

# Atlantic States Marine Fisheries Commission

## American Eel Management Board

*February 6, 2018*

*4:30 – 6:00 p.m.*

*Arlington, 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 (*M. Gary*) 4:30 p.m.
2. Board Consent 4:30 p.m.
  - Approval of Agenda
  - Approval of Proceedings from October 2017
3. Public Comment 4:35 p.m.
4. Consider Approval of Draft Addendum V for Public Comment **Action** 4:45 p.m.
  - Presentation of Management Options (*K. Rootes-Murdy*)
  - Stock Assessment Subcommittee Report (*K. Anstead*)
5. Approval of 2017 FMP Review and State Compliance Reports (*K. Rootes-Murdy*) **Action** 5:45 p.m.
6. Advisory Panel Report (*K. Rootes-Murdy*) 5:50 p.m.
7. Elect Vice-chair (*M. Gary*) **Action** 5:55 p.m.
8. Other Business/Adjourn 6:00 p.m.

The meeting will be held at the Westin Crystal City, 1800 Jefferson Davis Highway Arlington, Virginia; 703.486.1111

# ***Atlantic States Marine Fisheries Commission***

## **MEETING OVERVIEW**

### **American Eel Management Board Meeting**

**February 6, 2018**

**4:30 – 6:00 p.m.**

**Arlington, Virginia**

Chair: Marty Gary Assumed Chairmanship: 10/17	Technical Committee Chair: Tim Wildman (CT)	Law Enforcement Committee Representative: Cornish
Vice Chair: VACANT	Advisory Panel Chair: Mari-Beth Delucia	Previous Board Meeting: August 2, 2017

**Voting Members:** ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, VA, NC, SC, GA, FL, D.C., PRFC, USFWS, NMFS (19 votes)

#### **2. Board Consent:**

- Approval of Agenda
- Approval of Proceedings from August 2017 Board Meeting

#### **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-up 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 Board Chair may determine that additional public comment will not provide additional information. In this circumstance the Board Chair will not allow additional public comment. For agenda items that the public has not had a chance to provide input, the Board Chair may allow limited opportunity for comment. The Board Chair has the discretion to limit the number of speakers and/or the length of each comment.

<b>4. Consider Approval of Draft Addendum V for Public Comment (4:45 – 5:45 p.m.) Action</b>
<b>Background</b> <ul style="list-style-type: none"><li>• At the Annual Meeting, the Board moved to initiate a draft addendum to consider the following alternatives for yellow eel fishery: the current coastwide cap, management triggers, state by state allocations; and for glass eel fishery: Maine’s annual quota.</li><li>• An Allocation Working Group met via conference call from November through January to draft the Addendum.</li></ul>
<b>Presentation</b> <ul style="list-style-type: none"><li>• Overview of draft Addendum V for Board Review by K. Rootes-Murdy (<b>Supplemental Materials</b>)</li></ul>
<b>Board Actions for Consideration</b> <ul style="list-style-type: none"><li>• Approve draft Addendum V for public comment.</li></ul>

**5. Approval of 2017 FMP Review and State Compliance (5:45 – 5:50 p.m.) Action**

**Background**

- State compliance reports were due on September 1.
- The PRT reviewed and compiled the annual FMP Review (**Supplemental Materials**)
- New Hampshire, Massachusetts, Pennsylvania, South Carolina, Georgia, Florida requested and meet the requirements for *de minimis* for yellow eel
- South Carolina requested but did not meet the requirements for *de minimis* for glass eel

**Presentation**

- Overview of the 2017 Fishery Management Plan Review by K. Rootes-Murdy

**Board Actions for Consideration**

- Accept the 2017 FMP Review and approve *de minimis* request

**6. Advisory Panel Report (5:50-5:55 p.m.)**

**Background**

- The Advisory Panel met via conference call in December to receive an overview of the 2017 stock assessment update, recent Technical Committee work, and management actions in 2017 (**Briefing Materials**)

**Presentation**

- Advisory Panel Report by K. Rootes-Murdy

**7. Elect Vice Chair**

**8. Other Business/ Adjourn**

## American Eel

**Activity level: Low**

**Committee Overlap Score:** Medium (SAS overlaps with BERP, Atlantic herring, horseshoe crab)

### Committee Task List

- January 2018: Ageing workshop for state ageing labs
- SAS- January 2018: Respond to questions posed by Allocation WG regarding impact to the resource if Coastwide Cap is exceeded. Present response at February Meeting
- June/July 2018: Annual review of any aquaculture proposals that are submitted

