present their product to the Subcommittee, then identified four trackers to test out. Then after we had procured some of these trackers, we identified volunteer industry participants. We ended up testing three different devices.

We tested out trackers from Succorfish, Rock7, and Pelagic Data Systems. We tried eight of each of these devices in both Maine and then Massachusetts, so four devices per state. The trackers used both cellular and satellite networks. All of them used cellular, the Rock7s also had satellite. The Succorfish offered a satellite option, but we did not test that.

The goal was to have a one-minute ping rate. We didn't specifically attempt to get the one-minute ping rate only while the vessel was hauling. For most of these we just had them go at once a minute through the entire time the tracker was powered on. The first Rock7 devices were deployed in Maine in June of 2019, and the last devices were pulled around May, 2020. There are still a few Succorfishes that are going in May.

For results, you know the point of this project was to simply test out different tracking devices and see how they perform. Then we found that pretty much all the ones that we tested performed satisfactorily. They delivered the vessel position as expected. You know the exception to this, the Pelagic Data Systems tracking devices were solar powered, which seemed like a really great option. Massachusetts had some better results with theirs, but in Maine we had a really hard time in the winter getting enough sun to even hit the trackers it found did not turn on. Maine Marine Patrol had also done some experiments with that device in the past with similar results. The cellular-based systems are definitely considerably cheaper than satellite and permit faster ping rates, because the data is so much cheaper.

Most of the devices that were on cellular networks, they uploaded as soon as the vessel returned within cell coverage, which depended on where in the Gulf of Maine you are. I was anywhere from three to as much as ten miles out. The greatest cause of failure for the devices was loss of power from the vessel to the device, so literally they have to be plugged in to work. No surprise there.

There are various methods for using the power tracking devices, some of them were hardwired right into the vessels, such that there was pretty much always power being applied from the vessel battery. Some of them were plugged into auxiliary outlets, with just a 12-volt adapter. In actual use there would probably need to be some legal requirements on how the device were powered. The method of power seemed to be the biggest predictor of device failure.

Some of the devices did have some better features, in terms of integration interface. Add-on hardware, we tested out some Bluetooth outlying beacons in Maine with the Succorfish devices. But at the end of the day, they all pretty much did what they were supposed to do, which was report a position every minute for the vessel.

I started to mention we were shooting for a one-minute ping rate. The reason for that one-minute ping rate is that typically between a one and two-minute ping rate, you can programmatically detect

trawls as small as triples. In these two examples here, you know, this shows the map on the left is ten-trap trawls, the map on the right is triples.

In both cases these red polygons are the location of individual efforts, as detected by a hierarchical cluster algorithm. The orange dots over these are the actual GPS positions from a DMR observer on board. This has been really important to be able to automatically detect these trawl positions for quantifying the effort of the finer spatial scale, as well as potentially reducing harvester reporting requirements.

There are more details on this in the ASMFC's final report on this project. Recommendations and future work. As I mentioned, the one-minute ping rate was found to be essential. Faster ping rates than this are not really necessary. Multiple vendors could meet the requirements for higher ping rate VMS in the lobster fishery.

The minimum data that you get out of these devices, the vessel identifier, the timestamp, and the latitude and the longitude. A lot of these devices offer additional data elements, and they're mostly plots that you can calculate. It's conceivable that multiple vendors could feed these same four data elements into a common system.

Installation of these devices on many vessels will definitely require a significant amount of staff technicians. There are times when they stop working, you need to follow up with the fishermen. Additionally, if you're talking about putting 1200 of these devices on federal lobster vessels, that is a significant amount of work, just for the initial deployment. Significant data integration work remains. You know the tracking data on its own is not nearly as useful unless it is linked to a harvester report that has information about how much is caught, about how many trawls were hauled, data elements that are then being discussed.

It's possible further hardware testing, hauler sensors, environmental sensors. There are also some efforts at DMR to develop their harvester at vessel for length with some of these vessel tracking provider systems. DMR has recently received funding for an extended pilot project with up to 20 trackers integrating with harvester reporting. I also have results of a second project that was funded by ASMFC between Mass DMF and Rhode Island Innovative Trackers eTRIPS Mobile. I'll open up for questions.

