Atlantic States Marine Fisheries Commission

Tautog Management Board

May 7, 2015
8:30 – 10:30 a.m.
Alexandria, Virginia

Draft Agenda

The times listed are approximate; the order in which these items will be taken is subject to change; other items may be added as necessary.

1. Welcome/Call to Order (J. Gilmore) 8:30 a.m.
2. Board Consent 8:30 a.m.
   • Approval of Agenda
   • Approval of Proceedings from February 2015
3. Public Comment 8:35 a.m.
4. Technical Committee Report (J. McNamee) 8:45 a.m.
   • Clarification to Selecting Regional Tautog Stock Definition
   • New Reference Points
5. Consider Initiation of an Amendment in Response to the Benchmark Assessment (J. Gilmore) Action 9:15 a.m.
6. Other Business/Adjourn 10:30 a.m.
### MEETING OVERVIEW

**Tautog Management Board Meeting**  
**May 7, 2015**  
**8:30 a.m. – 10:30 a.m.**  
**Alexandria, Virginia**

| Chair: Jim Gilmore (NY)  
**Assumed Chairmanship: 04/13** | Technical Committee Chair: Jason McNamee (RI) | Law Enforcement Committee Representative: Jason Snellbaker |
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<td>Vice Chair: Adam Nowalsky</td>
<td>Advisory Panel Chair: VACANT</td>
<td>Previous Board Meeting: February 5, 2015</td>
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**Voting Members:** MA, RI, CT, NY, NJ, DE, MD, VA, NC, NMFS, USFWS (11 votes)

### 2. Board Consent
- Approval of Agenda
- Approval of Proceedings from February 5, 2015

### 3. Public Comment – At the beginning of the meeting public comment will be taken on items not on the Agenda. Individuals that wish to speak at this time must sign in at the beginning of the meeting. For agenda items that have already gone out for public hearing and/or have had a public comment period that has closed, the Section Chair may determine that additional public comment will not provide additional information. In this circumstance the Chair will not allow additional public comment on an issue. For agenda items that the public has not had a chance to provide input, the Section Chair may allow limited opportunity for comment. The Section Chair has the discretion to limit the number of speakers and/or the length of each comment.

### 4. Review Technical Committee Report (8:45 – 9:15 a.m.)

**Background**
- In February 2015, the Board accepted the stock assessment and peer review report for management use, but tabled the selection of a new stock unit. The Technical Committee developed a memo to clarify the rationale and methods used to develop the alternative regional stock unit definitions. The memo includes additional reference point calculations and analysis of recreational fisheries data (**Briefing Materials**).

**Presentations**
- Presentation of Clarification to Selecting Regional Stock Definition by J. McNamee

### 5. Consider Initiation of an Amendment in Response to the Benchmark Stock Assessment (9:15 – 10:30 a.m.)

**Background**
- Based on the stock assessment and peer review report and guidance from the TC report, the Board will consider management response to the assessment results. An amendment will be needed to propose a new stock unit definition and rebuilding program.

**Board Action for Consideration**
- Consider initiation of an amendment to propose a new stock unit definition and rebuilding program.

### 6. Other Business/Adjourn
DRAFT PROCEEDINGS OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
TAUTOG MANAGEMENT BOARD

The Westin Alexandria Hotel
Alexandria, Virginia
February 5, 2015

These minutes are draft and subject to approval by the Tautog Management Board
The Board will review the minutes during its next meeting
INDEX OF MOTIONS

1. Approval of Agenda by Consent (Page 1).

2. Approval of Proceedings of May, 2013 by Consent (Page 1).

3. Move to accept the Tautog Stock Assessment and Peer Review Report for management use (Page 15). Motion by Pat Augustine; seconded by Tom Fote. Motion carried (Page 16).

4. Main Motion: Move to move forward with exploration of two regions, northern and southern, for tautog management (Page 19). Motion by David Simpson; second by Pat Augustine. (Motion tabled on Page 24).

   Move to amend to add “with management measures in each region to end overfishing and rebuild overfished regions to target biomass levels.” (Page 20). Motion made by David Pierce; second by David Simpson. Motion failed (Page 22).

5. Move to substitute to develop an addendum with 3 regions, northern, southern, and DelMarVa, with management measures in each region to end overfishing and rebuild overfished regions to target biomass levels (Page 22). Motion by David Pierce; second by Rick Bellavance. Motion tabled (Page 24).

6. Move to table motion until May meeting (Page 24). Motion by Mr. Augustine; second by Russ Allen. Motion carried (Page 24).

7. Move to approve the 2013 FMP report and de minimis status for Delaware and North Carolina for commercial fisheries for 2015 (Page 25). Motion by Mr. Augustine; second by Rob O’Reilly. Motion carried (Page 26).

8. Motion to adjourn by Consent (Page 27).
Draft Proceedings of the Tautog Management Board Meeting February 2015

ATTENDANCE

Board Members

David Pierce, MA, proxy for P. Diodati
William Adler, MA (GA)
Mark Gibson, RI, proxy for R. Ballou (AA)
Dave Simpson, CT (AA)
Lance Stewart, CT (GA)
James Gilmore, NY (AA)
Emerson Hasbrouck, NY (GA)
Tom Baum, NJ, proxy for D. Chanda (AA)

Tom Fote, NJ (GA)
Adam Nowalsky, NJ, proxy for Asm. Albano (LA)
John Clark, DE, proxy for D. Saveikis (AA)
Roy Miller, DE (GA)
Tom O’Connell, MD (AA)
Bill Goldsborough, MD (GA)
Rob O’Reilly, VA, proxy for J. Bull (AA)
Kyle Schick, VA, proxy for Sen. Stuart (GA)
Mike Millard, NMFS

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

Ex-Officio Members

Jason McNamee, Technical Committee Chair
Jeff Brust, Stock Assessment Subcommittee Chair

Staff

Bob Beal
Toni Kerns
Melissa Yuen
Katie Drew

Guests

Alexei Sharov, MD DNR
Peter Burns, NMFS
Russ Allen, NJ DFW
Brandon Muffley, NJ DFW
Cynthia Jones, Old Dominion Univ.

Jack Travelstead, CCA
Arnold Leo, Town of E. Hampton
Greg Kenney, NYS DEC
Joe Cimino, VMRC
The Tautog Management Board of the Atlantic States Marine Fisheries Commission convened in the Edison Ballroom of the Westin Hotel, Alexandria, Virginia, February 5, 2015, and was called to order at 11:00 o’clock a.m. by Chairman James J. Gilmore, Jr.

CALL TO ORDER
CHAIRMAN JAMES J. GILMORE, JR.: Welcome to the Tautog Management Board. My name is Jim Gilmore. I’m the administrative commissioner for New York; and I will be chairing the meeting today. We’re going to be going over a bunch of things today. If you’ve seen that stock assessment, the technical committee put all the code in there.

I was actually looking at this; and this is a very similar meeting to menhaden a couple of days ago with the exception of menhaden had the advantage that they have an increased stock and they’re not overfished and overfishing is not occurring. Unfortunately, with tautog we know that is not the case.

APPROVAL OF AGENDA
CHAIRMAN GILMORE: Okay, the first item on the agenda is approval of the agenda. Everybody got a copy in their briefing information. Are there any changes to the agenda? Seeing none; we’ll take those adopted as written.

APPROVAL OF PROCEEDINGS
CHAIRMAN GILMORE: The second agenda item is approval of the proceedings from May 2013. Are there any changes to the proceedings from the 2013 meeting? Seeing none; we’ll adopt those as approved.

PUBLIC COMMENT
CHAIRMAN GILMORE: Before each meeting we have public comment on issues not on the agenda. Is there anyone in the public that would like to make a comment to the Tautog Management Board? Seeing none; we will move on to our next agenda item, which is the benchmark stock assessment.

2014 TAUTOG BENCHMARK STOCK ASSESSMENT

PRESENTATION OF STOCK ASSESSMENT REPORT
CHAIRMAN GILMORE: There will be a presentation of the stock assessment by Jeff Brust.

MR. JEFF BRUST: As Jim mentioned, we’ll be going over the stock assessment. I hope you didn’t read all 900 pages because it is only about the first 150 or so that I think will interest any of you. First I want to start off by recognizing the folks who helped put this together. We had a great stock assessment subcommittee, a couple of new faces on it from what we’ve had in the past.

We had great input from our technical committee. They certainly helped steer our direction and gave us a lot of good input. I did want to recognize Dr. Tom Miller from the University of Maryland. He was an integrated peer reviewer, so he also provided input along the way. Dr. Miller was a panelist for the 2005 peer review, so he had a good background and knew what we were dealing with; and so he provided a lot of good information.

A little reminder on tautog life history; they’re relatively long-lived. They live to about – well, a lot of records of 20 to 25 years old and quite a number of age 30-plus from several states and not just one or two, but there is probably a handful of them both from the north and the southern end of the range. They grow relatively quickly for such a long-lived species.

They’re recruited to the fishery at 15 to 16 inches at about six. There are two arrows up there. The one farther to the left is our old 14-
They are a structure-oriented fish, so they are kind of hard to sample; easy to find but hard to sample. It is not real fun dragging net over a reef. They do have high site fidelity; so we have records of fish that are caught within yards of each other multiple years apart. Virginia had some great data. We have got fish caught four or five times all on the same reef; so they do have strong site fidelity.

Their north/south movements are very limited compared to a lot of the species ASMFC deals with; mostly inshore/offshore; and even in the southern end of the range there is not a lot of that as well. Harvest is primarily recreational. As we all know, our recreational harvest estimates are highly variable; even more so with tautog because it is such a small fishery; a small number of very avid fishermen, but you can have years where you’re only getting a couple dozen intercepts rather than a couple hundred for some species like summer flounder.

A quick history of the assessments that we have done; all previous assessment were conducted with ADAPT VPA, an age-structured model that is available through the Northeast Fisheries Science Center toolbox. We’ve always assessed it as a coast-wide stock. We did try and separate into regional catch, but then we always combined them into a single coast-wide stock assessment.

There is information that the life history and the fishery characteristics suggest that regional models would be better. We presented this idea to the 2005/2006 peer review, and they supported that. Though at the time the models that we had were not sufficient enough to move forward with that, they did encourage us to keep investigating that.

We were not able to conduct multiple regional analyses in the past. There were data gaps. The models that we had were relatively inflexible; so we were kind of stymied, and we were stuck with the coast-wide model until now. We’ve had some new advancements and, like I said, some fresh blood on the committee and we came up with some new ideas.

We looked at three new modeling frameworks. One of them was data rich and two of them were data poor. This gave us a lot more flexibility to deal with the data and the warts that we had on the data that we did have. Also running multiple models allows us to corroborate the results. Hopefully, they give us similar answers; and that gives us more certainty that what we’re seeing is actually an indication of what is really happening.

We also dug deep and found a couple of new data inputs. We developed fishery-dependent indices, which we’ve never used for tautog in the past. One of the main things that this did was provide us with survey information – abundance indices in areas where we’ve never had them before; so that was helpful in the south where we don’t have any ocean trawl surveys or adult trawl surveys.

The third thing that we did is we looked at multiple regions. Given the more flexible models and some extra data inputs, we were able to investigate multiple regional models. It was more appropriate for the specie’s life history and also hopefully is more appropriate for the management of the critter giving region-specific management advice.

I know there is going to be some discussion on this later. We looked at a number of different things. Our feeling as the stock assessment subcommittee was given the specie’s life history, more regions is better. There is very limited movement. They are very localized. We
were up against a couple of issues; mainly data availability as well as some political considerations, even state boundaries and things like that.

Given all the analyses that we did, probably the best thing that we thought we could do was to split New York at the tip of Long Island. We knew that wasn’t going to happen; so given the analyses that we did have, what we came up with as our preferred regionalization, we came up with three regions. Southern New England includes Massachusetts, Rhode Island and Connecticut. There is a New York/New Jersey Region; and then the southern region is Delaware, Maryland, and Virginia and also North Carolina.

I believe North Carolina is de minimis. They don’t have a ton of data. We dropped their name from the regional name, but they are included in the assessment. This is our preferred regional structure; and this was approved by the peer review. As I said, I know there are some questions, and we can go over this a bit later.

Like any of our other stock assessments; our data inputs, we had recreational harvest from MRFSS Survey, MRFFS and MRIP. We had recreational discards. We assumed a 1.5 percent discard mortality rate. We had commercial harvest. Commercial discards, we were able to piece together something, but we didn’t think it was strong enough to use in the preferred model. It was only included as a sensitivity run.

Given the magnitude of the commercial harvest and the very low mortality rate, the commercial discards really didn’t add a whole lot of dead fish to the assessment; so we felt pretty comfortable going with just these three sectors. We had fishery-independent trawl surveys. We had fishery-dependent indices like I mentioned before from the recreational fishery.

One thing that we had done in the past that we were able to rectify is I don’t know if anyone remembers for the 2005 stock assessment we did not include Virginia’s age data, because we had some questions about the validity of those ages. There was an aging workshop and all of those ages were found to be accurate; and they were consistent with everyone else’s aging methods.

We included those back in, so we have several years’ worth of Virginia’s data that we had been neglecting for a couple of years. And as I said, because we did the regional models, all of these data sets were a subset to the appropriate region. Here are a couple of figures of the data that we were using. The top slide is the removals by region.

I don’t know how well you can see that in the back. The blue line is the Southern New England; the red line is New York/New Jersey, and the green line is the DelMarVa removals. Then on the bottom, on the left-hand side, are the adult trawl survey indices as well as the fishery-dependent index. On the right we had two young-of-year indices. I think both of those were seine surveys.