**TC Members:** Tim Wildman (CT, TC Chair), Ryan Harrell (GA), Kimberly Bonvechio (FL), Bradford Chase (MA), Ellen Cosby (PRFC), Sean Doyle (DC), Robert Eckert (NH), Sheila Eyler (USFWS), Alex Haro (USGS), Carol Hoffman (NY), Michael Kaufmann (PA), Wilson Laney (USFWS), Todd Mathes (NC), Patrick McGee (RI), Jennifer Pyle (NJ), Troy Tuckey (VIMS), Andrew Watson (SC), Keith Whiteford (MD), Gail Wippelhauser (ME), Jordan Zimmerman (DE), Kristen Anstead (ASMFC), Kirby Rootes-Murdy (ASMFC)

**SAS Members:** Greg Hinks (NJ), Bradford Chase (MA), Matt Cieri (ME), Sheila Eyler (USFWS), Laura Lee (NC), John Sweka (USFWS), Troy Tuckey (VIMS), Keith Whiteford (MD), Kristen Anstead (ASMFC), Kirby Rootes-Murdy (ASMFC)

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

**The Marriott Norfolk Waterside  
Norfolk, Virginia  
October 17, 2017**

These minutes are draft and subject to approval by the American Eel Management Board.  
The Board will review the minutes during its next meeting.

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1. **Approval of Agenda by Consent** (Page 1).
2. **Approval of Proceedings of August, 2017** by Consent (Page 1).
3. **Move to maintain Maine's glass eel quota for 2018 at status quo level from 2015-2017 (9,688 pounds)** (Page 17). Motion by Cheri Patterson; second by Pat Keliher. Motion carried (Page 18).
4. **Move to initiate an addendum to consider alternative allocations, management triggers, and coastwide caps relative to the current management program for both the yellow and glass eel commercial fisheries starting in the 2019 fishing** (Page 22). Motion by Lynn Fegley; second by Martin Gary. Motion carried (Page 22).
5. **Move to adjourn** by consent (Page 25).

**ATTENDANCE**

**Board Members**

Pat Keliher, ME (AA)	John Clark, DE, proxy for D. Saveikis (AA)
Dennis Abbott, NH, proxy for Sen. Watters (LA)	Craig Pugh, DE, proxy for Rep. Carson (LA)
Cheri Patterson, NH, proxy for D. Grout (AA)	Roy Miller, DE (GA)
G. Ritchie White, NH (GA)	Rachel Dean, MD (GA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)	Ed O'Brien, MD, proxy for Del. Stein (LA)
Dan McKiernan, MA, proxy for D. Pierce (AA)	Lynn Fegley, MD, proxy for D. Blazer (AA)
Raymond Kane, MA (GA)	Rob O'Reilly, VA, proxy for J. Bull (AA)
Robert Ballou, RI, proxy for J. Coit (AA)	Kyle Schick, VA, proxy for Sen. Stuart (LA)
David Borden, RI (GA)	David Bush, NC, proxy for Rep. Steinburg (LA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)	Michelle Duval, NC, proxy for B. Davis (AA)
Mark Alexander, CT (AA)	Robert Boyles, SC (AA)
Sen. Craig Miner, CT (LA)	Malcolm Rhodes, SC (GA)
Lance Stewart, CT (GA)	Pat Geer, GA, proxy for Rep. Nimmer (LA)
Jim Gilmore, NY (AA)	Spud Woodward, GA (AA)
Emerson Hasbrouck, NY (GA)	Nancy Addison, GA (GA)
Adam Nowalsky, NJ, proxy for Asm. Andrzejczak (LA)	Rep. Thad Altman, FL (LA)
Russ Allen, NJ, proxy for L. Herrighty (AA)	Jim Estes, FL, proxy for J. McCawley (AA)
Tom Fote, NJ (GA)	Sherry White, USFWS
Loren Lustig, PA (GA)	Martin Gary, PRFC
Andrew Shiels, PA, proxy for J. Arway (AA)	

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

**Ex-Officio Members**

Jeff Brust, Chair, Stock Assessment Subcommittee

**Staff**

Bob Beal  
Toni Kerns

Kirby Rootes-Murdy  
Kristen Anstead

**Guests**

**NOTE: Sign-in Sheet Not Distributed**

Jeff Brust, NJ DFW  
Mitch Feigenbaum, Delaware Valley Fish Co.

Jeffrey Pierce, MEFA  
Sara Rademaker, American Unagi, LLC

The American Eel Management Board of the Atlantic States Marine Fisheries Commission convened in the Hampton Roads Ballroom V of the Marriott Waterside Hotel, Norfolk, Virginia, October 17, 2017, and was called to order at 2:32 o'clock p.m. by Chairman John Clark.

#### **CALL TO ORDER**

CHAIRMAN JOHN CLARK: Welcome to the American Eel Board. Will Commissioner's please come to the table, audience please be seated, and those that are in conversation please take it outside. Thank you.