CHAIR MCKIERNAN: Toni, any hands up?

MS. KERNS: Not yet, Dan.

CHAIR MCKIERNAN: I have one question, and it had to do with data storage. Is this going to be a challenge, kind of an unmet burden to maintain large amounts of data on some systems?

MR. DeVOE: Yes, that is a great question. When DMR is having conversations with odd looking data that provides our harvester app, we had done some back of the envelope calculations, and said you know okay, if we had every federal vessel producing one-minute pings with those elements I described. How much would that actually produce?

The lowest number that we came up with, if you were just storing, you know the device ID, the timestamp or the position was 3 gigabytes a year, which is nothing. We rounded it up. In conversations with the software developers at Bluefin. We said let's just call it 50 gigs, and I think that they had thrown out a figure that was, it was absurd. It was something like \$5.00 a month for storage. It was nothing at all. That was using what the sort of maximum possible, if you had all sorts of other data elements you know, things like calculated vessel speed, effort number, et cetera.

CHAIR MCKIERNAN: Thanks, are there any other questions Toni, from the Board?

MS. KERNS: Tim Donovan has his hand up, Dan.

CHAIR MCKIERNAN: Tim Donovan? Okay.

MR. TIM DONOVAN: Good afternoon folks, Tim Donovan, NOAA Office of Law Enforcement. Nice report, Bill. One of the things, as far as enforcement is concerned is the tamper proofing of these types of units to be used for any type of litigation. Did the vendors give you any information on something that we probably want General Counsel to review at one point, if this goes any further?

MR. DeVOE: Yes, that is a great question, thank you. I think I only talked about this once in the presentation, but we worked with Maine Marine Patrol on some of these tracking devices, and got some of their feedback. I would definitely welcome and encourage any feedback from OLE. Yes, so a few of the devices do have some antitamper type hardware. The Succorfish device that we tested had a wire loop that ran through the wiring harness, so that if anybody unplugged or cut the cable to the tracker, it would trigger an event.

Additionally, as far as security, all the ones that we tested out were fully encrypted. This is something that has definitely been considered by the companies that are producing these. Something I would throw out too, for the consideration of the Board, you know from the Office of Law Enforcement. You know there would be further discussion on how important real-time data is.

In my personal discussions with our Marine Patrol Officers that were involved in this, they seemed to think that the lower cost of cellular data more than made up for any loss in real-time capability. Similar to the scientific end of this were more interested in viewing vessel tracks after the fact instead of real time. That is something to consider during discussions regarding real-time satellite VMS versus cellular.

CHAIR McKIERNAN: Toni, are there any other questions from the Board?

MISS KERNS: I don't see any hands up, Dan.

CHAIR McKIERNAN: My question is, what are the next milestones? You had mentioned that there is a southern New England version of this that is trying to link up to eTRIPS. Do you want to speak to what is going to come in the next chapter of the development of this technology?

MR. DeVOE: I can't speak to the southern New England project, although Story might know something about that if he's on the line. But as far as DMR, we're working on integrating the harvester app that is being developed called VESL. We had some of the data interfaces to these tracking providers, starting out with Succorfish, but possibly including other tracking providers.

In the expanded pilot project that we're hoping to do, we would test anywhere between 20 and 25 tracking devices. But in addition to just deploying these on federal lobster vessels, it would also have the captains of the vessels reporting via vessel to fulfill their harvester reporting requirements with tracking data linked up.

CHAIR McKIERNAN: Yes great, and I think that was one of the original visions that Pat Keliher of Maine brought forward a few years ago, when we were talking about requiring 100 percent harvester reporting. Pat's vision of the model he was trying to develop was, with trackers it would become easier to generate the record and that particular part of the report wouldn't have to be entered, it would be captured by the device.

I look forward to more developments in this, especially as it relates to the potential and ongoing offshore wind development. The offshore wind development that could very well take place in the Gulf of Maine is going to desperately need good data on where and when lobstermen fish, and it is so critical to shore up that missing information, when so many other gear types have VMS and have a much stronger position, in terms of defining where they fish. The lobster fishery, which is the most valuable fishery in the Gulf of Maine, the data is so lacking. Nice job on this, and I really look forward to more progress. Thanks for this report.