For the modeling, we actually looked at four population models. One of them was a continuity run using the ADAPT Model. The other three I mentioned before. One was the Age-Structure Assessment Program, ASAP, from the NMFS Toolbox. This is the preferred model. It is data rich. It is able to incorporate all of the age information that we have as well as the uncertainty in our age data and our survey data and our harvest information. On top of that, we also did two data-poor methods.

One is the DB-SRA and one is something that Jay developed for JayMac, the Bayesian State Space Surplus Production Model. Both of these are data poor; and they don’t incorporate age information. They are less data-intensive, but they give pretty good information. As I said
before, multiple models allows to corroborate the results from these models.

One of the main reasons we used the data-poor method is in case the data-rich method didn’t work. We did want to try and push these regions forward or whatever regions we came up with. We thought regionalization was important; so we wanted to use these data-poor models in case the data-rich model fell apart at these smaller regional levels.

These are some of the results from the continuity run. The continuity run was only run at the coast-wide level. We tried it at the regional level in the past and it fell apart; so I’m only showing results for the coast-wide continuity run with the coast-wide ASAP Model. The blue line here is the VPA. The orange line is the ASAP Model.

You can see the scales are slightly off, but the trend is relatively consistent; and that is really what we’re looking for. The top left is abundance; the bottom left is spawning stock biomass. On the right-hand side, at the top, it is annual fishing mortality. Because our harvest estimates are so variable between years – in the past we’ve always used a three-year average. Because our harvest estimates are variable, our fishing mortality estimates are also variable; so we’ve always used a three-year average smoother.

The top right is annual and the bottom right is the three-year average fishing mortality rate at the coast-wide level for the VPA continuity run and the ASAP Coast-Wide Model. Again, the main point here is that they’re following a similar trend. They are not diverging wildly, so this gives us some indication that the ASAP Model is not flying off into space somewhere and that it is not a reliable model.

Now moving into the regional models; these are three models that we tried at the regional level. The blue line here is ASAP; the orange line is the Bayesian State Space Model; and the gray line, which I’m not sure how well it is showing up, is the DB-SRA. Again, this is for the Southern New England Region. Again, they’re all very consistent in terms of the trend that they’re providing as well as the biomass that they’re ending with in 2013.

The fishing mortality rate on the bottom right-hand corner; again, very similar trends. This region performs with the most amount of consistency among the models for this region. This made us feel good about ourselves. Then we went to the New York/New Jersey Region. The top left, again, is biomass; the same color scheme, so blue is ASAP, orange is the Bayesian State Space Model, and gray is the DB-SRA.

You can see that the ASAP Model and the DB-SRA are showing a similar pattern; so that is good. The scales are a bit different but the pattern is – the trend is consistent. The Bayesian State Space Model had a little trouble fitting this region. It was keying in on one of the indices that we had and just following that without really taking into account any of the other information that we had.

The fishing mortality rates look pretty similar; again, just a different scale.

Then for the DelMarVa Region, biomass on the top right – these are all following a similar trend. The bottom right is fishing mortality. You can see that overall all of the models – except for that one model in New York/New Jersey, they all showing similar patterns, which is very encouraging. It gives us confidence that the trends that it is providing are consistent, and we just had to deal with the scale.

As I said before, we chose the ASAP Model as our preferred model for its ability to incorporate the available age data as well as our uncertainty in our surveys and our catch data. It seemed to provide trends and estimates of total biomass and exploitation that were similar to the DB-SRA in all of the regions. It gave stock
status determinations that were similar to DB-SRA in all regions.

The one place that it did differ is that New York/New Jersey biomass trend relative to the Bayesian State Space Model; and it also – well, the Bayesian State Space gave a different fishing mortality status for DelMarVa. Those were the model runs. Then we had to pick reference points. We considered both MSY-based reference points as well as spawner-recruit-based reference points.

Where we thought we had the information, we selected MSY-based reference points; and that was really only the Southern New England Region. For the DelMarVa and the New York/New Jersey Region we had to use SPR-based reference points. These are the reference points up here. One thing I should mention is in the past our biomass target and thresholds at the coast-wide level; they were ad hoc. I don’t know if anyone remembers when we developed those.

We took the early time series of biomass from the ADAPT Model and then picked a – I think it was an average of the first ten years was our target and then 75 percent of that was our threshold. It was very ad hoc reference points. These biomass reference points, if you add them together to give sort of an estimate of what the coast-wide biomass should be, it is much lower. We recognized that; and I just wanted to point that out to you.

It is mostly a function of the ad hoc method that we used for the first one. We didn’t know where we should be; so we came up with what we thought was a very conservative estimate. These model-based reference points are hopefully more appropriate for the stock. These slides are just going to show our stock status relative to the reference points that we came up with.

The biomass threshold for the Southern New England; we were at 63 percent of our biomass threshold. That is the bottom left-hand corner. You can see we’re under the threshold; so we are overfished. The lower right-hand corner shows that we are overfishing. Our fishing mortality is about 2.5 times the fishing mortality threshold. In the Southern New England Region we are overfished and overfishing is occurring.

For the New York/New Jersey Region, our biomass is below our biomass threshold. We’re at about 80 percent; but our fishing mortality is below our fishing mortality threshold. We are overfished but overfishing is not occurring in New York/New Jersey. Though you can’t see that in the bottom right-hand corner, the confidence intervals do cross that line. I do have some scatterplots if people care to see them, but the point estimate is overfishing is not occurring in the New York/New Jersey Region. For the DelMarVa Region, the same picture. Biomass is below the biomass threshold and fishing mortality is below the fishing mortality threshold; so we are overfished, but overfishing is not occurring.

Here is just a comparison of the stock status determinations from the three models by region. You can see for the Southern New England Region all three models gave us the same determination; overfished and overfishing. For New York/New Jersey and DelMarVa, the ASAP Model and the DB-SRA gave us the same status; overfished and overfishing not occurring; but Bayesian State Space Model said not overfished for either of those regions and overfishing is not occurring.

Again, we had good concurrence between ASAP and the DB-SRA. Just boiling it down to our preferred model; the status determinations by region up here, and here is the uncertainty around those status determinations. Southern New England you can see just about every point is overfished and overfishing. For New York/New Jersey, it is a pretty wide spread, but the point estimate is overfished but not overfishing. DelMarVa is slightly more
optimistic, but still overfished and not overfishing.

Just a couple of points to boil this all down; we have moved away from a coast-wide model, which we think is more appropriate for the tautog life history. We have tried multiple models and we think it is more rigorous and more appropriate for the data that we have and the amount of uncertainty that we have in the data.

We chose the age-structured model as preferred, because it can take into account that valuable age information. We got good corroboration and results and across most of the models. We did sensitivity runs, which I didn’t get into here but I can if you care to. When we played with the regional configuration, the models were still robust. They didn’t fall apart; so they were robust to the regional configuration.

We came up with a couple of research recommendations. I am not going to read them here, but they are in the report. Our recommendation is to do an update in 2016 and the next benchmark in 2019. That is my presentation, Mr. Chairman. I’ll take any questions.

**BOARD DISCUSSION OF STOCK ASSESSMENT REPORT**

CHAIRMAN GILMORE: Thanks, Jeff; that was a great summary. Are there questions for Jeff? Tom Fote.

MR. THOMAS FOTE: Jeff, on Southern New England, I noticed all the red dots; and I was wondering were those red dots also appearing in Long Island Sound just on the Connecticut side or the New York side. You can’t understand it for that; but I’m just saying actually I’ve always considered Long Island Sound as its own region by itself when it comes to lobsters and when it comes to tautog and things like that. Tautog ain’t really moving out of the Sound. They move in and out of the – because it is 140 feet deep in the section of the Sound. I used to fish the Sound a lot back in the seventies. I’m just curious on that one.

MR. BRUST: Those dots were point estimates of relative Fmsy and biomass relative to – well, F relative to our threshold and biomass relative to our threshold for each of the regions. That plot that you’re talking about was for the whole region. We didn’t do it by state. We couldn’t do it by water body.

There is probably some validity to splitting Long Island Sound into its own region. We don’t have the data. At this point there was no way we could have assessed Long Island Sound as its own region. I don’t know what that plot would have looked like because we didn’t do it. Chances are it could have looked like that, but I don’t know.

DR. DAVID PIERCE: Thanks, Jeff, to you and all those who assisted you with this impressive piece of work. It is not an easy task, to say the least; and I know that from many years of experience with tautog management and assessments and from talking with Paul Caruso, who is retired so we no longer have access to his many years of expertise so we rely on you.

I’m still confused as to why the stock assessment subcommittee decided to put Connecticut in with Massachusetts and Rhode Island. For many, many years it was Massachusetts and Rhode Island, those two states, largely because of the point that you’ve already made that tautog don’t move very far, inshore/offshore movements, not much east and west movement.

Frankly, that point is made known in the executive summary of the stock assessment on Page 1. I still don’t understand why Connecticut was moved in with us, especially because number two in the executive summary that has the term of reference justify assumptions about stock structure and geographical scale of which...
the population is assessed does not provide that justification. Help me understand and the board understand why this very important change was made.

MR. BRUST: I didn’t go into the details here. A lot of it is in the report. We looked at least three different analyses to help us identify the regions. We looked at growth rates. We looked at mortality rates. We looked at the distribution of the fishery. As I said during the presentation, our feeling, when we went into this, was more regions was better. Coastwide we didn’t think was appropriate.

In the past we have always done a north/south split; but even that we thought we could get a finer detail. We were doing these analyses to help us identify where those regions should occur. The evidence that we got from these analyses was pointing towards this Massachusetts/Rhode Island/Connecticut was one region. That is not say we just accepted it and it was done; we looked at it once.

We had probably four conference calls about regionalization to the point where the day before the report was due, we had technical members saying, well, what if we change the structure to this; and we just couldn’t do it. We went with what the analyses told us that was our preferred model. It went through the peer review.

Quite honestly, they didn’t like two of the analyses that we did. I guess, to step back, that regionalization is based on one analysis; but that is what the data was telling us and that’s what we thought as experts in this region right now; so that’s what we went with. That was our expert opinion.

DR. PIERCE: Okay, I appreciate the expert opinion, but I’m not sold, not at all. Long Island Sound is Connecticut and New York. I’m not convinced from what I’ve read so far and from what I’ve seen that there is this back-and-forth exchange so that we’re working off the same stock – the three states working off the same stock.

There were I think some real significant implications for including Connecticut with Rhode Island and Massachusetts; in part because when you look at the recreational take of tautog in Connecticut, it can be rather significant. If that’s included in with Rhode Island and Massachusetts, I speculate that can have a real influence on the outcome regarding stock status off of Rhode Island and Massachusetts.

Rhode Island and Massachusetts have been quite aggressive with our steps to curtail effort within the tautog fishery; so now slipping Connecticut into our region gives me pause and concern that our fisheries may – and what we need to do to our fisheries in our region will be influenced by what is or is not happening in Connecticut. Again, I’m not convinced. My last question is you said that the conclusion was in the New York/New Jersey Region, that doesn’t include Connecticut now, overfishing is not occurring. If Connecticut had been included in that region, would overfishing have been occurring? Was that analysis done?

MR. BRUST: Yes, we did that analysis. If I may, I just want to step back to your first point. We did look at a Massachusetts/Rhode Island and we looked at including Connecticut/New York/New Jersey as a single region. That was the big discussion at the assessment committee level, at technical committee level; should that be our preferred regionalization?

We fully recognize that Long Island Sound is the wildcard here. We thought, however, that Connecticut was more similar to Massachusetts and Rhode Island – Long Island Sound was more similar to Massachusetts and Rhode Island than it was to New Jersey; so that is one of the justifications for including Connecticut with Massachusetts/Rhode Island rather than Connecticut/New York/New Jersey. We did do those analyses. Massachusetts and Rhode...
Island alone, it was still overfished with overfishing occurring; and if moved Connecticut into New York/New Jersey, that region was also overfished/overfishing occurring.

MR. ROB O’REILLY: Just a couple of questions; and thank you, Jeff. I guess a question is the update would be scheduled for 2016?

MR. BRUST: That was our recommendation, yes. I guess it is scheduled whenever you tell us we will do it, right?

MR. O’REILLY: Will that include 2015 data; would you think?

MR. BRUST: I guess it depends when in 2016 it is done. If it is early on, then, no, it won’t; but later in the year, we should have commercial landings by then.

MR. O’REILLY: So, just a little follow-up, Mr. Chairman; so what we’ve noticed is that – I’m going to speak about the DelMarVa Area – the fishing mortality rate has been in decline especially on a three-year average basis. What I’m wondering is I was looking at our regulations just a moment ago; and it was 2012 that we raised the recreational size limit by two inches; the commercial size limit by an inch; so 16 and 15, respectively.

At the same time the commercial fishery has reduced to about just a little over four months. It would seem – I will ask you, though – do you think the changes that were made recently – as recently as 2012, because I see an effective date of January 2013 in our regulation – has there been time for those fairly substantial changes to really be tracked through the assessment that has been done now?

MR. BRUST: I guess it is hard to say. One concern I have – I don’t think we talked about this too much at the assessment committee level – one thing that I’m a little wary about as an individual is the size increases that most states – New Jersey took one; I believe New York took one; Maryland, Delaware and Virginia, we all went up in size.