#### **APPROVAL OF AGENDA**

CHAIRMAN CLARK: Our first item is to approve the agenda. Are there any changes to the agenda? Seeing none; are there any objections to the agenda as it stands? Seeing none; the agenda is passed.

#### **APPROVAL OF PROCEEDINGS**

CHAIRMAN CLARK: Everybody has had a chance to see the proceedings from the August, 2017 meeting. Are there any edits or changes to the proceedings? Seeing none; are there any objections to approving the proceedings as submitted? Seeing none; that is Item number two.

#### **PUBLIC COMMENT**

CHAIRMAN CLARK: For item number three, Public Comment, we have three people who have signed up for public comment. We're going to start with Mitch Feigenbaum.

MR. MITCHELL FEIGENBAUM: Congratulations to ASMFC and the Eel Board on the occasion of the Commission's 76th Annual Meeting. Thank you, Chairman Clark for the opportunity to offer some comments today. My name is Mitchell Feigenbaum. I'm a member of the Eel Advisory Panel; and the Principal of Delaware Valley Fish Company, an eel exporter near Philadelphia.

I am involved with other ventures, including Nova Eel; a research and development company in Canada. Nova Eel is based in Halifax, Nova Scotia. Almost all of its shareholders are glass eel quota holders in Maine and Canada. I am here to report on its efforts. We are a professionally managed company focused on one goal; to transfer North America's 25 million dollar glass eel fishery into a world class aquaculture and fish processing industry worth \$250 million dollars.

Presently glass eel harvesters ship their eels alive to Asia, for Chinese farmers to use as seed material for their vast eel farming industry. They add ten times worth of value, turning our raw goods into a final product. We want to make as much as possible of that finished product right here in North America.

The eel farming industry we envision would create hundreds of jobs. We began investigating this effort in 2004; around the time the Fish and Wildlife Service began the first of its two ESA assessments. Since 2014, we have invested 1.5 million dollars in supporting work, a series of internally run experiments at Dalhousie University in Halifax.

These efforts established the safety and effectiveness of a medicated fish feed; which dramatically increases the speed and size of growth in aquaculture. Our internal work enabled the U.S. Food and Drug Administration to open up the file for an investigative new animal drug earlier this year. Our pharmaceutical grade medicated feed is presently being manufactured. After next year's glass eel harvest we expect to commence our pivotal studies; experiments at independent certified labs, necessary to obtain drug approval from both the U.S. and Canada governments.

We hope to be farming eels with our approved product on a pilot scale in 2019; and to open up one or more commercial eel facilities in 2020 or

2021. Our commercial plans are naturally focused in those areas where glass eel fishing already takes place; but we are prepared to make our proprietary eel feed and farming methods available beyond Canada and Maine.

We've identified eel science and aquaculture colleagues at universities in several ASMFC states, who are enthusiastic to be part of the effort. It appears likely this Board is about to embark on Addendum V in the near future. Addendum IV includes an aquaculture provision; allowing states to grant 200 pounds of glass eel quota for use in a domestic facility.

Addendum V will give the Board a chance to take another look at this provision. My colleagues and I hope that the Board will consider a mechanism for states to join together, pool obligations, and share resources in connection with the aquaculture quota. At some point every state will likely cast a vote on aquaculture issues.

We hope each state will study its opportunities as well. Nova Eel welcomes suggestions, ideas, and proposals from all stakeholders, and will advance some of its own. At a minimum, we hope the Commission will allow the state of Maine a reasonable degree of flexibility to pursue its goals in the area of eel quotas for both commercial fisheries and aquaculture.

The Maine DMR has worked hard to earn this deference. We look forward to working with the PDT, TC, and Eel Board on this important matter. On the question of yellow eel quotas, the Fish and Wildlife Service has twice told us that the eel population may be at the low end of its historic range, but is not endangered.

It has been stable and pleasant over most of its historical range for more than a full generation; since the collapse of Great Lakes stocks was first observed. Our adult eel harvest is locked down at the low end of its long term range. We question the landings numbers, but we don't

disagree that the stock is low. ASMFCs next stock assessment seems likely to find that the species remains depleted.

Industry looks forward to reviewing the stock assessment; and will share with the Technical Committee, peer reviewers and Eel Board any relevant information that may be overlooked during the assessment process. We are particularly concerned that the glass eel recruitment indices are not being accorded proper weight. Again, I commend the ASMFC for reaching its 76th Anniversary. Thank you, Commissioners for your attention and staffs and committees for all your hard work.

CHAIRMAN CLARK: Thank you, Mitch. I think you will be available if anybody has questions for you later. Next up we have Sara Rademaker of American Unagi; to discuss eel aquaculture in Maine.