MS. KERNS: Dan, David Borden has his hand up.

MR. BORDEN: I'll make it quick. We've gone through Lobster Board, and I would point out both Councils and NOAA. We've gone through a whole series of issues, and I would just kind of summarize them. We've talked about the need for better enforcement offshore. The New England Council just went through a Deep-Sea Coral Amendment.

You have a New England Council Habitat Amendment, a Mid-Atlantic Council Habitat Amendment. A number of us on this Coral have been pretty much preoccupied with the issue of Right Whales and the co-occurrence of lobster gear and Right Whales. Now, as the Board Chairman correctly notes, we've got the issue of Gulf of Maine wind power.

In my own case, I've received a couple of very preliminary briefings about where wind power may go in the Gulf of Maine, and on Georges Bank. It is pretty horrifying, to be blunt, how little information you have on the location of where the lobster gear is set. Now, I am not deluding myself at all, and I'll be blunt and just say that putting trackers on lobster boats is bound to be extremely controversial, and I totally understand why it would be controversial.

We've had about five or six issues that have come up before the Lobster Board, where we need better spatial and temporal information on the lobster fishery, as a means of protecting that industry from some of the large-scale activities that are now competing with it. At some point I think the Board needs to have a discussion of whether or not they want to write down all those reasons.

You know like a white paper or whatever, summarize those reasons, and then consider including some part of the puzzle for tracking devices either in all of federal waters, or a subset of the federal waters, as a means of protecting the industry. Well, what you really

need on a wind power issue is at least two or three years on a really accurate information on where the fishery is taking place.

Otherwise, you're going to run the real possibility of having another situation like southern New England, where the wind companies are basically pushing the industry out of 1500 square miles of area, which is going to have huge impacts on an industry that was managed. I guess my question to you, Mr. Chair, in terms of process.

How do we do this? Do we do a white paper? Do we schedule or put it on a formal agenda, and give the industry notice of what we're going to discuss? What is the best way to move forward? Because I think there is a need for at least a discussion on this, and clearly fleshing out the logic behind it.

CHAIR MCKIERNAN: David, I would like to take you up on your offer, and assist you, and pledge not only my support, my agency's support to maybe developing a position paper on this. I think you've just eloquently described the litany of management actions that the lobster industry has faced that if there had been better delineation of fishing locations, it might have turned out differently, or have been less controversial. I would like to see us put together a paper like that, maybe in a draft form for the Board's reading for the next meeting.

Does anyone object to that? Does anyone on the Board object to, David if you're willing to take the lead on that. Again, I would offer you my support as coauthor, and even some of my staff's support. We feel this is a critical issue. Can we get some discussion on that? It would be a draft white paper for the Commission to review, about the need for better delineation of fishing location through some kind of tracking technology. Toni, are there any comments, any hands up?

MS. KERNS: You have one hand up, Pat Keliher, and then I have a follow up question when Pat is done, Dan.

CHAIR MCKIERNAN: Okay, Pat Keliher.

MR. KELIHER: I don't object to the development of a draft white paper. I just remind the Board that there were conversations with the Agency around trackers, as it pertains to whales. We still have not seen any proposed rules come out of the Agency to date. Based on the timeline that they have set with the Courts; I'm assuming that it will be sometime this fall. We may or may not see something there, but I just bring that up as a reminder.

CHAIR MCKIERNAN: Toni.

MS. KERNS: One, I was going to remind the Board that we did make the request, I believe, in a letter almost two years ago now, for trackers to be on federal vessels to GARFO or to NOAA. Then, is this white paper focusing on federal vessels or all lobster vessels? Then after that, Tim had his hand up. I don't think it was directly related to the white paper though.

CHAIR MCKIERNAN: Well, my response to that is I think that is the issue that can be raised in the white paper, is that there seems to be a much more urgent need for data in the federal zone than in the state waters, but I think we should describe that.

MS. KERNS: Thank you for that clarification, and then Tim has his hand up.

CHAIR MCKIERNAN: Tim.