That is going to protect those fish for a couple of years until they grow into the new size limits. Once they reach that size, they are going to be harvestable fish again; so I don’t know what is going to happen with the fishing mortality rate. I believe something similar, though, happened back in 2000 or 2002. A lot of states implemented a size limit, fishing mortality went down for just one or two years, and then it went right back up.

Hopefully, it is a little bit better this time around. One benefit we have is that now I believe they’re all above spawning size by the time they enter the fishery; so they’ll at least have a chance to spawn at least once or twice more before they’re harvested. It is going to take a couple of years, though, before we see that data and whether these size cuts – or, excuse me, the fishing mortality cuts, one, if they stick or if those fish grow back in and the fishing mortality goes back up.

And then, two, assuming that they do stick, how is it going to affect the stock. It is long-lived, low productivity; we don’t know how long it is going to take for these guys to come back up. I’m sorry, I don’t if I answered your question directly or not. If I didn’t, I apologize.

MR. O’REILLY: You did; I appreciate it. I have another question. Whenever other people get a chance to ask questions, I’d like to come back.

CHAIRMAN GILMORE: Okay, we’re starting to delve into management a little bit. We have a peer review presentation coming up; so if you’ve got questions now, just try to focus on the stock assessment first. We’re going to get into management, so hold those off a little bit. Mark Gibson.

MR. MARK GIBSON: Congratulations on all the great work that the group has done. Stock assessments in tautog has come a long way.
since I last poked at it. I noted with regard to reference points, the computation for the Southern New England area is based on Fmsy from a stock-recruit relationship; whereas, you’re using proxies, you know, percent maximum SSP over on the other areas. I think it was 30 and 40 percent in the other two areas.

In the Southern New England area, what would Fmsy and 75 percent of that represent on a maximum spawning potential? I’m trying to get comfortable with the existing F to reference rate ratios; that they’re all on similar footing.

MR. BRUST: Give me a second, if you would, Mark. I believe I have a table with that in here and I just need to find it. Maybe I didn’t carry it over. It doesn’t look like it. Do you have one, Katie? Sorry, Mark, I thought I put that slide in here. Oh, I did have it! If we went with F 30 and 40 percent for Southern New England, they would have resulted in much higher fishing mortality rates than the other regions.

The reason that we were able to use – or that we chose to use the Fmsy for Southern New England is because we had a stock-recruitment curve that we thought was credible. For the other two regions, we did not. The DelMarVa one was flat. There was no information in it whatsoever. The New York/New Jersey stock-recruit actually looked credible, but it was very sensitive to how we dealt with the early years.

We didn’t have age data for that region so it was very sensitive to how we filled those holes. We didn’t think it was quite as credible as the Southern New England one. I think your question was just what would these look like if we used Fmsy and SSBmsy for Southern New England?

MR. GIBSON: Yes, I guess in a way I wanted to know what the percent SSB over R would be for Fmsy and 75 percent of that, but I think this slide answers my question that the Southern New England area is being held to a much higher standard in terms of its fishing mortality reference points are very low relative to the other two areas.

So the likelihood of giving it to generating similar fishing mortality rates in the regions; the likelihood of Southern New England being overfished considerably is much greater with that reference point. I’m curious as to why there is so much of a difference in the reference points between an MSY calculation and an SSB over R computation, but it is probably beyond this discussion right now.

MR. DAVID SIMPSON: Similar concerns that you’re hearing around the table; mine are focused on Long Island Sound and the assessment taking Connecticut data and putting it with Rhode Island and Massachusetts and separating the Sound with New York going to New Jersey, a couple of points.

One, we’re calling it the Connecticut Trawl Survey here, but it covers all of Long Island Sound. We sample New York waters, so it is representing hopefully all of Long Island Sound and the abundance of resources there of tautog. In the New York/New Jersey survey you’ve got the Western Long Island Sound Seine Survey, so data from Long Island Sound in that case goes south.

Then you have the Paconic Trawl Survey, which is a hundred miles from New Jersey representing that southern area. When I look at New York’s harvest, if you look through MRIP, you can get estimates of harvest from the ocean greater than three miles, the ocean less than three miles and then inland waters.

If you take the vast majority of inland waters for New York to mean Long Island Sound, then 65 percent of New York’s harvest is from Long Island Sound. Now, there are some of the South Shore Bays. There are fisheries there. My point is you’ve got – and our fisheries overlap tremendously. I personally probably spend half of my time tautog fishing in New York and half in Connecticut; and certainly we
see New York boats fishing in Connecticut and returning.

This unit stock concept is seriously violated in my view by splitting the Sound. I understand Massachusetts and Rhode Island’s concern about adding Connecticut because in looking at the sensitivity runs, it appears that Connecticut or the Long Island Sound Trawl Survey has the most influence on the stock assessment of the tuning indices, I guess I’ll say, so I can see where they’d be concerned.

My sense was from looking at the biological data that New York’s biological data was more aligned with Connecticut than say New Jersey. There are all kinds of concerns from a technical sense that splitting the Sound violates that unit stock for even this very localized species. You look ahead to the management implications; and I guess you’re using three-year averages to characterize these regions.

In my review in preparation I was looking at the terminal year estimates; and so for Southern New England the terminal year exploitation rate is 0.21, rounding, and in terms of biomass, the current biomass is like 31 percent of Bmsy. That’s the characterization of Connecticut’s part of Long Island Sound. You go to New York/New Jersey, the current exploitation rate is 0.036; and they’re at a little better than 1.5 times their Bmsy.

You can picture this great divergence of management measures where we’re having to cut back, cut back, cut back and New York can expand, expand, expand on the same body of fish – and the divergence in rules and everything. I really have a concern about these stock areas and how useful they’ll be for our managing Long Island Sound, which amounts to 30 percent of the total coast-wide harvest comes from Long Island Sound. I have got some real concerns here.

CHAIRMAN GILMORE: Do you want to respond to that?

MR. BRUST: I can a little, I think.

CHAIRMAN GILMORE: Was there a question in there, Dave?

MR. BRUST: Well, one thing I want to respond to is, yes, the Southern New England Region is overfished and so you’re going to cut back, cut back, cut back. I would strongly recommend against New York/New Jersey expand, expand, expand. They’re overfished. Overfishing is not occurring; but at 0.97 of the threshold, we’re over the target, under the threshold, but only by a hair; and the stock is still overfished, I don’t see them expand, expand, expanding. That is my own person take.

Again, just to touch again on the regional issue, I won’t pretend to think that we did every analysis imaginable. We did three or four. We had representation from both sides of Long Island Sound on the committee – I guess on the technical committee and not on the stock assessment committee. If I remember correctly, they couldn’t agree on how to split the region either.

This was not a decision that the assessment committee or the technical committee took lightly. We spent hours and hours and days talking about how to split this. The analyses that we did do, this is what we came up with. Chances are it could be improved again in the future. This was our first stab at doing it; and we would welcome any suggestions.

You guys have already given us a lot of fodder on what to look for next time. A lot of it comes down to data availability, also, and can we split the catch in New York, say, Long Island Sound versus outside the Sound, things like that. There are a lot of things to consider and this is what we came up with. I understand there is disagreement. There was disagreement at the committee, but this was the preferred.
PRESENTATION OF
PEER REVIEW PANEL REPORT

CHAIRMAN GILMORE: I think at this point it might be good – we have a Peer Review Panel that reviewed the stock assessment. We have the Chair of that and we’ll go into that presentation and then we can continue the discussion. The panel was chaired by Dr. Cynthia Jones from Old Dominion; and she is going to do a presentation right now on the Peer Review Panel.

DR. CYNTHIA JONES: This was the same Peer Review Panel that looked at the black drum. The documentation is up on your website. The Peer Review Report is up on your website. The panel consisted of me as panel chair; Gary Nelson from Massachusetts; Dr. Jiao from Virginia Polytechnic; and Dr. Jason Cope from NMFS Northwest. All people on that panel were quite familiar with data-poor and age-structured stock assessment models.

The panel found that the stock assessment was acceptable for management purposes. They agreed with assessing the stocks by region and not coastwide. I will get into that a little bit more later. We agreed that Southern New England is overfished and overfishing is occurring; and for New York/New Jersey and DelMarVa, that the stock is overfished but overfishing is not occurring.

The first term of reference we had was to evaluate the thoroughness of data collection and treatment of fishery-dependent and independent data in the assessment. We found that the presentation of – we looked at the presentation of data sources, the justification for inclusion or elimination of data, consideration and strengths and weaknesses. We looked at the spatial scale and standardization of the abundance indices.

Our conclusion was that this was a very thorough review of the available data. They developed criteria that were acceptable to a stock assessment scientist; that there was evidence for spatial differences. We agreed that it was reasonable to use the three regions for assessment. There is always a problem with the MRFSS/MRIP recreational survey estimates because of low sample sizes; and this always adds to variability in catch records, which are quite important especially in a fishery that is predominantly recreational in its nature, and it adds to uncertainty.

The review panel agreed that the sample sizes for age/length keys were adequate to do both coastwide and regional age/length keys. They agreed that the standardization was appropriate. The second term of reference was to evaluate the assumptions of stock structure and geographic scale at which it was assessed.

The panel agree with the three-region modeling approach as a preferred choice. They agreed because there appears to be differences in the productivity based on growth among other things. One of the problems in the stock is there is very limited – and this was the caveat that the panel put forward – there is very limited data at any fine scale.

Let me address the issue of how much the stock has philopatry – how much these fish have philopatry, which means returning to their natal grounds, their juvenile grounds. You have two things. You have tagging data that shows site fidelity, but you also have genetics that do not support that.

When you have that kind of a structure, what a geneticist would call would be a stepping stone type of development where if you have groups A to B; A plays with B, B plays with A and C, C plays with B and D; and so what you have is a mixture of the stock. You only need to have two fish per generation move between groups; and what you will do is carry on the genetics of the other group; and so that encourages what is called panmixia, which is introduction of genes throughout the range.
That also means when that happens, when you have a stepping-stone type of mixture; in the genetics what happens is that you destroy local adaptation. What we anticipated here was to see a slightly broader scale set of size at age, reproductive capacity, things like that, that determine the productivity of the stock.

To do better than that; it needs more data, and the panel felt that there was paucity of data in general to address these fine-scale stock issues. In fact, we go on to recommend that doing better collection in the spatial scale is advisable. Excuse me for going off on that, but that seemed to be the discussion we’ve had and I wanted to bring you the panel’s thinking. Also, I guess before we get on to Term of Reference 3 is to say that this is an issue for a variety of stocks that we have on the east coast. Black sea bass certainly is another example of a fishery where increased fine-scale spatial data collection would be very helpful.

Term of Reference 3; we evaluated the methods and models used to estimate population parameters. We evaluated the choice and justification. We looked at the multiple models that were considered; and we evaluated model parameterization. We found that the ASAP Model made the most use of the available data; that dividing it into regions gave more specificity for the difference in production that we believe existed.

Certainly, the use age structure; anytime you can use age structure in a model certainly improves the ability of that model to predict and to evaluate stock status. We found that the models – certainly, the extended DB-SRA estimates were similar, but they also had greater uncertainty. They don’t use as much of the things like the age data; and they also make stronger assumptions about the behavior of the stock, which we didn’t think were justified, especially when you had ASAP available. We endorsed the use of ASAP.

We evaluated the methods used to characterize uncertainty in the models and ensure that the implications of uncertainty were clearly stated. The largest source of uncertainty, again, are the quality of the recreational catch data and the lack of catch data going back to the 1980’s; the low biological sampling for the species; and we agreed with the methods of characterizing uncertainty.

We applauded the stock assessment group for the high quality of work that they had provided; across the board their work with the models; and their work with characterizing uncertainty were state of the art and excellent at any level. We evaluated the best estimates of stock biomass abundance exploitation from the assessments for use in management; and if possible, we specified alternative measures.

We agreed that the ASAP Model provided the best estimates. The Southern New England and the New York/New Jersey certainly are showing a decline in abundance in biomass with a slight increase in the past two years. The DelMarVa has a declining trend but less severe. We found that the assessment was a significant advance over previous assessments both in the attempt to give some regionality to the model, but also in the move to ASAP; and also agreed that the regionality will be improved with more data.

We evaluated the choice of biological reference points and the methods used to estimate them. We agreed that the new reference points should be used; and the panel agree with the stock determinations. Again, we came to the same conclusions that Southern New England was overfished and overfishing was occurring; and for New York/New Jersey and DelMarVa, that the stock is overfished but overfishing is not occurring.

I don’t know if we have to go into all of these. We reviewed the research data collection. One of the emphasis we had was that there really needs to be more biological metrics to match spatial scales, because that will give you the
best regional models and regional model development. We thought that the development of an alternate flexible selectivity curve would certainly be an advantage in this model; and we recommend doing that. We also recommend collecting otoliths and not just opercula to do aging.

I have to be careful of this because I’ve done otolith chemistry and be known for it. Tom Miller actually put forward the idea of when you have a fish like this that may have fine-scale philopatry and movements; that an alternative to a massive tagging program to do that would be to use otolith chemistry; and that might give you a better idea of how much mixing you have going on and where the fish are going.

Again, it is not the only way to handle that. Tagging certainly is an excellent method. The eighth term of reference was to recommend the timing of the next benchmark; and we recommended that occur in five years and that the update be done annually. Excuse me, let me go back on that; that the next benchmark be done in three years. I’m in the black drum mode at the moment. I have to switch off that.

Overall, we found that the data used were appropriate. There are limitations to the catch history, but it did provide good data for an age-structured model; that ASAP was certainly the best use of those available data. Those data are very costly to get, very costly to provide to management, and so they should be used when they are of appropriate character.