MS. SARA RADEMAKER: My name is Sara Rademaker; and I've been growing eels up in Maine for the past three years. I started a company called American Unagi; that's been focused on taking Maine harvested glass eels, and growing them out for the domestic seafood industry. I'm here today just to introduce myself, let you know about the work that I've been doing, and also our intention to request an aquaculture quota for 2019.

My background is in aquaculture. I've been in the industry for over 15 years; and that has included education facility management and industry development, both internationally and domestically. I came back to Maine to start an aquaculture business; and when I saw what was happening with the glass eels being shipped abroad and then importing a questionable product back in.

I really saw an opportunity to produce a better product for the U.S.; but also to provide value and jobs in the state of Maine, so 2014 I dug in, and wanted to validate this idea. I started with

a couple of tanks in my basement; and then the following year built a pilot facility at the Darling Marine Center, and in 2016 put the first eels into the U.S. market.

We've gotten really great feedback, and we've had a lot of support from the Maine community, and also groups like Maine Aquaculture Innovation Center, Maine Technology Institute, USDA, Maine Sea-Grant that have all helped the progress of this company. I've also had the opportunity to get a talented group together of advisors from the fisheries, seafood, and aquaculture industry to help this business progress.

I'm really excited about it, and the last three years have been super successful. We're looking to get out of the pilot facility and into a commercial facility. Part of that success of launching that facility is going to be having a secure source of glass eels. We've been from the very beginning, having a very open dialogue with the Department of Marine Resources.

Recently we've been discussing this opportunity to do the aquaculture allocation for 2019. I just wanted to share with you some of the work that we're doing that we're really excited about this opportunity, and have really worked hard the last couple of years to show that this can be a valid business and a valid industry for the U.S. I look forward to working with all of you in the future, and thanks for your time.

CHAIRMAN CLARK: Thank you, Sara. Next up we have Jeff Pierce of the Maine Elvers Association.

MR. JEFFREY PIERCE: Good afternoon, Chairman Clark, distinguished members of the American Eel Board. My name is Jeff Pierce; I'm here on behalf of the Maine Elver Fishermen's Association, and thank you for allowing me public comment.

In the August 2 meeting, I submitted a letter for public comment about the good work the state of Maine Department of Marine Resource and the Maine Elver Fishermen have done to stop poaching; such as implementing swipe card systems and many other positive things that have dramatically improved this fishery. I will not repeat them at this time.

In 2012, Maine glass eel catch was 18,000 plus pounds, 2013, Maine glass eel catch was 20,000 plus pounds, 2014, and Maine was put on an allocation quota of 11,749 pounds; about a 46 percent cut from the 2013. In 2015, Maine was cut again to 9,688 pounds for a three year period of allocated quota. The three year period is up, and we would hope that this Board would return Maine's quota to the 2014 level of 11,749 pounds for the 2018 season. We the Maine Elver Fishermen appreciate your considerations on increasing this year's quota.

There is also a question of a new addendum on this agenda. We look forward to participating in this process; and hope that aquaculture is part of this conversation, perhaps as part of conservation credit. We look forward to exploring these options. Thank you.

CHAIRMAN CLARK: Thank you, Jeff. That concludes our public comments.

#### **2017 AMERICAN EEL STOCK ASSESSMENT UPDATE**

CHAIRMAN CLARK: We will now move on to Item 4, which is the 2017 American Eel Stock Assessment Update, and Jeff Brust will be presenting the assessment update. Take it away, Jeff.

MR. JEFF BRUST: Good afternoon to members of the Board. Yes, for those who don't know me I'm Jeff Brust with New Jersey Marine Fisheries; and Chair of the American Eel Stock Assessment Subcommittee. Before we get into the 2017 update, I just thought I would set the

stage with a quick reminder of what we did for the benchmark in 2012.

The methods, we did a thorough review of the biological data. We looked at a lot of different indices at local, regional, and coastwide levels; so there was a lot of index-based assessment work going on at this point. Then we looked at trend analyses, so a range of different methods; Mann-Kendall methods and ARIMAs and things like that.

We did try a data-poor assessment method, the depletion-based stock reduction analysis. What we found through the peer review was that there were significant declines in many of the surveys over the time period that we were looking at; some of them extending back to the 1970s and 1980s.

The Peer Review Panel did not endorse the findings of the DBSRA; and so because of that we did not have any specific, any official biological reference points. No overfishing or overfished determinations could be made based on just the trend analyses; and because of the declines but without having any official biological reference points, the Committee and the Peer Review Panel recommended that the stock status be found as depleted.

We started the update in 2016. We looked at the data again. We did a thorough review of new research and literature since the benchmark. Because it was an update report, we did not rewrite the entire document. We relied heavily on references to the original benchmark assessment. The introductory sections were updated with the new literature where we found them.