MR. DONOVAN: I just wanted to add along the enforcement line. Currently OLE is conducting a pilot program with an ROV, Remote Operating Vehicle, to do some gear inspections offshore. Hopefully some time in November, I'll have data to be shared with both the Lobster Board and the Law Enforcement Committee regarding the results of that activity. I just wanted to give you all a heads up.

CHAIR MCKIERNAN: All right, thank you. Is there any other discussion on this topic? If not, we'll move on to.

MR. KELIHER: Mr. Chairman, I am not sure if I had my hand up. Just as far as the white paper. I think it's going to be critical that the draft include some comments on who the lead is going to be. Is it going to be the Commission, or is it going to be the Agency? Are we recommending that the Agency take that lead?

CHAIR MCKIERNAN: I'm sorry, Pat, when you say the Agency taking the lead, in terms of regulating something like that or bringing it to the attention?

MR. KELIHER: As far as actually the regulatory side of it, yes.

CHAIR MCKIERNAN: Well, that is a good question, because I fear that given NOAAs longer rulemaking process, and I'm being kind, I wonder if the states could require it sooner, if that was the decision to move forward. I worry that you know with offshore wind development coming in the next handful of years.

In my view we need this data within just a couple years to get in that conversation. I'm not sure if NOAAs rulemaking process, if they would be up to the task of being that nimble. Anyway, I think that's what this white paper should try to flesh out. I think it is important to be open and discuss some of these points. All right, let's move on. Thank you, Pat.

MS. KERNS: Dan, I'm sorry. I was trying to tell you that David Borden also had his hand up.

CHAIR MCKIERNAN: David Borden, go ahead.

MR. BORDEN: I'm happy to work on that per your request with you, and my suggestion is there are probably a few of our state agencies on this call that would want to have a member of their staff involved in that. I think we should broaden it if we have volunteers.

CHAIR MCKIERNAN: Certainly. Are there any volunteers at this time from any of the other states?

MS. KERNS: I don't see any other hands, but folks that want to volunteer, or maybe we might ask for additional help, can e-mail Caitlin.

**CONSIDER FISHERY MANAGEMENT PLAN
REVIEW AND
STATE COMPLIANCE REPORTS**

CHAIR MCKIERNAN: Okay, thank you. All right let's move on. We're pretty much on schedule to move on to the Fishery Management Plan Review and State Compliance Reports. Caitlin.

MS. STARKS: Can everyone see my slide? All right, great. We'll be going over the FMP reviews for lobster for the 2019 fishing year, and then Jonah crab for 2018 and 2019 fishing years, starting off with lobster.

**FMP REVIEW FOR AMERICAN LOBSTER FOR
THE 2019 FISHING YEAR**

MS. STARKS: As you can see in this figure, the lobster fishery has grown quite substantially in landings over the last 40 years, and the all-time high occurred in 2015. In 2019 coastwide commercial landings were 125.8 million pounds, which is a 15 percent decrease for 2018 landings. The largest contributors to the 2019 fishery were Maine, which is shown as the orange line on the graph, and Massachusetts, which is shown as the gray line, and those contributed 80 percent and 13 percent of landings respectively, and the ex-vessel value for lobster landings in 2019 was 630 million.

Moving on to the monitoring information, starting with trawl surveys for 2019. These are the Maine and Long Island Sound Surveys, but there is other state information in the FMP Review. But for the Maine and New Hampshire Trawl Survey, the spring Survey Abundance Indices, which are shown as the top figure on the left, increased in 2019 from 2018, and they are above the time series mean.

Fall survey abundance indices, which is on the bottom, decreased in 2019, but they are also above the time series mean. Then for Long Island Sound there has been considerable declines in the spring and fall indices over time. The spring 2019 Lobster Abundance Index was

the third lowest in the time series, but it's similar to 2017 and 2018.

Then sadly, the fall 2019 survey was the first time since the survey began in 1984 that no lobsters were caught in September and October. These are the VTS survey results for 2019. For Maine VTS there were slight decreases in the number of sublegal and legal lobsters caught in 2019, compared to 2018.