We did endorse the use of regional models because there is evidence that there is a regional – this is not necessarily a coast-wide stock. It has some spatial fidelity at a range we don’t fully have data for. We thought that the biological reference points were appropriate.

The concern of the panel was that there are differences between the accumulated biological references and the coastwide; and that because of that, that precaution should be done in managing the stock. Again, Southern New England is overfished and overfishing is occurring; and for the other two regions, they’re overfished but overfishing is not occurring. Thank you.

BOARD DISCUSSION OF PEER REVIEW PANEL REPORT

CHAIRMAN GILMORE: Questions for Dr. Jones? David Pierce.

DR. PIERCE: Dr. Jones, thank you very much. Obviously, the Peer Review Panel did a great job. You really covered a lot of bases and really went into depth regarding the modeling and other aspects of the assessment itself. I’m still left with the concern that I have expressed earlier relative to stock structure.

I look at the Peer Review Panel Report and the second term of reference regarding evaluate the assumptions of stock structure and the geographical scale at which the population was assessed; and I don’t see anything in this text that addresses the specific issue of putting Connecticut in with Rhode Island and Massachusetts; you know, the justification for that.

There is a lot of good text here, but it is not specific to that evaluation of that very critical assumption of structure, Connecticut within the other two states. Would you please explain how the Peer Review Panel addressed that particular point relative to that specific term of reference?

DR. JONES: To a certain extent – how do you like that as a beginning? To a certain extent when you do not have sufficient fine-scale data, you are left with ad hoc decisions; and ad hoc is not a good word for a statistician or a stock assessment scientist. Nonetheless, you have to deal with the data at hand. After we reviewed the work that Jeff and his team had done, we thought that what they did was acceptable for a regional model. I think you see that the panel is
also underscoring the fact that you need more data; that your decisions are going to be ad hoc until you have more data. You can do things for management purposes. Ultimately want you want to do something for is to benefit the productivity and the sustainability of stocks so it will be around long term. Against that is the fact that these data are expensive to obtain. We understand that. And because of that interplay of the ad hoc nature and the expensive nature, we went with – we decided that what they had done was reasonable and acceptable. Can you do it other ways? Yes, you can; is it ad hoc; yes, it is. Does that answer your question?

DR. PIERCE: It does; it is an ad hoc assumption.

DR. JONES: It is an ad hoc assumption; you don’t have the data to support it. As I said before, you have problems with black sea bass and other species that have the same paucity of data.

DR. PIERCE: David Simpson raised some very important points a little later on when he gave the Connecticut perspective, which I thought was very good. It is just unfortunate that perspective is not reflected by what the assessment group did; and, of course, your Peer Review Panel wasn’t in a position to deal with that particular perspective because it wasn’t before you.

DR. JONES: Yes, we don’t run our own assessments. In a Peer Review Panel, you have a limited time to ask the team to do a slightly different analysis, but a stock assessment takes so long that they cannot be working day and night for weeks while you’re waiting for things to come back. Overall, we thought that this work that was done by both your black drum and your tautog panel was exceptionally well done.

There was a team of people there who had been doing stock assessments their entire lives; and they were quite impressed. There were things that were done in terms of the extended DB-SRA that no one else had done before and were a significant improvement to that model. We saw that quality of work throughout the stock assessment. We were quite impressed.

DR. PIERCE: I agree; it is a great piece of work. I’m also impressed except with the determination that Connecticut should be in with Massachusetts and Rhode Island. How can there be any logical outcome?

DR. JONES: If you want to do things on regional scales and finer scales, you just need to have more data and regional data. I certainly think this is an improvement over the coastwide. The coastwide really doesn’t reflect that stepping-stone difference in potential production of this species.

MR. O’REILLY: Dr. Jones, my question relates to – you know, the idea of regional is something that has always seemed obvious for many years but was never able to be put forward. Until now the idea of moving to the ASAP Model, which I think is used for summer flounder and bluefish as well and other species, seems to have – this may be a question that relates the DelMarVa Region specifically – seems to have allowed the regional approach in DelMarVa to not be held hostage by the fact that there is no fishery-independent indices.

So when we look at what went into the model, Delaware and Virginia didn’t have anything. Delaware’s trawl didn’t pick up anything. Maryland had some collections, some sub-legals as well, but it was about 65 fish or so I think is what I read. I think that is a move forward to having the Preferred Model ASAP.

I know that there is sort of a complicated recreational CPUE Index that has been used for DelMarVa, and I just wonder in the future, if we continue along these lines, is that going to be something that will be pretty stable to have that type of a fishery-independent surrogate, I will call it, for DelMarVa?
DR. JONES: Who is that for, Rob?

MR. O’REILLY: That is for Dr. Jones.

DR. JONES: That is a complicated answer I’m going to give you. It is my fond hope that moving to MRIP will improve quality of recreational data and that it will improve the fishery-dependent input to the assessment. That said, it is very difficult on this kind of a fish to get any fishery-independent sampling; again because of where it lives and how it lives.

I wouldn’t assume that unless there is magic in the works that that type of indices would improve; and so I think there is going to be a dependence on the fishery-dependent recreational statistics. The stability is going to be how well the improvements of MRIP work out in, again, a sporadically caught fish. Does that answer the question, Rob?

MR. O’REILLY: Yes; and I think it means that we wait and if it is possible in 2016 we get another test of this process, but it is clear to me that there may not be a true fishery-independent index for DelMarVa. It is really important for us to know that with the methodologies that have been used with the CPUE basis that that is something that has some relative merit compared to the regions that do have the fishery-independent index.

DR. JONES: Rob, one way to solve the issue is to increase MRIP intercept samples. That has been done in the past for other fisheries and clearly it improves the data, particularly if you can do specialized weighting of access points you know to be frequented by fishermen. We have done that in the past.

It is expensive to do that and states are always balancing where to put limited monies. I haven’t seen a great expansion of money available to natural resource agencies to do increased sampling; and it is a management decision as to whether there is a cost benefit in increasing sample size, but more access points gives you better data. Most access point interviews give you better data, but it is a cost-benefit analysis; is it worth it.

CHAIRMAN GILMORE: Well, we all take over MRIP next year and that is going to improve dramatically, so we should be in much better shape. Dave Simpson.

MR. SIMPSON: I do want to make sure everyone understands how much I appreciate the multiple types of assessments on multiple stock areas at broader scales and finer scales is just a tremendous amount of work done on this. It is just a fantastic effort. I have already talked about the other issues I had. The one thing that I didn’t have a chance to follow up, because I read the peer review too late in my preparation, is the second to last bullet, the discussion of how SSB and estimates and like that compare, you know, when you do a coast-wide assessment versus regional assessments and how they compare, you know, the sums of the regions to the total; if one of you could elaborate a little bit on that. You’re expressing some concerns or suggesting precaution; if you could elaborate on that a little bit, it would be really helpful.

DR. JONES: If I remember correctly when you looked at the spawning stock biomass that was necessary to support the fishery, you needed to maintain a larger spawning stock biomass if you did the coastwide; that you could, with the regions, have a smaller spawning stock biomass in each of the regions, if I’m remembering that correctly, Jeff?

MR. BRUST: I know that when we compare some of the regions to the old biomass reference point, they don’t add up. I don’t remember what the coast-wide ASAP reference point was.

DR. JONES: Yes; and I can’t pull that out either. I would have to look up exactly which of those estimates we were referring to, but it was that you could have a lower spawning stock biomass
regionally. Having the full coast-wide assessment, you would need to hold back more stock and have lower harvests.

MR. SIMPSON: Okay, thanks, that’s important. The other part that I wonder about is as we try to figure out how many fish are in the ocean, how the coast-wide assessment of the total population size compares to the sum of the regions and their estimates of spawning stock biomass, for example.

MR. BRUST: Give me a second, Dave. I know we did that at least for – I remember seeing a slide in here at least for the north/south compared to the coastwide. Katie, Slide 46 – this doesn’t get to the total, so this is a comparison of like whether we put Connecticut on one side or the other. You can see that they fall right on top of each other when we get there.

Let me keep looking for the one that we did at the coast-wide level. Dave, whether you put Connecticut on one side or the other, when you sum those two regions together, they’re right on top of each other. I’m pretty sure we did it at the coast-wide level as well; so summing the three regions and comparing it to the coastwide, I don’t remember if that figure is in my back pocket here.

DR. JONES: But we felt you should be a little precautionary in management.

CONSIDER ACCEPTANCE OF STOCK ASSESSMENT AND PEER REVIEW PANEL REPORT

MR. PATRICK AUGUSTINE: Thank you, Mr. Chairman. That was my question, Mr. Simpson. Excellent report by Jeff and Dr. Jones; very clear, very clean cut. It presented all the facts. It is the best we’ve had in many, many years; and I’ve been here a long time. I think it is time to make a motion, Mr. Chairman, if you’re ready. I would move that the board accept the assessment and peer review reports as presented today.

CHAIRMAN GILMORE: Tom Fote, are you seconding the motion; yes. Let’s get it up there and see if we have any discussion on the motion. Is there discussion on the motion? Dave Simpson.

MR. SIMPSON: Yes, regrettably I have to oppose the motion. I can’t imagine going forward with this assessment with the fundamental problems I have in the unit stock and the split in particular of Connecticut and New York’s fisheries.

CHAIRMAN GILMORE: David Pierce, are we going to have some surprise from you?

DR. PIERCE: No, no surprise. I suspect that in 2015 Massachusetts, working with Rhode Island, will consider and perhaps take further steps to constrain our tautog fishery. I’m not arguing the fishing mortality is too high or that its spawning biomass is too low. I just cannot accept this ad hoc conclusion that Massachusetts should be in with Connecticut. Rhode Island, of course, we’re together, we’re wedded, we sit next to each other. We’re almost sitting next to Connecticut, but I think the implications regarding how we move down the road with further management of tautog are undesirable. I’m going to oppose the motion.

CHAIRMAN GILMORE: More discussion on the motion? Mark Gibson.

MR. MARK GIBSON: Mr. Chairman, I’m torn on this one; not so much of the Connecticut issue. That doesn’t seem to change our stock status in the region one way or another. I certainly agree with the managerial challenges placed with splitting a water body. I’m still concerned about the comparability of the reference points, particularly the MSY-based direct computations with the stock-recruit data versus the proxies in the other region.

These minutes are draft and subject to approval by the Tautog Management Board. The Board will review the minutes during its next meeting
It seemed that it gives us considerably more conservative overfishing limits and targets. I understand that there is some perhaps life history differentials that might explain the discrepancies between those, but the fact that two regions have proxies and the other has a direct computation leads to a larger gap between our overfishing definition and the current F is troubling me. It may be in the last minute before I decide how to vote. Thank you.

CHAIRMAN GILMORE: Any other comments on the motion? Anyone in the public want to make a comment on this? Okay, I don’t see any. I’m assuming we need some time to caucus; so why don’t we take a couple of minutes to caucus and we’ll take the vote.

(Whereupon, a caucus was held.)

EXECUTIVE DIRECTOR ROBERT E. BEAL: Just a quick comment during the caucus, which is unusual, I think. There seems to be some concern with what exactly this motion means and is the board bound to anything should this pass. What this motion means is you guys have received the presentation of the stock assessment and the peer review report and you accept those findings and you will use those for consideration in the next management step.

It doesn't bind you to any specific portion of the stock assessment. If there are different methodologies within this document that you want to focus on, that is fair game. This does not by any means adopt the reference points that come out of this. If the board wants to adjust these reference points for whatever reason, that is the next step. That is the management decision. This is just acknowledging the work done by the technical committee and the peer review and accepting that for consideration moving forward.

CHAIRMAN GILMORE: Good point; thanks, Bob. Okay, are we ready for the vote? David.

DR. PIERCE: I disagree with Bob Beal’s conclusion. Maybe there is a nuance here; but still when we move to accept it and use it for management use, there is a serious implication that what has come out of this assessment will be used. Again, there is a nuance here. I still think this assessment and the conclusions that have been drawn will drive the bus and will force decisions and motion down the road relative to reference points and what have you, stock structure assumptions that I’m not going to be supporting. Again, I’m going to vote against this.

CHAIRMAN GILMORE: Okay, let’s take the vote. All those in favor of the motion, please raise your hand; those opposed; abstentions; null votes. The motion passes seven, two, no abstentions and one null vote. We have adopted that. I think at this point we’re going to take a little break now to go out and grab lunch. My suggestion is maybe we take 15 minutes.

(Whereupon, a recess was taken.)

CHAIRMAN GILMORE: Okay, I think what we’re going to do before – the board needs to consider some management steps of where we’re going to be going at this point. We obviously need to do something, but there is a lot of disagreement on what is in the stock assessment.

PRESENTATION BY DR. KATIE DREW

CHAIRMAN GILMORE: I think, first off, we’re going to let Katie take a few minutes just to go through it a little bit more so everybody understands what is in the stock assessment. There is a bunch more than just a black-white assessment. There are some little nuances and extra information. Just to make sure we’re clear on that, Katie is going to go through a couple of slides to enlighten us all.

DR. KATIE DREW: I think what the technical committee wanted to stress was that we
actually did consider a lot of different regional breakdowns. If fact, if you look at the document, we basically did assessments for – in addition to the base runs that had sort of the preferred regional consideration that the technical committee came to through consensus, we also did sort of alternative assessments for alternative regional configurations.

We looked at putting Massachusetts and Rhode Island in with each other and putting Connecticut in with New York and New Jersey. We also looked at sort of the old traditional north/south breakdown of New Jersey south being one region and New York north being a separate region. These analyses are all in the stock assessment.