We updated the indices and the data through 2016; where they were available. The methods we used for the update were very consistent with what we did for the benchmark. There were a few tweaks that were necessary, and I'll try to highlight those as we go through the rest

of the report. Because the DBSRA was not approved by the Peer Review Panel, we did not attempt to update that.

It wasn't approved, so there was no need to update it again. The report was made available in the meeting materials. The agenda item is up there; so presentation of the assessment updates by me, and then I guess possible management action by the Board. Before we get into the actual meat of the assessment update, I wanted to thank the Stock Assessment Subcommittee and the TC, and in particular ASMFC staff for the support they provided in developing the document. Just a reminder, we broke the coast up into multiple regions; they're not management regions, just regions for data analysis, and those are shown up there on the slide.

A reminder also that the stock unit is all American eel population occurring in the territorial seas and inland waters along the Atlantic coast from Maine to Florida. We know the stock extends north into Canada and south into Mexico, and South America as well; but the stock that ASMFC has purview over is the Maine through Florida coastline.

As I said, landings data were updated through 2016. For commercial data we tried to corroborate all the different sources of data; so state landings, federal landings, and everything through ACCSP make sure everything was consistent and coherent. A couple of biases that were addressed in the benchmark that we are carrying forward, obviously ASMFC in most states do not have jurisdiction in fresh water, so any harvest that occurs up there is not included.

We looked for indices that occurred in fresh water, and I think we have a couple. But very few states had any landings information from fresh water jurisdictions. Also, reported in the benchmark were concerns about the commercial reporting. This was addressed through Addendum IV, so I'm happy to report

that we had better data reporting for the update than we did for the benchmark.

Here is a slide of commercial landings through 2016. I do want to point out that for the, I think it was the 2009 stock assessment, we used only three regions; North Atlantic, Mid-Atlantic, and South Atlantic. That's what this slide shows. There is no easy way to split the landings to the regions that we have now; because they are watershed based and no one collects data from watersheds, we collect it from the states.

These are not quite consistent with the assessment regions that I showed on the previous slide; but it gives you an idea of where the landings are coming from. You can see looking back, we had a peak in landings in the '70s and early '80s, and it declined from there. But for about the last two decades it has been relatively stable; right around a million pounds.

Here is the same slide or a similar slide with landings in the dark line; as well as the commercial eel value in the dashed line there. That strong uptick in the recent years is most likely an influence of the glass eel fishery; the price in the glass eel fishery. We also collected; we utilized the recreational catch in the harvest information.

Due to the change from MRFSS to MRIP in 2004, we did use the calibration. You can see that most of the eels that are caught are discarded alive. Again, we don't think this is excellent data. Again, because eels extend up into fresh water and the MRIP Survey does not extend into fresh water areas.

We think there is probably a significant amount of catch that is not being reported through the MRIP. But either way the recreational landings are very low; relative to the commercial landings. We're looking at a couple hundred thousand eels as opposed to a million pounds. Moving into the indices, we had 20 state mandated young-of-year-glass-eel indices, as

well as two that were not mandated by ASMFC. This slide up here has a couple of different color codes. I don't know how well you can see those from the back. Hopefully you can at least see the regions listed here on the left. Suffice it to say that the two in yellow are the non-state-mandated-glass-eel surveys. The three in green are new. We did not use these in the benchmark. We added these during the update; and the three in red were updated as late as we could take them, but none of them went through 2016.

Some of them were discontinued. Some of them they changed the sampling location; and so we took it as late as we could with the data that we were given. Those are the 22 glass eel surveys. Just to walk through them very quickly, I'll show each region's glass eel indices. Here is the Gulf of Maine. There were three there.

I guess one thing to keep an eye on when we're going through these. Notice that in any given region, and also across the coast, there is no consistent trend in the index of abundance. Here in the Gulf of Maine, here is one going up. Here is one that is pretty flat; and here is one that is going down.

You'll see across the coast, and even within a region there is not always a lot of consistency, and they are highly variable. Here is the Gulf of Maine. Southern New England we had four. I'll go through these relatively quick. I'll leave them up long enough for each state to see their index; and then I'll move on.

The Hudson River, we only had one glass eel index; it's from the Hudson River Estuary Monitoring. This is one of our longer time series. It is not mandated. It's not one of the ASMFC glass eel surveys. The Delaware Bay and Mid-Atlantic Coast, we had four. We have three of them that are ASMFC mandated, and the one in the lower right is a Rucker's Ichthyoplankton Survey that is not a required ASMFC survey.

Chesapeake Bay there was six, and the South Atlantic we had four. I know this is a little bit hard to see. We did a correlation analysis. The hope is that we would get a lot of indices that are showing the same trend. I've highlighted the ones in red; where they are showing a statistically significant similarity in their trend.