In the Gulf of Maine portion of Massachusetts, the mean CPUE of sublegal lobsters, which is the top line, was quite a bit lower in 2019 than 2017 and 2018, and the mean catch-per trap of legal sized lobsters also decreased from 2018 and was below the time series average. Then these graphs show the young of year surveys for Maine and Massachusetts.

In Maine settlement indices in 2019 increased from 2018 in all areas, and they are near the time series average in Areas 511 and 512, but they continue to be below the series average for Area 513 east and west. Then in Massachusetts, densities of young of year lobsters were low, compared to the time series average in all of the sampling locations, except for the south shore.

Then in Gulf of Maine there were no young of year lobsters found in the Boston sampling regions, and in southern New England there were no young of year lobsters found in the Buzzards Bay sampling locations. We've already discussed this a bit today, so I'll make it quick.

But just to note that most of the Addendum XXVI requirements were implemented by January, 2020, but that spatial resolution component has been delayed to January 1, 2021, along with the other data elements that Toni went over earlier, and that was to allow for the necessary changes to be made to the data collection platforms.

The Plan Review Team noted a few issues in the state compliance reports. First, New Jersey completed three fisheries sampling trips in 2019, although the minimum requirement under Addendum XXVI is ten total trips. New Jersey noted that in recent years it has been increasingly difficult to get compliance and

willingness from vessel captains to accommodate their observers onboard, and then Connecticut also did not complete any sea or port sampling in 2019, due to continued staff and budget limitations. Lastly, the PRT noted that Massachusetts and Connecticut weren't able to provide their compliance reports by the August 1st deadline. As for *de minimis* requests, Delaware, Maryland, and Virginia have requested continued *de minimis* status, and all three states meet the requirement that their most recent two-year average commercial landings are under 40,000 pounds.

The PRT Recommends approving those requests. The additional PRT recommendations are summarized on this slide, first being approving the *de minimis* requests, and they also recommended that the Board review the monitoring requirements for southern New England, given that the stock status is unfavorable, and that it has been difficult to obtain sea sampling.

Then the PRT also recommended coastwide consideration be given to the transfer of tags between traps, in order to remove the need for exchange tags. Then also, that continued efforts to improve effort quantification in the lobster fishery are recommended, as well as research on lobster growth, maturity, connectivity, settlement and larval dynamics. Lastly, the PRT recommends engaging the Committee on Economic and Social Sciences or CESS, to consider or develop socioeconomic metrics that can be used to characterize changes in the fishery.

FMP REVIEW FOR JONAH CRAB FOR 2018 AND 2019 FISHING YEARS

MS STARKS: Next, I'll go over the Jonah crab FMP reviews, and if it's okay, I'll just hold questions until the end.

In 2019, approximately 16 million pounds of Jonah crab were landed along the Atlantic coast, and that is a 21 percent decrease from

the 2018 total of 19.8 million pounds. The states of Massachusetts and Rhode Island were the largest contributors to landings in the fishery in both of those years, landing 61 percent and 21 percent of the total in 2019, respectively.

Addendum III asks the states to expand their fishery independent surveys to collect more information on Jonah crab, though no surveys are required. This is the Massachusetts Trawl Survey results, but again the other states survey results are included in the FMP Review. Trends across the time series for this trawl survey are generally positive, though the 2019 data points for all seasons and regions in the Massachusetts Trawl Survey were below their time series medians, except for the spring survey in Gulf of Maine.

The status of the Jonah crab stock is generally unknown, and a coastwide stock assessment has not yet been conducted. In the FMP Review there is information on a number of studies that were completed in recent years. Then next month we do have a pre-assessment data workshop scheduled for Jonah crab, to evaluate all available data sources, and to determine whether enough data are available to conduct a stock assessment.

This is just a summary of the current management program for Jonah crab. The FMP was approved in 2015, establishing the permit requirements, minimum size, prohibition on the retention of egg-bearing females, and recreational possession limit. Then Addendum I established the bycatch limit for non-trap gear and non-lobster trap gear.