They were all peer reviewed by the peer review panel. The peer review panel – I don’t want to put too many words in their mouth; but as Cynthia Jones was saying, there are definitely data issues. There is not a single smoking gun to say this is the best region and this is a terrible region. They supported regionalization and they supported with the technical committee put forward as a base run, but they did not reject any of the other alternative regions that we put forward in the assessment as well.

These assessments have reference points and stock status available with them; and through the acceptance of the assessment report for management, they are available for management use. I thought we could maybe take a few minutes to go through some of the alternate region configurations. I don’t know if Jeff wants to give this presentation because he does have the slide on this.

MR. BRUST: I can do it if you want. As Katie said, we did look at a bunch of different regionalizations. The fallback is we looked at a coast-wide model just as we’ve done in the past using the ADAPT Model. We did it with the three new models that we looked at. We looked at the traditional north/south split, so Massachusetts to New York and New Jersey to North Carolina; then the regions that we proposed as our preferred and then kind of shifting Connecticut between Southern New England and New York/New Jersey.

This is Southern New England without Connecticut. This is just Massachusetts/Rhode Island. There is some precedence for this region, as was alluded to earlier. Massachusetts and Rhode Island have been able to – in the past the board approved a Massachusetts/Rhode Island Region with the ADAPT Model; so there is some precedence for this. We did consider it in our deliberations.

The top left is the spawning stock biomass that is showing a very similar trend whether you include Connecticut or not. The blue line is Massachusetts/Rhode Island. The orange line is the preferred Massachusetts/Rhode Island/Connecticut. You see it is showing a similar trend, slightly less biomass if you take out one of the states.

On the left-hand side is Southern New England; so it is Massachusetts/Rhode Island versus Massachusetts/Rhode Island/Connecticut; biomass on the top left. The bottom left is biomass relative to the biomass threshold; so whether we include Connecticut, we’re overfished in the northern region.

On the right-hand side we have got the preferred New York/New Jersey in orange and the alternate New York/New Jersey/Connecticut in blue. You can see we have transferred some biomass from the graph on the left to the graph on the right; again, though, showing a very similar pattern. The bottom right shows biomass status. Whether we include Connecticut or not with New York/New Jersey, we are overfished.

Going to the next slide – we showed this just before the break – no matter where you put Connecticut, when you sum the biomass for the two regions it comes out to the same; so we’re
not really affecting the scale of the model. This next slide is the same setup but now with fishing mortality. On the left you can see with or without Connecticut; Massachusetts and Rhode Island, overfishing is occurring. On the bottom left we’re above the fishing mortality threshold.

In the New York/New Jersey Region, if you add Connecticut we move from not overfishing to overfishing. It is right on the line there, but it is an overfishing status there. This next slide is just the historic north/south split. On the left is the north; the top is biomass; the bottom is biomass relative to the threshold.

The whole northern region, so Massachusetts through New York, would be considered overfished. On the right we have the southern region, so New Jersey through Virginia; and the same thing, the whole region would be considered overfished.

We have Massachusetts/Rhode Island/Connecticut; New York/New Jersey; the one that you haven’t see yet is in gray for both of these slides. The gray on the left is the northern region and the gray on the right is the southern region.

And the same thing for fishing mortality; for the whole northern region we are above the fishing mortality threshold. For the whole southern region we are above the fishing mortality threshold; so that is different than what the preferred model says. The whole southern region, overfishing is occurring and the stock is overfished; the same for the north. I guess the take-home from this is the more we lump the less optimistic the stock outcome is.

MR. SIMPSON: When I looked at these graphs in the assessment, I thought they were revealing. The one thing that struck me about these was that the New Jersey/New York estimates of F were much more volatile when done just as that small group and somewhat smoother and perhaps – I mean, more stable implies more reliable to me. That is one important difference. You see in the last year the F estimate for New York/New Jersey goes from way up here to way down there; if you can go just a couple of slides ahead, the F ones.

MR. BRUST: This is the F one.

MR. SIMPSON: Neither one has the three – there you go; yes; so you can see how volatile the orange one is compared to the other two. In the last two years you get an F way up here to an F way down there; and just to me an argument for needing to lump more.

MR. BRUST: I guess just to put a little perspective on that; so much of these fishing mortality estimates are driven by the recreational data. We know that the more we lump states, that the more consistent estimates we get; higher sample size and all that. That’s a good point to make, Dave.

**DISCUSSION OF NEXT STEPS FOR MANAGEMENT**

CHAIRMAN GILMORE: That essentially gets us – I mean, I think the thing we hopefully can agree with is that we want to maybe move towards regional management, but we have obviously different options for regions. Even though what was preferred in the assessment, there are still alternatives to that.

The question is how we’re going to get to the selection of what the appropriate region is. Now, we’re going have to do an addendum, obviously, for this whole thing; but I guess I’m looking to the board right now as to what suggestions people have about how we would get to deciding what the region is. Anybody got any suggestions? Pat.

MR. AUGUSTINE: Well, based on your comment, Mr. Chairman, it sounds like we maybe need to start out with a basic framework that we need to develop an addendum that will
address the following. I don’t know how many items you would want in there.

You would want coastal, you would want regional and whatever other option you might want to put in there as a framework. Now, maybe the motion would be too soon for where we’re going, but I think we need a framework to start with. What would you suggest we do; go with the amendment as a basic structure; to create a motion to create an amendment to start the process of developing.

MS. TONI KERNS: I think my suggestion, in order to get good public comment; the board may want to consider what do you think is best for this management? Is it a two-region approach; is it a three-region approach or none; but to get that direction first and then to move forward with an addendum to consider reference points.

How you want to consider those reference points; if we think that some of them might be too conservative or not conservative enough; to let the technical committee go back and look at those things; but first provide guidance to the technical committee on what approach do you want to move forward with; is it two or is it three regions or is it something else?

MR. SIMPSON: Yes; certainly, my offering would be a two-region approach. I agree with Toni that bringing this sort of thing out for public comment just invites cherry-picking; and I don’t think it will help us make a decision any better. Again, I look at New York and New Jersey and whichever graph on the left you choose, the F over Fthreshold, just, for example, for plausibility – if that’s a word – for New York and New Jersey; is there any explanation in management or otherwise to explain why F dropped so much in the last two years or any major changes in management?

In other words, I don’t think there are; and so that would be cause for concern for me to use that going forward. To further divide to get that level of specificity, you are sacrificing a lot of, I think, accuracy and reliability. If you’d like a motion, I would move that we focus the addendum on two regions, north and south.

CHAIRMAN GILMORE: Well, not an addendum at this point; you just want to task the technical committee to like evaluate those first and then we would do an addendum at that point?

MR. SIMPSON: In preparation for an addendum; yes.

MR. BRUST: Can I just respond? So, Dave, your question of why did New York/New Jersey’s fishing mortality drop so much; if you look over on the right, the southern region, the DelMarVa Region did as well. If you remember, was it 2012 when a lot of states increased their size limit; that would probably drive the fishing mortality rate drop.

Massachusetts/Rhode Island did not change their size limits. They already had a 16 inch; but New York, New Jersey, Maryland, Delaware and Virginia all increased their size limit at least one inch and in some cases two inches. I can’t say that’s the entire reason. We know these estimates are jumpy; but that is, in my mind, a good reason for why these fishing mortality rates dropped.

MR. SIMPSON: Yes; I guess I would have expected that would change the partial recruitment pattern but not the full F estimate. Connecticut did, too, increase by two inches in the same time frame, but, anyway.

CHAIRMAN GILMORE: Dave, to put you on the spot here, could you just put that motion a little bit more formal as to what you wanted us to explore?

MR. SIMPSON: To move forward – I guess you’re asking move forward with exploration of two regions, northern and southern, for tautog management.
CHAIRMAN GILMORE: Well, we may need a little more than that, but let’s see if we can get a second to that. Pat Augustine seconds. Go ahead, Pat.

MR. AUGUSTINE: Mr. Chairman, to that point, I would ask the maker of the motion in view of the fact that it was presented as three regions, including DelMarVa, why would we not want to put that in there for consideration for the technical committee develop the possibility of having that as a separate as opposed to just north and south. If he would take that as a friendly addition, I would go with it. If not, I would move to amend the motion.

MR. SIMPSON: What that would end up with, if I understand you right, we’d have a northern region, we’d have New Jersey, and then we’d have the DelMarVa. That is how I would interpret what you are suggesting.

MR. AUGUSTINE: As a possible third one, at least let them present it as three although both you and I may agree that it is only two, but let the public see all three possible options and value of or lack of.

MS. KERNS: What I was trying to suggest before is that the management board should decide how you want to manage this fishery. Do you want to manage it in two regions or a three-regional approach? Once you’ve made that decision, then the technical committee can do this additional exploration that Mark talked about earlier and the little bit that Dave talked about earlier with the reference points, as well as options for management.

You can go out to public comment to decide whether or not you want to do something with a two-region approach or a three-region approach. Katie and Jeff have given you the pros and cons for two regions versus three regions here today; and it is something that the management board can decide here today is how you want to approach.

It is within the framework of the assessment that you were just presented. Typically when we do management documents based on assessments, you guys tell us which stocks you want to use and then we take we management options out for public comment based on those stocks. Taking out to public comment two different approaches for the stocks themselves in addition to management measures I think would be pretty confusing for the public. It is within the realm of the things that the board can do, but you may want to think about how we would present that.

MR. SIMPSON: With that discussion, I’m still comfortable with this approach. I think we need to make this call; and from my review of the assessment, I just thought this one was the best – they are all compromises, right, but I thought this was the best compromise in keeping fisheries together, the right unit stock, but get a little more discrimination than we’ve had in the past with coast-wide assessment and management.

DR. PIERCE: Well, this particular motion does provide us with the opportunity to further discuss for management purposes what makes sense in terms of definition of northern and southern. However, the motion does not provide us or the public with a clear indication of what we need to do in response to the assessment that has been provided; the status of the stock, high fishing mortality.

Frankly, I was surprised at the size of the high level of fishing mortality in the northern area, Rhode Island/Massachusetts, but still it is too high and we need to address it in some way. I would make a motion to amend to add on to the motion on the screen, “Move forward with exploration of two regions, northern and southern, for tautog management with management measures in each region to end overfishing and rebuild overfished regions to target biomass levels.” It is more specific. It doesn’t postpone our addressing what has
come to us in terms of an assessment and a peer review.

CHAIRMAN GILMORE: Do I have a second to that; Dave Simpson? Do we have any discussion on the motion? Roy Miller.

MR. ROY MILLER: Mr. Chairman, notwithstanding the arguments from Dr. Pierce and Dave Simpson regarding where Connecticut should be placed, it seems to me we’re kind of ignoring the advice of our technical committee, which was backed up by the peer review, that three regions are preferable for management of the species.

It just seems to me we have or more less rejected that advice and gone to two regions; and I’m not exactly sure why we’re doing this. Why wouldn’t we give equal time to exploration of management for three regions? Whether we lump Connecticut with New England or with New Jersey and New York; those could be two sub-options just like we proposed with summer flounder. That way we would be responsive to the advice we received from the technical committee.

MR. O’REILLY: Mr. Chairman, I have similar views a little more pertinent to DelMarVa Region that came out of the stock assessment and the peer review. I’m really not sure how that is going to be hybridized or averaged out. I think one of the long-standing problems with DelMarVa has been the fishery-independent issue. That is why I raised that question today for Dr. Jones.

I’m not sure how that approach would go even though I’m not sure whether Dave Simpson meant to start New York in the north or whether that was even part of what he was thinking, whether we were going to define the north and the south later, but this just seems to be a reactionary approach. Maybe it is right to have Connecticut where it is; maybe it is not.

I think that is the real issue, but I just look to the number of slides that were presented that showed with and without Connecticut. The issue of what Dave Pierce brought out; I think that is the real issue. I don’t think the regionalization is the real issue. I wouldn’t support this and I just think that we’re overreacting to an issue that we should work on directly instead of indirectly.

MR. EMERSON C. HASBROUCK, JR.: Mr. Chairman, I’m a little unclear as to the purpose of the primary motion. If the purpose is to replace exploring or looking at management options with three regions; to replace that with just two regions, I don’t know that I would be able to support that.

I might be able to support a motion that would add to those three regions; another option which would be to look at two regions. The original motion also doesn’t give any indication as to where that north/south line would be, and maybe that is on purpose to have the technical committee come with that. Those are some things that are concerning me right now.

MR. RUSS ALLEN: Mr. Chairman, I would just like to reiterate what Roy had to say. I’m very confused about this whole motion to start with. The second half that Dr. Pierce put in there I can live with; but the two regions, we just had some great advice from our technical folks and peer review report. It just doesn’t make any sense to me so I can’t support this.

MR. GIBSON: Mr. Chairman, similar to the discussion that Roy started, I don’t support this motion. I think it is taking us in the wrong direction from our assessment committee’s advice and the peer review panel’s advice, particularly the need for finer-scale spatial data and not to refine the regions but not to shrink away from the three. Where Connecticut goes in the three regions doesn’t really concern me that much.

These minutes are draft and subject to approval by the Tautog Management Board. The Board will review the minutes during its next meeting
What does concern me is that whatever the three-region arrangement we come out with; that the reference point computations be done consistently so that they're on the same page relative to the F relative to the target, SSB relative to the target so that we're all on the same playing field relative to reductions or stock status determination and management measures that might need to be taken.