They're all positive correlations; which means they're all showing the same trend. If it was a negative correlation they would be going in opposite directions. It does not mean that the index itself is going up; it just means that these indices are showing the same pattern. For the update we had 20 significant correlations; all of them were positive.

For the benchmark we had ten that were positive and three that were negative. If you're following along in the document, because I recognize this is hard to see. This is Table 8 from Page 97 of the PDF report. You'll see that in the northeast at least, we have pretty good consistency. A lot of the indices are showing similar patterns; at least in the northeast.

Moving on to yellow eel indices, there were 15 of these. We standardized these using GLM where possible; to try and take out influences of non-abundance based changes in the index between years, so trying to account for temperature and timing of the survey and things like that. The four highlighted up here, again these are ones that we were not able to update through 2016; again, the survey location changed or we didn't receive the data, or the survey was just discontinued. For the Gulf of Maine we had no yellow eel indices. For southern New England we had two. For the Hudson River there were three. Again, you can notice they vary widely between years; and also within and across different regions there is not always a consistent pattern. Delaware Bay and Mid-Atlantic there were four. Chesapeake Bay we also had four; and for South-Atlantic there were two.

Again, we did correlations to hopefully show that they had similar patterns. This is Table 10 on Page 100 of the PDF document; if you want to get a closer look at it. Again, in the northeast we see a lot of similar trends. The ones in red are statistically significant; in terms of their similarity. For the yellow eel indices there is actually more similarity with the southern indices as well; which is a good thing.

For this we had 23 significant correlations; all of them positive. Again, a positive correlation does not mean the index is going up. It just means that they're showing a similar pattern. Those were the individual glass eel and yellow eel indices; and then what we wanted to do is try and combine them regionally, and also combine them across the entire coast.

For the coastwide indices, for the young-of-year surveys we did a long term index; which extended back to the 1980s, and also a short term index that was only since 2000, I believe. Then for the yellow eel indices we were able to do three different indices; one for 20 years, one for 30 years, and one for 40 years.

The longer the time series is, the fewer surveys that were included in that combined index; because we only have so many indices going back 40 years. We also did regional indices for glass eels and yellow eels; and then in a minute I'll get into the different trend analyses that we did on these, to see if these combined indices were providing any information.

The coastwide young-of-year indices, the coastwide glass-eel indices, the top left is the short term index; and the bottom right is the long term index. The short term goes back to 2000, and the long term index goes back to 1988. These are the indices that are included in the 20, 30, and 40 year combined yellow eel indices.

I'm sorry, I don't have the actual table listed up here; but it's going to be Table 11 or 12, I

believe. You can see; so one change from the benchmark is for the benchmark we used a PSEG survey that went back to the 1970s, but when we looked at it a little bit more in detail for the update, we realized that they had changed gears a couple of times and that the gear was only consistent back to 1998.

It no longer met the 30 or 40 year requirement, so we were only able to use it for the 20 year index. Here are the three coastwide indices for yellow eel; and the top left is the 40 plus year, the top right is 30 years, and the bottom is 20 years. The regional young-of-year indices, I don't know if you can see these in the back.

The top left is the Gulf of Maine going down on the left side; so Gulf of Maine, southern New England, Hudson River, and then in the right column is Delaware Bay, Chesapeake Bay, and South Atlantic. All right, so correlations for these regional glass eel surveys is shown up here; pretty good correlation among those in the northeast and Mid-Atlantic, and then here are the regional yellow eel indices. Again, on the left column is Gulf of Maine and southern New England where we had no yellow eel indices; and then the Hudson River in the right column is Delaware Bay, Chesapeake Bay and the South Atlantic. Correlations among the yellow eels, there were actually no significant correlations; which is unfortunate. You can sort of see that looking here. There is a lot of variability here. One thing that we wanted to look at is hopefully the glass eel index is going to correlate with the yellow eel index a couple years later as those eels grow older.

We should be able to hopefully see the same signal on the yellow eel, and the glass eels from a few previous years. We tried correlation analyses by lagging the yellow eel and the glass eel indices a different number of years. I forgot to highlight this one, but the Hudson River actually worked pretty well; not a lot of significant correlations among the other

regions, between their glass eel and yellow eel indices.

Those were the individual indices that we looked at; and then we just talked about the combined indices regional and coastwide. The next step was to do trend analyses on some actual statistical tests on these; to see if there is any information in the trends that they're showing us. The four things that we looked at was a power analysis, which tells us the strength of the index.

What is the probability of being able to observe a trend of plus or minus 50 percent over a 10 year period if it actually occurs? If there is so much variability, you're not even going to be able to see a trend. This tests how powerful the index is in being able to show us a trend; if it actually exists.