Addendum II established coastwide claw harvest provisions, and the bycatch definition, and then lastly Addendum III improved the harvester reporting and data collection. Only one issue was noted by the PRT with regard to state compliance with the FMP requirements, and this has been noted for the past several years. New York has implemented all of the management measures, except for the regulations to limit the directed pot fishery to lobster permit holders only, and the 1,000-crab bycatch limit.

New York has noted that it's unclear how long it will take to get this legislation revised to implement these provisions, but that in practice the fishery is operating under these conditions already. The report also notes that New York had been seeing a decline in Jonah crab landings over time, and that in 2019 New York only contributed 0.8 percent of the coastwide Jonah crab landings.

New York also notes that they do currently have limited entry for crab licenses, and a moratorium on the lobster license. The PRT also noted that Massachusetts and Connecticut have been unable to meet the compliance report deadline for the last two years. Delaware, Maryland, and Virginia have requested continued *de minimis* status for Jonah crab, and they all meet the requirement that the average commercial landings constitute less than 1 percent of the average coastwide commercial catch for the last three years.

The PRT recommends approving all three of these requests, and with *de minimis* status these states would be exempt from fishery independent sampling and for sea sampling requirements. Then these are the PRTs recommendations for this year, and for last year's FMP reviews. First, they noted the concern about the lack of Jonah crab regulations in New York, which was first raised as a concern in 2017. They also recommended that jurisdictions with crab-only harvesters should report on the number and collective effort of these participants.

That research of the Jonah crab species should continue, in order to complete a coastwide stock assessment, and also that the LEC should review compliance in the Jonah crab fishery, given it's a relatively new FMP, and there may be a learning opportunity there. These are the actions that the Board can consider today, both consider approval of the lobster FMP review, and state compliance reports, as well as the two

Jonah crab FMP reviews. With that I can take any questions.

CHAIR MCKIERNAN: Are there any questions from the Board?

MS. KERNS: Cheri Patterson.

CHAIR MCKIERNAN: Cheri.

MS. PATTERSON: Caitlin, I have a question in regards to the first bullet in the lobster fishery management plan memo from the PRT. Has the TC talked about reducing required sampling trips if there is actually a reduction in effort for a particular state?

MS. STARKS: Short answer is I don't think we've discussed that recently. But it is something that we can have the TC discuss.

MS. PATTERSON: It just seems a little counterintuitive to keep making a state do sea sample trips, if they just don't have the effort involvement. Maybe that should be something that is looked at on a more regular basis to adjust sampling trips appropriately to effort. To that, Mr. Chair, after all the questions for the lobster I can move forward with a motion.

CHAIRMAN MCKIERNAN: Thank you, Cheri, is there anyone else who would like to ask any questions about the two compliance reports?

MS. KERNS: I see Pat Keliher and Ritchie White.

CHAIR MCKIERNAN: Go ahead, Pat.

MR. KELIHER: Considering the time that has passed with New York on this issue, even though it is relatively small from a compliance standpoint. I think I would recommend that the Board send a letter to New York, asking them to come into compliance for the next year. At least they'll have something to give to their legislature. We all know that when we're trying to make changes, and the legislature is involved, it adds a level of complexity sometimes, and maybe a letter like that would garner some assistance for them.

CHAIR MCKIERNAN: Pat, as Chair, maybe you can help me. Would that action have to go to the Policy Board before a letter went out?

MR. KELIHER: Yes, I believe it would, and I would look to Toni and Bob, and I'm quite sure it would have to be approved by the Policy Board.

CHAIR MCKIERNAN: Do you want to put that in the form of a motion to propose that the Board submits to the Policy Board that New York be communicated to about the lack of compliance on those items within the Jonah crab management plan.

MR. KELIHER: Happy to call that a motion, Mr. Chair.

CHAIR MCKIERNAN: Pat has made that motion, is there a second?

MS. KERNS: David Borden has his hand up. Mr. Chair, I guess you've already made it, so let's go ahead and help Maya get the motion up on the screen, since it's already been made, really quick here. Maya, we move to recommend to the ISFMP Policy Board a letter be sent to New York regarding the implementation of Jonah crab measures. Does that work, Pat?

MR. KELIHER: Yes, that is perfect.