DR. PIERCE: Perhaps the best way to proceed in the interest of timeliness and simplicity is to – with the forbearance of the chair and the board – instead of my making a move to amend, I could move to substitute. I would move to substitute and that motion would be –

CHAIRMAN GILMORE: Hold on, David, we have a little procedural problem with this.

MS. KERNS: I'm going to be Dennis Abbott today; and I hope he would be proud of me. You have a motion on the table to amend and it had a seconder, so you can't switch that motion. You would need to vote that motion up or down and then come forward with a newer motion.

CHAIRMAN GILMORE: So let's just do that; let's just take a simple vote and dispense with this one way or the other and then we'll move on. I'm just going to call the question for the motion to amend. All those in favor; all those opposed; abstentions; null votes. The motion fails. It was a tie; four to four with two abstentions. Okay, David, so now we can amend, I guess; so if you'd like to amend, David, go ahead – I'm sorry, substitute.

DR. PIERCE: I would move to substitute to develop an addendum with three regions, northern, southern and DelMarVa, for tautog management with management measures in each region to end overfishing and rebuild overfished regions to target biomass levels. I'm specific with regard to developing an addendum; three regions, north, south, DelMarVa. The north and south would be subject to further discussion. Anyway, I'm not defining north and south; so develop an addendum with three regions, northern, southern and DelMarVa, with management measures in each region and – yes, that would be it.

CHAIRMAN GILMORE: Do I have a second to that motion; Rick Bellavance. Discussion on the motion. Dave Simpson.

MR. SIMPSON: So with northern and southern being undefined; that to me implies we might have new combinations that haven't been assessed yet that we would be asking for. In other words, a middle region could be – north could be Massachusetts – and I am anticipating this may be what he is after – Massachusetts/Rhode Island is one region, Connecticut/New York is another region, New Jersey south is another region; or maybe given that DelMarVa is presumably explicit, then this does come down to either Connecticut is forced to be with New Jersey, which I think is as illogical as anything, or New Jersey gets – I don't know what – or New York is its own middle region. Yes, this concerns me.

MR. MILLER: I would like to suggest that I think what we’re talking about are the following three regions: New England, call it Mid-Atlantic, if you will, that would include New Jersey, New York and possibly Connecticut – Connecticut could also be examined to be a part of the New England Region – and then Delmarva. I think we’re talking about three regions, New England, Mid-Atlantic and DelMarVa. The sub-options would be where do you place Connecticut?

CHAIRMAN GILMORE: If we added that in, Dave, would that make you feel more comfortable?

MR. SIMPSON: Anything that splits Connecticut and New York I see as unworkable, illogical and unworkable. I can’t imagine adopting measures based on such an assessment.
CHAIRMAN GILMORE: Yes; I got that, but this one I think explores the option of that. I know you will be opposed to it, but at least it will move us along. Toni.

MS. KERN: Jim, I just want to clarify – and I’m going to need Katie and Jeff to help me out – typically how we move forward, as I said before, we accepted the stock assessment with all of the alternative runs that were completed in there, but that we would need to base these stock units or stock regions based on the runs that have been completed in the assessment. It would be difficult for us to do new runs because those wouldn’t have been peer reviewed. Does the alternative that Dave is looking for lie within the runs that you have done already?

MR. BRUST: Yes; we’ve done the runs I think that Mr. Miller just put forward; so Massachusetts/Rhode Island, New York/New Jersey, flip-flopping Connecticut between either one of those; we’ve done both of those.

MS. KERN: And that’s a two region or a three region?

MR. BRUST: There is DelMarVa. DelMarVa was never touched with Connecticut; so DelMarVa, that stands alone. Then we did two options putting Connecticut with Massachusetts/Rhode Island and putting Connecticut with New York/New Jersey.

MR. SIMPSON: I’m not sure what I’m supposed to say. Connecticut Long Island Sound tautog managed with Cape May, New Jersey; I’d just as soon stick with the devil we know, which is coast-wide assessment and management. We know it is not right, but we can all agree with that. Here we’re going to have this false assessment, in my mind, that I’ve going to have a very hard time complying with.

There is just nothing else to say. It’s just ridiculous. I’ve been saying this for six months; so it is not new to anyone. If you divide Long Island Sound in half, that is completely illogical for tautog; and putting a refinement that puts Connecticut Long Island Sound with New Jersey makes no sense at all to me, none, so I don’t know what to offer you.

MR. AUGUSTINE: Mr. Chairman, I will use my favorite expression. It is almost like we’re trying to beat a dead horse. We’re looking for options that will be developed, and we will see them in writing clearer than what we have just seen. This assessment was based on what you presented and we accepted.

We have different sizes between Connecticut and New York in various species that we’re dealing with right now. To have another invisible line and divide Connecticut and New York when it comes to blackfish, tautog doesn’t seem to be a whole lot different. I seconded that motion because I thought I would be able to put in that third region, because that’s basically what the technical committee did.

I do think that having done what they did and peer review having approved it, I think we have to take the next step and put out a document with the options on there. Whether Mr. Simpson and myself don’t agree with it, the fact is I think we have to give the public an opportunity to see what we have done as a board and then make a decision based on that. From what Jeff said, it appears we have the ability to support those three options; am I correct or not? Yes; so without any further ado –

MS. MELISSA YUEN: Just to clarify, the stock assessment subcommittee did present the three-region breakdown, so we will add the option of – the two options would be to either have Connecticut with Massachusetts/Rhode Island or New York/New Jersey; so we will make those available.

CHAIRMAN GILMORE: Okay, other comments on the motion? Toni.
MS. KERNS: Just a clarification; Mark had requested some technical committee review of the reference points themselves that come out of each of these regions. I’m wondering if the board is looking for options of difference points in addition to management options. Typically we at least have an idea of where reference points are going before we develop management options for a document.

I don’t know if the adjustments that Mark is suggesting would make large differences in the status of the stock or not for each of the regions. Until we really do that work, I’m not sure we’ll know that. I’m wondering what the time frame that the board is looking for in terms of when this addendum would go out; and does Mark want to see those reference points before we put together – or the board want to see those reference points before we move forward with development of management options.

MR. GIBSON: Well, it was my understanding and I thought we had a chart there that the proxy reference points based on SSB over R already exist so they’re within reach of – based on Toni’s earlier remark, they’re within reach of this action, so I would think you would need sub-options that have them all computed consistently through the SSB over R proxies or the region that emerges will support stock-recruit analysis; there would be an option for that.

The other two regions, as far as I understand it, did support that analysis, but there are two viable analyses for the so-called northern region at this point. I don’t know how they change if Connecticut dropped out of that region; but there seems to be two viable one. I have concerns about the lack of consistency if we were to only go forward with the direct MSY computations now. In the northern region, however it pans out, you could have both of those as an option. I think that is the way to go.

CHAIRMAN GILMORE: It might be a better or a cleaner way to do this is to have the technical committee evaluate the reference points for the different regions first, before we go to putting an addendum out on the street because if we have – essentially this thing will snowball into so many options, it won’t be understandable. It might be a better approach, first, just to do that simple task of the technical committee and then initiate an addendum after we get through that and then we can discuss it at the next meeting. Pat.

MR. AUGUSTINE: So, Mr. Chairman, do you want to table this to date certain to the next meeting?

CHAIRMAN GILMORE: Yes; that sounds like a good move, Pat.

MR. AUGUSTINE: Okay, so I so move.

CHAIRMAN GILMORE: Do I have a second to that; Russ Allen. I don’t think we need discussion on the motion unless anybody really wants to talk about it; so why don’t we just take a vote. All those in favor on tabling this, please raise your hand; all those opposed; null votes; abstentions. The motion carries eight to zero to two. Toni, in terms of the charge to the technical committee right now; is that something we need to do through a motion or is that something we’ve pretty well identified just through the last discussion?

MS. KERNS: We don’t need to go through a motion. If Jeff and Katie are clear on what their task is, then we are good to go.

MR. BRUST: Just to make sure that we’re clear, the task is for the technical committee and stock assessment subcommittee to evaluate reference points for all the different regional options, using the different methodologies for calculating the reference points. Thank you.
FMP REVIEW REPORT AND STATE COMPLIANCE

CHAIRMAN GILMORE: Everybody is okay with that? Okay, great. I think we have time to move on to hopefully our last agenda item. This is on the FMP Review Report and State Compliance; and Melissa is going to go through that quickly.

MS. YUEN: I will keep this as brief as possible. I’m actually just going to skip through this because Jeff went through already the commercial and recreational fisheries. As you can see, landings have decreased over the years. This is a close-up of the coast-wide landings. As you can see, 2012/2013 were pretty close and similar.

This graph shows the proportion of recreational to commercial landings with Massachusetts on the left and then going south to North Carolina on the right. Maryland was omitted from this graph because their commercial landings were confidential. This graph shows the recreational harvest of tautog by wave, so most of the tautog are caught in later part of the year, from November through December.

Now going to the management plan and state compliance; Addendum VI, which was the most recent addendum approved in March of 2011, set the F target at 0.15 and required a coast-wide reduction of 39 percent. Each state must implement board-approved regulations in the commercial and recreational sectors.

The state compliance reports were due on May 1st. All states submitted their state compliance reports. The plan review team found that all states had implemented management plans consistent with the FMP. The FMP also required all states to collect 200 opercula for aging. The states of Massachusetts, Rhode Island, Connecticut, New Jersey, Delaware and Virginia collected 200 samples each.

New York almost met their target; they collected 195. Maryland collected 165; so they weren’t able to collect them all because they were voluntarily donated by charterboat captains. The PRT found that the states have met or tried their best to meet this biological sampling requirement. Request for de minimis status; Amendment 1 sets the criteria for commercial landings to be less than 1 percent of coast-wide landings or 10,000 pounds, whichever is greater. Delaware and North Carolina submitted requests to continue de minimis status. The plan review team granted them de minimis status. As you can see, their landings are on the slide and it is below 10,000. This concludes my presentation.

CHAIRMAN GILMORE: Are there any questions on the presentation? Okay, let’s try to do one motion for both of these things. Pat Augustine.

MR. AUGUSTINE: I move that we approve the 2013 FMP Review and State Compliance Reports and approve Delaware and North Carolina’s request for de minimis for commercial and recreational fisheries for 2015.

CHAIRMAN GILMORE: Do I have a second to that; Rob O’Reilly. Any discussion on the motion? Is there any opposition to the motion? Roy Miller.

MR. MILLER: Clarification; I thought I heard Pat say that Delaware and North Carolina would be de minimis for commercial and recreational; is that what you said, Pat?

MR. AUGUSTINE: Yes; that is what it said on the report, Roy, so I wasn’t sure you wanted it clarified beyond that. Did you only want recreational or commercial?

MR. MILLER: Certainly commercial for Delaware; I’m not so sure about recreational.

MR. AUGUSTINE: Why don’t we clarify that, then, Mr. Chairman, that Delaware only wants it...
for commercial and North Carolina wants it for recreational?

CHAIRMAN GILMORE: In the briefing document, Roy, it was listed as commercial and recreational; so if you want to change that, we can do that.

MR. MILLER: As long as it is in there that way; I’m okay with it.

CHAIRMAN GILMORE: Is there any opposition to the motion? Rick Bellavance.

MR. RICK BELLAVANCE: I’m not opposed; I just have a question. Is it for the 2013 FMP or ‘14?

MR. AUGUSTINE: I approved ‘14 and the de minimis for ‘15 for Delaware and North Carolina. I think that is what they’re talking about; approve the 2013 FMP Report and de minimis status for Delaware – but it is for Delaware and North Carolina for 2015; that’s correct.

CHAIRMAN GILMORE: That’s correct. Any other questions on the motion? The motion is to approve the 2013 FMP Report and de minimis status for Delaware and North Carolina for 2015. The motion by Mr. Augustine and seconded by Mr. O’Reilly. Any questions on the motion? Roy.

MR. MILLER: I’m sorry to be a pain, Mr. Chairman, but just glancing in the report at Table 3, recreational harvest, and following the columns down for Delaware, honestly, in good conscience I don’t see how we can be classified as de minimis for recreational. Certainly we can for commercial, but I don’t see us as de minimis for recreational.

CHAIRMAN GILMORE: So, yes, we can remove recreational; so maybe we will just specify for commercial fisheries. Does that look good, Roy? Okay, anymore comments on this before – Rob O’Reilly.

MR. O’REILLY: Just a question; I’m used to de minimis being both fisheries combined and then it is usually a percentage of the total. Is it different for tautog? Such as something I’m not aware of; is that the way it works for de minimis for tautog?

MS. KERNS: Can you give us five minutes so we can confirm that you can split the de minimis status while we look it up in the FMP real quick?

MR. AUGUSTINE: Point of information, Mr. Chairman. I’m looking at Page 14 of the report and highlighted in yellow it indicates that the states of Delaware 2,302 pounds in 2013 and North Carolina 2,005 pounds in 2013 have requested de minimis status for the 2015 fishing season for the commercial sector. These two states meet or exceed the criteria and the PRT recommends that the board approve the states of Delaware and North Carolina requests as such. We need to remove the recreational fisheries in that motion to make it correct.

CHAIRMAN GILMORE: Right; we’re working on it, Pat. I think you’re correct, but hang on one second. Pat, I think in the motion if you remove “recreational” from that and the second is okay, we will be in good shape.

MR. AUGUSTINE: That is correct, Mr. Chairman.

CHAIRMAN GILMORE: Are you okay with that, Rob.

MR. O’REILLY: I’m okay and I found that tautog is just the commercial, anyway, for de minimis.