The Mann-Kendall test just identifies where there is a significant increase or decrease over time. A Manly Analysis does something similar; and it's comparing among the different analyses to see if they're all showing similar patterns. Then the ARIMA is a smoothing process. It's another way of developing an index; but it also gives us the opportunity to compare to a reference point.

It's not a biological reference point; we use the 25th percentile of the observed data points. I'll step through each one of these individually. For the power analysis, this is Table 18 on Page 106 of the PDF document; if you're following along. This shows that our surveys, our indices range in their ability to show us an actual trend; if it actually occurred.

Some of them have a very strong power; like this Connecticut DEP electrofishing that says that there is 100 percent chance of us seeing a trend if the trend actually existed. Then there are some that have a very low probability; such as the Delaware Bay young-of-year survey in

Turville Creek; which gives us only a 6 percent chance of seeing a trend if it actually exists.

These are based on the amount of the CV, the amount of interannual variability seen in the index. If you have a lot of variability between years, it is not going to be able to show you a trend; it's going to look like noise. The ones with small CVs are going to be the ones that give us a lot of power; and the ability to see a trend if it occurs.

For the Mann-Kendall, this is just again, just showing if there is a significant increase or decrease over time. The last two columns on the right there, the second to last column is the result that we saw from the benchmark in 2012. The far right is the trend that we saw for the update in 2016. You can see most of them, both for the update and for the benchmark, show no significant trend over time. You can see though there are a couple that are showing a significant decrease over time; one in the Gulf of Maine, one in southern New England, one in Delaware Bay. Next page, yes this table continues, Chesapeake Bay there are none for either the benchmark or the update that show a significant decrease; and in the South Atlantic there are actually three that are showing a significant decrease that were not showing a decrease during the benchmark.

I'm sorry, so those were just for the glass eels. Now moving into the yellow eel indices, these show a bit more variability or more significant results. But again, very similar to what we saw for the benchmark in 2012. Here are the northern three regions for the yellow eel indices, the southern two regions for the yellow eel indices.

Hopefully it's evident, but up arrow shows that it's a significant increase in trend; and a down arrow is a significant decline in abundance over time in the index. Here are the regional young of year and yellow on the same table. Again, very similar to what we saw for the benchmark.

Here is just a quick synopsis of what we saw for the Mann-Kendall analysis.

The results are not 100 percent comparable between the benchmark and the update; because like I said, we added or subtracted a couple of different indices. But overall the update is showing six significant negative trends in the young-of-year data that were not observed in the benchmark. For the yellow eels a couple fewer negative, but also a couple fewer positive increases.

In regional it's about the same. The Manly results, I'm not going to spend a lot of time on this. Just suffice it to say that this analysis showed that there is a consensus for decline in both life stages. There were enough indices that were showing a significant decline for both glass eels and yellow eels that the result was significant.

But we had the same result for the benchmark; so it's not any worse news than we saw during the benchmark. For the ARIMA, again this is a smoothing analysis. You can see the dots on these plots are the observed index and the solid line through them is the ARIMA estimated model. Then you'll also see the dashed line on each of the plots is the 25th percentile.

It's the lowest 25th percentile of the observed values. What we're looking at here is the probability of the index, the ARIMA Index being below that 25th percentile. We only did this for surveys that had 20 years or more. If it was only 19 or fewer years we did not include it in the ARIMA; just because the models fit better with longer time series.

You can see that there are a couple here that are below the 25th percentile, but many of them are not. I'm sorry, this first plot we did not have any for Gulf of Maine or southern New England that met the 20 year requirement; so the first plot was the Hudson River. Here is the Delaware Bay and Mid-Atlantic.

You can see that this ARIMA is very dependent on the first value in the time series. The top right and the bottom left, you see they fit that first year almost perfectly; and then a straight line through the rest of it. It's not always as useful as we want it to be; and then for the Chesapeake Bay and the South Atlantic.

A summary slide for the ARIMA results, the column on the far right shows the probability of being below the 25th percentile value in the terminal year of the index. Just for comparison, we looked at the probability of being below that 25th percentile in 2012; just for a comparison to the benchmark. What you'll see is that most of them did not change that much. We had one that went up pretty significantly, so the New England Alosine Beach Survey went from 34 percent of being below the benchmark in 2012 up to 72 percent. That shows that we've declined over time. But there is one also that went up pretty significantly. I'm looking for it here and I don't see it.

I won't waste our time looking for it though. Overall, most of the surveys did not change the probability of being below that benchmark; since the benchmark assessment over time. Yes real quick, the benchmark had two surveys where we had a higher than 50 percent probability of being below that 25th percentile benchmark. For the update we had three surveys.