CHAIR MCKIERNAN: We don't have a second yet. David Borden, are you seconding that?

MR. BORDEN: Yes.

CHAIR MCKIERNAN: Any discussion on the motion?

MR. G. RITCHIE WHITE: Mr. Chairman, Ritchie, I had my hand up.

CHAIR MCKIERNAN: Go ahead, Ritchie.

MR. WHITE: I was going to raise the same issue, and I think the letter needs to have the word

about you know stricter measures at the end of the year if there isn't action taken, so whether it's implemented within a year or the legislature is passing it, or the bill is before the legislature. You know we need to see some action or we'll find New York out of compliance. That would be my suggestion.

CHAIR MCKIERNAN: This will be taken up at the Policy Board, and maybe you can weigh in at that time as well. Is there any objection to this motion?

MS. KERNS: Ritchie, do you need to have your hand up? Emerson Hasbrouck, you now have your hand up.

MR. HASBROUCK: Yes, can you hear me? I'm having some technical difficulties on this end.

CHAIR MCKIERNAN: I can hear you, yes.

MR. HASBROUCK: Not opposed, but I just want you to know that New York is going to abstain.

CHAIR MCKIERNAN: Thank you, Emerson. Because it won't be unanimous, do we need to do a roll call?

MS. KERNS: It doesn't have to be a roll call, Dan, it could just be a regular. I guess you could ask if there is any objection, noting that New York has abstained.

CHAIR MCKIERNAN: Outside of New York's abstention, is there any other dissent on this motion? None, Toni?

MS. KERNS: I don't see any hands.

CHAIR MCKIERNAN: All right, then it passes by unanimous consent, with the exception of one abstention, which is by the state of New York. Now we need a motion to approve the Plan Reviews.

MS. KERNS: I believe Cheri Patterson said she would be ready to make a motion for that.

CHAIR MCKIERNAN: Cheri.

MS. PATTERSON: I would like to move to approve the Lobster Fishery Management Plan Review for the

2019 fishing year, state compliance reports and *de minimis* status for Delaware, Maryland, and Virginia.

CHAIR MCKIERNAN: Is there a second?

MS. KERNS: Ray Kane.

CHAIR MCKIERNAN: Thank you, Raymond Kane second, any discussion on the motion?

MS. KERNS: We have David Borden with his hand up, Emerson, and Ray. I'm not sure if they want to speak, or if they were offering a second.

CHAIR MCKIERNAN: David Borden, you're first.

MR. BORDEN: I mistakenly had my hand up, Mr. Chairman, I support the motion.

CHAIR MCKIERNAN: Emerson, you have anything you would like to add?

MR. HASBROUCK: No, thank you, Mr. Chairman. My hand was up to second the motion.

CHAIR MCKIERNAN: Raymond, I'm assuming you don't have any comments, or do you, Raymond Kane?

MR. KANE: I believe we have consensus, Dan, let's move this along.

CHAIR MCKIERNAN: All right, hearing no objections, it is passed by unanimous consent. Is there any other business to come before the Board?

MS. KERNS: Dan, we just have one more motion from Cheri for the Jonah crab FMP Reviews.

CHAIR MCKIERNAN: Oh, I'm sorry, yes, Cheri.

MS. PATTERSON: I would like to move to approve the Jonah crab FMP Reviews for the

2018 and 2019 fishing years, state compliance reports, and *de minimis* status for Delaware, Maryland, and Virginia.

CHAIR MCKIERNAN: Is there a second?

MS. KERNS: You have a second from David Borden.

CHAIR MCKIERNAN: Thank you, David. Are there any objections to the motion?

MS. KERNS: I see no hands raised, Dan.

CHAIR MCKIERNAN: It's adopted by consent, and finally other business.

ADJOURNMENT

CHAIR MCKIERNAN: Is there any other business to come before the Board?

MS. KERNS: I do not see any hands raised for other business.

CHAIR MCKIERNAN: All right, well thank you everyone, it was a productive meeting. Thank you, Toni, for assisting me in identifying the speakers, and thanks to all the presenters today. This meeting is adjourned.

(Whereupon the meeting adjourned at 4:32 p.m. on October 19, 2020.)