CHAIRMAN GILMORE: And the world is good again. Any other questions on the motion before we call the question? The motion is to approve the 2013 FMP Report and de minimis status for Delaware and North Carolina for commercial fisheries for 2015. Motion by Mr. Augustine and seconded by Mr. O’Reilly. Is there any objection to the motion? Seeing none; we will take that as approved.
ADJOURNMENT

We’re down to Item 7; is there any additional business to come before the Tautog Management Board? Seeing none; we are adjourned.

(Whereupon, the meeting was adjourned at 1:50 o’clock p.m., February 5, 2015.)
MEMORANDUM

April 20, 2015

To: Tautog Management Board

From: Tautog Technical Committee

RE: Clarification to Selecting a Regional Stock Definition for Tautog Management

Summary

In February 2015, the Tautog Management Board approved the 2015 Benchmark Stock Assessment and Peer Review Reports for management use, but tabled the selection of a regional stock definition. The Tautog Technical Committee (TC) prepared this memo to clarify the selection of a regional breakdown for management. The memo explains the biological and fisheries data analyses used to weigh the strengths and weaknesses of the four stock unit definitions. It also presents additional MRIP data analysis completed after the assessment, and the overfished and overfishing status based on biological reference points from the age structure assessment program (ASAP) assessment model presented in the stock assessment.

The 2015 Tautog Benchmark Stock Assessment presents three regional stock unit options for managing tautog as alternatives to the current coastwide stock unit. ASAP is the assessment model used to determine stock status and reference points. It is the preferred approach because of its (1) ability to incorporate available age information and uncertainty in the catch and survey data and (2) good performance and stability even at small regional scales. Based on the reference points calculated using the methods presented in the assessment report, the stock status and overfishing levels for the different regional definitions are listed in Table 1. The TC determined a three-region approach provides the best balance between a smaller geographical scale and data richness/reliability. It considers both “preferred” and “highly regarded” three-region breakdowns to be reasonable from a scientific standpoint.

Table 1: The four stock definitions presented in the 2015 benchmark stock assessment and overfished, overfishing status for sub-regions based on the ASAP model and peer-reviewed methods.

<table>
<thead>
<tr>
<th>Options for Stock Unit Definitions</th>
<th>MA</th>
<th>RI</th>
<th>CT</th>
<th>NY</th>
<th>NJ</th>
<th>DE</th>
<th>MD</th>
<th>VA</th>
<th>NC</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Three Region (Assessment Preferred)</td>
<td>Overfished Overfishing</td>
<td>Overfished Not Overfishing</td>
<td>Overfished Not Overfishing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Three Region (Highly Regarded Alternative)</td>
<td>Overfished Overfishing</td>
<td>Overfished Overfishing</td>
<td>Overfished Not Overfishing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Two Region</td>
<td>Overfished Overfishing</td>
<td>Overfished Overfishing</td>
<td>Overfished Overfishing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D. Coastwide (status quo)</td>
<td>Overfished Overfishing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1. ASMFC Tautog 2015 Benchmark Stock Assessment and Peer Review Reports (February 2015)

Vision: Sustainably Managing Atlantic Coastal Fisheries
DEFINING TAUTOG STOCK REGIONS

The TC considered all available biological and fisheries data, as well as management concerns when determining the regional definitions to assess. Based on the analyses of biological and fisheries information, the TC determined the “coastwide” stock unit is inappropriate. Appropriate region designations must compromise tautog’s limited home range with available data and political boundaries. With these considerations in mind, the TC determined a three-region approach would provide the best balance between a smaller geographical scale and data richness. The TC recognizes the proposed three region breakdowns likely contain distinct sub-stocks, but believes this regional structure reduces the risk of overfishing individual sub-stocks and provides a better stock assessment than the coastwide structure currently used.

The TC considered two different three-region breakdowns, one that placed CT with MA and RI, and one that put CT and NY with NJ. DE, MD, VA, and NC formed the third region in both alternatives. NY and NJ share a fishery in the NY Bight area, making it difficult to separate landings. Given that biological evidence suggests CT and NY fish from Long Island Sound are more similar to MA and RI fish than to NJ fish, the TC believed CT would have a higher degree of connectivity with MA and RI than with NJ. As a result, the TC favored the Southern New England (MA-CT), NY-NJ, and DelMarVa (DE-NC) breakdown when completing the assessment report. During deliberations, the TC expressed concern this “preferred” regionalization splits Long Island Sound (LIS) into two stocks while the data sets contain both CT and NY fish. Therefore, a “highly regarded” alternate regional breakdown was also developed that placed CT with the NY-NJ region so that the data sets and regional breakdown matched.

Although a two region breakdown (MA-NY and NJ-NC) and a coastwide model were also considered, the TC determined the finer geographic scale provided by the three-region approach provided a better assessment of stock status and management advice than the two region or coastwide models. It is important to note the stock assessment presented both the “preferred” three-region and the alternate “highly regarded” three-region definitions – both supported for management use by the TC and Peer Review Panel.

Biological information included age and length data collected by each state (used to infer growth rates), natural mortality based on estimators from scientific literature, and migration behaviors based on tagging studies conducted by state programs. It is important to note data availability vary by region; northern states have more data from early in the time-series, when more older, larger fish were present in the samples. The southern states lack data from fishery-independent sources and thus have limited samples of the youngest, smallest fish. In addition, NY samples come from both LIS and the Atlantic Ocean (about half from each area), making the distinctions between NY and NJ growth rates less certain (i.e. data may be confounded). Further examination of growth rate differences should be explored using data that are more representative of the full size-age structure of the population.
• **Growth curves** per state and regions were developed using length-weight data (Table 2). Results suggest tautog from Southern New England and NY waters have significantly lower maximum sizes than fish from NJ to VA. Growth constants generally decreased along the north-to-south gradient, while maximum sizes were higher in the southern portion of the range than the northern portion of the range. This suggests a clear regional difference in tautog growth and size.

**Table 2.** Estimates of maximum sizes and growth constants by state and regional units.

<table>
<thead>
<tr>
<th>State</th>
<th>Maximum Size Estimates (cm)</th>
<th>Growth Constant</th>
</tr>
</thead>
<tbody>
<tr>
<td>MA</td>
<td>61.68</td>
<td>0.118</td>
</tr>
<tr>
<td>RI</td>
<td>60.25</td>
<td>0.140</td>
</tr>
<tr>
<td>CT</td>
<td>59.11</td>
<td>0.171</td>
</tr>
<tr>
<td>NY</td>
<td>60.45</td>
<td>0.123</td>
</tr>
<tr>
<td>NJ</td>
<td>80.66</td>
<td>0.052</td>
</tr>
<tr>
<td>DE</td>
<td>76.03</td>
<td>0.060</td>
</tr>
<tr>
<td>MD</td>
<td>78.23</td>
<td>0.085</td>
</tr>
<tr>
<td>VA</td>
<td>74.67</td>
<td>0.065</td>
</tr>
</tbody>
</table>

• **Length-at-Age:** The examination of mean length-at-age identified significant differences in lengths between regions, particularly the northern and southern states.

• **Natural mortality** (M) was calculated for regional stock units (Table 3). The area-specific estimates showed higher rates of M in the northern regions than southern. However, the higher estimates of M for the northern regions came from the estimators that rely on growth parameters, while estimators that rely on longevity data were more similar across all regions.

**Table 3.** Average natural mortality rates by region.

<table>
<thead>
<tr>
<th>Regional Stock Unit</th>
<th>Average Natural Mortality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three Region (Assessment Preferred)</td>
<td></td>
</tr>
<tr>
<td>SNE (MA-RI-CT)</td>
<td>0.24</td>
</tr>
<tr>
<td>NY-NJ</td>
<td>0.15</td>
</tr>
<tr>
<td>DelMarVa</td>
<td>0.16</td>
</tr>
<tr>
<td>Two Region</td>
<td></td>
</tr>
<tr>
<td>Northern (MA-NY)</td>
<td>0.23</td>
</tr>
<tr>
<td>Southern (NJ-NC)</td>
<td>0.12</td>
</tr>
<tr>
<td>Coastwide</td>
<td></td>
</tr>
<tr>
<td>MA through NC</td>
<td>0.16</td>
</tr>
</tbody>
</table>

• **Migration behavior** was inferred from tagging data, which indicated tautog have strong site fidelity and move only short distances longitudinally, if at all, during seasonal migrations. This is strong evidence for managing tautog at a finer regional scale, further justification the current coastwide stock unit is not appropriate based on the limited home range of this reef species.
In summary, the biological data suggest a broad pattern of differences in growth between the north and the south, with little movement of adult fish. The TC used fishery-dependent data to refine the regional structure.

**Fishery-dependent data** included recreational and commercial trip data from vessel trip reports. Fishery catch and effort information from NMFS Fishing Vessel Trip Reports (VTR) was evaluated by NMFS statistical areas to identify state-specific fishery characteristics (Figure 1). VTR data are provided by a subset of the fishery that are required to report, which in some states includes only fishers with a federal license, therefore may not be fully representative of the entire tautog fishery. However, they provide a finer scale breakdown of area fished than the broad angler-reported categories from MRIP.

Results based on fishing effort reported in the stock assessment indicate that:
- Angler effort from MA to CT remain primarily within local sounds and bays
- Angler effort from DE to VA remain south of Delaware Bay
- Fisheries in NY and NJ range from LIS to Delaware Bay, with significant overlap in ocean waters of NMFS statistical areas 612 and 613 (approximately Manasquan River, NJ to Montauk, NY (Table 4).

**Figure 1.** NMFS statistical areas.
Similar results were produced when the analysis used catch rather than effort (Tables 4A and B). The patterns of fishing effort inferred from VTR data suggested NJ and NY are fishing on the same fish in the ocean south of Long Island, and NY and CT are fishing on the same fish in LIS, although CT and NJ have minimal overlap. Given the overlap of fishing effort between NY and NJ in ocean waters, the TC chose to include NY and NJ in the same region. NY and CT fishing effort also overlaps significantly in LIS, which is why the TC also strongly endorsed the inclusion of CT in the NY-NJ region, and preferred the three-region breakdown over separating NY and NJ into northern and southern regions.

Table 4A. Proportion of commercial catch by statistical area and state from VTR records. Red, bolded numbers indicate areas that account for more than 10% of a state’s catch.

<table>
<thead>
<tr>
<th></th>
<th>MA</th>
<th>RI</th>
<th>CT</th>
<th>NY</th>
<th>NJ</th>
<th>DE</th>
<th>MD</th>
<th>VA</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>514</td>
<td>0.16</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.02</td>
</tr>
<tr>
<td>537</td>
<td>0.04</td>
<td>0.06</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<td>538</td>
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<td>0.00</td>
<td>0.00</td>
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</tr>
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<td>0.01</td>
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</tr>
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<td>0.40</td>
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<tr>
<td>613</td>
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<td>0.03</td>
<td>0.10</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.04</td>
</tr>
<tr>
<td>614</td>
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<td>0.00</td>
<td>0.00</td>
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<td>0.00</td>
<td>0.01</td>
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<td>615</td>
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<td>621</td>
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<td>0.00</td>
<td>0.23</td>
<td>0.03</td>
<td>0.01</td>
<td></td>
</tr>
</tbody>
</table>

Table 4B. Proportion of recreational catch by statistical area and state from VTR records. Red, bolded numbers indicate areas that account for more than 10% of a state’s catch.

<table>
<thead>
<tr>
<th></th>
<th>MA</th>
<th>RI</th>
<th>CT</th>
<th>NY</th>
<th>NJ</th>
<th>DE</th>
<th>MD</th>
<th>VA</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>514</td>
<td>0.32</td>
<td>0.00</td>
<td>0.00</td>
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<td>0.01</td>
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<tr>
<td>537</td>
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<td>0.03</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
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<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>538</td>
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<td>0.00</td>
<td>0.05</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.03</td>
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<td>539</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.01</td>
<td>0.01</td>
</tr>
<tr>
<td>614</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.03</td>
<td>0.02</td>
<td>0.00</td>
<td></td>
</tr>
</tbody>
</table>
An analysis of MRIP data by area fished was conducted after the assessment at a Commissioner’s request. Data from RI through NJ were evaluated by summarizing the harvest and catch data into various categories including ‘State’, ‘Site’, ‘Fishing Area’, and ‘Distance From shore’ from 2004-2014. This analysis showed a similar pattern to the VTR data, with RI catch coming primarily from Narragansett Bay, CT catch coming primarily from LIS, NJ catch coming primarily from open water, and most NY catch being split between Long Island Sound (~57%) and open water (~35%) (Table 5).

**Table 5:** Proportion of recreational catch by area fished and state from MRIP data. Red, bolded numbers indicate areas that account for more than 10% of a state’s catch.

<table>
<thead>
<tr>
<th></th>
<th>RI</th>
<th>RIWest*</th>
<th>CT</th>
<th>NY</th>
<th>NJ</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Water</td>
<td>0.25</td>
<td>0.91</td>
<td>0.01</td>
<td>0.35</td>
<td>0.72</td>
<td>0.36</td>
</tr>
<tr>
<td>Sound</td>
<td>0.01</td>
<td>0.04</td>
<td>0.01</td>
<td>0.02</td>
<td>0.00</td>
<td>0.01</td>
</tr>
<tr>
<td>River</td>
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<td>0.00</td>
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<td>0.00</td>
</tr>
<tr>
<td>Bay</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.04</td>
<td>0.14</td>
<td>0.05</td>
</tr>
<tr>
<td>Other</td>
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<td>0.00</td>
<td>0.01</td>
<td>0.10</td>
<td>0.03</td>
</tr>
<tr>
<td>Narragansett Bay</td>
<td>0.73</td>
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<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.13</td>
</tr>
<tr>
<td>Long Island Sound</td>
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<td>0.00</td>
<td>0.98</td>
<td>0.57</td>
<td>0.00</td>
<td>0.41</td>
</tr>
<tr>
<td>Hudson Estuary</td>
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<td>0.00</td>
<td>0.01</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>Delaware Bay</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.03</td>
<td>0.03</td>
<td>0.01</td>
</tr>
</tbody>
</table>

*Rhode Island harvest occurring west of Point Judith Harbor accounts for approximately 6% of total RI harvest.

While the prior VTR analysis showed the majority (60%) of the NY recreational catch coming from offshore, thereby emphasizing the shared fishery resource between NY and NJ, VTR data do not characterize the entire fishery. For a species like tautog, which is primarily a recreational fishery, MRIP data must also be considered. Analysis of MRIP data showed the majority (57%) of NY recreational catch coming from LIS, thereby emphasizing the shared fishery resource between NY and CT. This additional information was not available for peer review, but should be considered when evaluating the demarcations of the regions.

**Peer Review Panel Comments**

The Peer Review Panel down-weighted the biological information in assessing regional determinations because they found the regional differences could be driven as much by data availability as biological factors. The Panel approved the finer regional scale of the assessment, stating region-level ASAP stock assessment models provided the best available scientific foundation for management, but did not endorse one regional breakdown over another. Based on information presented in the assessment, the Panel concluded either three-region breakdown would be suitable for management, meaning one three-region breakdown is not “preferred” over another.

Additional analyses by the TC showing the substantial overlap in fisheries between CT and NY in LIS and the minimal overlap in fisheries between CT and RI are also justification for considering the three-region alternative including CT in a region with NY and NJ as being
comparable to the three-region option that places CT in the region with RI and MA. The TC agrees either three-region definitions can be used for management.

**REFERENCE POINTS AND STOCK STATUS**

This section of the memo provides the reference points presented in the stock assessment report and includes additional reference points calculated using consistent methods for each regional stock unit as requested by the Board. Because longer data time series exist for states in the northern range, the stock assessment used different methods to calculate reference points for regions. **Maximum sustainable yield (MSY) based reference points** were estimated from ASAP, which uses a combination of spawning potential ratio (SPR), yield-per-recruit (YPR), and the stock-recruitment relationship to calculate the $SSB_{MSY}$ and $F_{MSY}$. 75% $F_{MSY}$ was calculated by projecting the population forward assuming the same stock-recruitment (S-R) relationship and finding the fishing mortality ($F$) that maintains the population at 75% $SSB_{MSY}$. $SSB \times \%$ was calculated by projecting the population forward while fishing at $F \times \%SPR$ with recruitment randomly drawn from the observed historical recruitment.

MSY-based reference points were proposed for the SNE region due to the longer time-series of data. The assessment proposed **SPR based reference points** for NY-NJ and DelMarVa regions because of the shorter time-series of the data. The DelMarVa S-R curve fitted by the model resulted in unrealistic parameters (e.g., steepness equal to one). The S-R curve for the NY-NJ region provided more reasonable parameter estimates, but since the data used in the assessment did not include the peak of exploitation at the beginning of the recreational time-series and the curve was sensitive to assumptions about population levels at the beginning of the time-series, the TC chose to use SPR reference points for the NY-NJ region.

Based on the assessment’s proposed regional stock units and reference points, the resulting overfished and overfishing status for each of the regional stock units are listed below.
### Table 6A. Stock assessment preferred three region stock definition

<table>
<thead>
<tr>
<th>Stock Region</th>
<th>SSB Target</th>
<th>SSB Threshold</th>
<th>SSB 2013</th>
<th>F Target</th>
<th>F Threshold</th>
<th>F 3-year Ave</th>
<th>Stock Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNE (MA-RI-CT)</td>
<td>3,883</td>
<td>2,912</td>
<td>1,814</td>
<td>0.15</td>
<td>0.20</td>
<td>0.48</td>
<td>Overfished Experiencing Overfishing</td>
</tr>
<tr>
<td>New York – New Jersey</td>
<td>3,570</td>
<td>2,640</td>
<td>2,202</td>
<td>0.17</td>
<td>0.26</td>
<td>0.24</td>
<td>Not Experiencing Overfishing</td>
</tr>
<tr>
<td>DelMarVa</td>
<td>2,090</td>
<td>1,580</td>
<td>1,532</td>
<td>0.16</td>
<td>0.24</td>
<td>0.16</td>
<td>Not Experiencing Overfishing</td>
</tr>
</tbody>
</table>

### Table 6B. Alternative three region stock definition

<table>
<thead>
<tr>
<th>Stock Region</th>
<th>SSB Target</th>
<th>SSB Threshold</th>
<th>SSB 2013</th>
<th>F Target</th>
<th>F Threshold</th>
<th>F 3-year Ave</th>
<th>Stock Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>SNE (MA-RI)</td>
<td>2,633</td>
<td>1,975</td>
<td>1,612</td>
<td>0.16</td>
<td>0.19</td>
<td>0.38</td>
<td>Overfished Experiencing Overfishing</td>
</tr>
<tr>
<td>CT – NJ</td>
<td>5,160</td>
<td>3,920</td>
<td>2,359</td>
<td>0.17</td>
<td>0.24</td>
<td>0.34</td>
<td>Overfished Experiencing Overfishing</td>
</tr>
<tr>
<td>DelMarVa</td>
<td>2,090</td>
<td>1,580</td>
<td>1,532</td>
<td>0.16</td>
<td>0.24</td>
<td>0.16</td>
<td>Not Experiencing Overfishing</td>
</tr>
</tbody>
</table>

### Table 6C. Two region stock definition

<table>
<thead>
<tr>
<th>Stock Region</th>
<th>SSB Target</th>
<th>SSB Threshold</th>
<th>SSB 2013</th>
<th>F Target</th>
<th>F Threshold</th>
<th>F 3-year Ave</th>
<th>Stock Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>North</td>
<td>7,277</td>
<td>5,458</td>
<td>3,447</td>
<td>0.14</td>
<td>0.18</td>
<td>0.36</td>
<td>Overfished Experiencing Overfishing</td>
</tr>
<tr>
<td>South</td>
<td>4,037</td>
<td>3,028</td>
<td>1,254</td>
<td>0.18</td>
<td>0.15</td>
<td>0.33</td>
<td>Overfished Experiencing Overfishing</td>
</tr>
</tbody>
</table>

### Table 6D. Coastwide stock definition

<table>
<thead>
<tr>
<th>Stock Region</th>
<th>SSB Target</th>
<th>SSB Threshold</th>
<th>SSB 2013</th>
<th>F Target</th>
<th>F Threshold</th>
<th>F 3-year Ave</th>
<th>Stock Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastwide</td>
<td>20,612</td>
<td>15,459</td>
<td>4,882</td>
<td>0.10</td>
<td>0.13</td>
<td>0.30</td>
<td>Overfished Experiencing Overfishing</td>
</tr>
</tbody>
</table>
For comparison, a full suite of biological reference point (BRP) options was calculated for all four regions as tasked by the Board (Table 7). This included MSY-based reference points and SPR-based reference points. MSY-based reference points are generally preferred when they are considered reliable, because they address stock productivity by taking into account the relationship between SSB and future recruitment, whereas SPR-based reference points do not.

The TC recognizes there still could be a significant uncertainty in S-R data for the New England region. Because of this, F\textsubscript{MSY} reference point may change in the future as a result of a future assessment. However, this is the best scientific information available at this point. F\textsubscript{MSY} development for the NJ-NY and DelMarVa regions will require additional S-R data accumulation with sufficient contrast in stock size. It is also important to note F-based reference point values by region are not exactly comparable due to the differences in age-specific selectivity. Tautog are fully recruited to the fishery at an older age in the New England area, due to the larger minimum size. As a result, more younger fish can contribute to the spawning population before being harvested, resulting in a higher F reference point.

For the Southern New England and MA-RI regions, where a longer time-series of stock-recruitment data is available, the MSY-based target reference points (F\textsubscript{MSY} and SSB\textsubscript{MSY}) were closer to F\textsubscript{50%SPR} than the F\textsubscript{40%} target proposed for the other regions. If the stock recruitment relationships in NY-NJ and DelMarVa areas are similar to the parameters estimated for the New England area the F\textsubscript{30%} and F\textsubscript{40%} may exceed the F\textsubscript{MSY} for those areas as well.

Table 7. Spawning stock biomass and fishing mortality based on a range of reference points, by regional stock unit. The bolded reference points were used to determine overfished and overfishing status in the assessment (Table 6A-D).

<table>
<thead>
<tr>
<th>Region</th>
<th>SNE</th>
<th>NY-NJ</th>
<th>MARI</th>
<th>CT-NY-NJ</th>
<th>DMV</th>
<th>North</th>
<th>South</th>
<th>Coastwide</th>
</tr>
</thead>
<tbody>
<tr>
<td>SSB\textsubscript{MSY}</td>
<td>3,883</td>
<td>4,616</td>
<td>2,633</td>
<td>4,695</td>
<td>885</td>
<td>7,277</td>
<td>4,037</td>
<td>20,612</td>
</tr>
<tr>
<td>75% SSB\textsubscript{MSY}</td>
<td>2,912</td>
<td>3,462</td>
<td>1,975</td>
<td>3,521</td>
<td>664</td>
<td>5,458</td>
<td>3,028</td>
<td>15,459</td>
</tr>
<tr>
<td>SSB 30%</td>
<td>2,310</td>
<td>2,640</td>
<td>1,390</td>
<td>3,920</td>
<td>1,580</td>
<td>3,840</td>
<td>3,730</td>
<td>6,710</td>
</tr>
<tr>
<td>SSB 35%</td>
<td>2,715</td>
<td>3,120</td>
<td>1,630</td>
<td>4,610</td>
<td>1,870</td>
<td>4,405</td>
<td>4,255</td>
<td>8,050</td>
</tr>
<tr>
<td>SSB 40%</td>
<td>3,090</td>
<td>3,575</td>
<td>1,930</td>
<td>5,160</td>
<td>2,090</td>
<td>5,145</td>
<td>4,760</td>
<td>9,240</td>
</tr>
<tr>
<td>SSB 50%</td>
<td>3,940</td>
<td>4,570</td>
<td>2,490</td>
<td>6,430</td>
<td>2,610</td>
<td>6,475</td>
<td>5,915</td>
<td>11,675</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Region</th>
<th>SNE</th>
<th>NY-NJ</th>
<th>MARI</th>
<th>CT-NY-NJ</th>
<th>DMV</th>
<th>North</th>
<th>South</th>
<th>Coastwide</th>
</tr>
</thead>
<tbody>
<tr>
<td>F\textsubscript{MSY}</td>
<td>0.15</td>
<td>0.18</td>
<td>0.16</td>
<td>0.19</td>
<td>0.50</td>
<td>0.14</td>
<td>0.15</td>
<td>0.10</td>
</tr>
<tr>
<td>F 75%\textsubscript{MSY}</td>
<td>0.20</td>
<td>0.21</td>
<td>0.19</td>
<td>0.25</td>
<td>0.71</td>
<td>0.18</td>
<td>0.18</td>
<td>0.13</td>
</tr>
<tr>
<td>F 30%</td>
<td>0.44</td>
<td>0.26</td>
<td>0.56</td>
<td>0.24</td>
<td>0.24</td>
<td>0.42</td>
<td>0.23</td>
<td>0.34</td>
</tr>
<tr>
<td>F 35%</td>
<td>0.33</td>
<td>0.21</td>
<td>0.42</td>
<td>0.19</td>
<td>0.19</td>
<td>0.33</td>
<td>0.19</td>
<td>0.26</td>
</tr>
<tr>
<td>F 40%</td>
<td>0.26</td>
<td>0.17</td>
<td>0.31</td>
<td>0.17</td>
<td>0.16</td>
<td>0.25</td>
<td>0.16</td>
<td>0.21</td>
</tr>
<tr>
<td>F 50%</td>
<td>0.16</td>
<td>0.11</td>
<td>0.19</td>
<td>0.11</td>
<td>0.11</td>
<td>0.16</td>
<td>0.11</td>
<td>0.14</td>
</tr>
</tbody>
</table>
Conclusion

The Tautog TC determined a three region approach would provide the best balance between a smaller geographical scale and data richness/reliability. The TC considers both three-region breakdowns to be reasonable from a scientific standpoint, and recommends the Board chose a regional structure based on management considerations. However, the alternate, “highly regarded” three-region breakdown avoids the mismatch of data source created by the “assessment preferred” three-region breakdown.

The TC notes LIS presents a unique challenge to regional management for this species. It is possible that the population within the Sound represents a sub-stock that has only a small overlap of recruitment with the surrounding area (ex. western RI waters). There is currently a genetic study taking place that may help inform this assumption. In recent years, harvest from LIS has accounted for 29% of coastwide landings. For these reasons, the TC acknowledges managing LIS as a discrete area may be appropriate. Fishery-independent data exist for LIS, all of CT’s sampling comes from the Sound, and most of NY’s fishery-independent surveys for tautog (or include tautog data) come from the Sound. However, there are challenges with properly partitioning the fishery-dependent data and harvest estimates for LIS, especially for NY’s harvest. These challenges prohibited exploration of assessing LIS as its own region for the current benchmark assessment but the TC recognizes the value in exploring this option in the future.