All of the others were above that 25th percentile. What this suggests is that the indices are relatively stable, have been relatively stable since the benchmark was done in 2012. The changes that we did see were small; and some of them went up, some of them went down. There was no consistent directionality in the change.

Just a real quick recap; what have we seen so far? We looked at individual young-of-year and yellow-eel indices; they are highly variable. There are no consistent patterns; the same with

coastwide and regional yellow eel and glass eel indices, highly variable and no consistent patterns. We did multiple different trend analyses. We did their power analysis; which shows that many of the indices we're looking at have low power, and maybe not a lot of ability to show us a trend, if it actually occurs.

The Mann-Kendall showed several with significant declines over time. These were mostly the ones with longer time's series that go back to the 1970s and 1980s when we saw that spike in harvest. The Manly Analysis said that there is consensus among the indices for a decline over time; this was similar to the benchmark, and the ARIMA shows us that most are not likely below the 25th percentile value of the index, for the years that we have data for.

Again, we don't have any biological reference points; because the DBSRA was not approved, and we can't develop those without a life history model. We don't have any official stock status determination for the update. The trend analyses did show significant declines in several of the indices over the time period; but they do appear to have been relatively stable over the last decade or so.

The benchmark concluded that the prevalence of the significant downward trends in multiple surveys was cause for concern. The trend analysis results in the update are consistent with the 2012 results, and so the Assessment Committee and the Technical Committee have determined that the stock of American eel remains depleted. That's it and I'll take any questions.

CHAIRMAN CLARK: Thank you very much, Jeff, to you and to the Stock Assessment Subcommittee for another excellent job of analyzing a lot of data. I know there have got to be a lot of questions here, so can I see some hands of those who have questions for Jeff? I see Rob, and Rob why don't you go ahead and

start; and I'll just write down the names of everybody else.

MR. ROB O'REILLY: I have three short questions. Jeff, when you showed the young-of-year indices, and I realize the correlations are really not significance testing and have no cause and effect. But you were pointing out the ones that were positive. But did the Committee do anything as far as ranking beyond the positive. For example, there were some that were 0.5 a few that were 0.2. I mean it is a correlation, so I was just wondering if that occurred.

MR. BRUST: No, we didn't go beyond the correlation analysis, and we need to be careful because the value itself is not as meaningful; because we have different lengths of time series. It's not just the P value. Well, it incorporates the number of years that are available as well. Ranking them just based on the correlation value is not necessarily meaningful.

CHAIRMAN CLARK: Follow up, Rob?

MR. O'REILLY: Follow up with a different question. I don't see a lot of catch-per-unit effort information; and it would be for the yellow eel for the fisheries, and it would be great to see that to get some indication of availability or abundance; depending on which of those it might be showing. Is it just that there is not a lot of information among the states to have that information, or is it something that has been talked about but not completed?

MR. BRUST: I'm trying to remember. I remember talking about it during the benchmark. You're right though. There are not a lot of states with it. I'm trying to remember; I don't think it was included in the benchmark even, so that's why it wasn't included here. I'm looking at Kristen; hopefully she can remember as well.

MS. KRISTEN ANSTEAD: The benchmark did have commercial CPUE for the yellow eels; it was not part of the update, because it was not used in any of the analysis. But it's definitely something we talked about that if we went back to a benchmark we'd try to more thoroughly get that data from the states.

CHAIRMAN CLARK: Is this a follow up, Rob, or is this a different question?

MR. O'REILLY: A different question.

CHAIRMAN CLARK: Well, okay last one.

MR. O'REILLY: All right and it will be my last one. The DBSRA, so from what I read it will be the next benchmark; but there seems to be some promise that that is the way to get these biological reference points so that we're not sort of in a situation where trying to determine what depleted means every time we get an update, how depleted and everything else. I know that you personally worked with the DBSRA, probably seven or eight years ago, not on eel. I think you're probably the person to answer that question.

MR. BRUST: We did use it for eel; and it is one of these promising models to provide reference points when we don't have reliable age data. We still need to be careful using it for eel though. The issue is again, we don't have much if any information both harvest and index information from fresh water.

One of the concerns that were raised is that when we used it in the past we were only modeling the marine portion of the population. In addition, we need to be careful because the model assumes that carrying capacity has been constant over time; and with the advent of migratory barriers and things like that there are things happening with the population. It is suggested that there are things happening with the population; either mortality or carrying capacity or productivity, whatever that need to

also be hopefully accounted for somehow if we do a model like that. Yes it does have some promise; but I don't want to give anyone the impression that it's going to be the silver bullet.

CHAIRMAN CLARK: Next question is Lynn.

MS. LYNN FEGLEY: Thank you, Jeff that was a great presentation. I know this was a challenging one, so thank you. I have one question that maybe has two parts. The first part of it is that there is a lot of discussion in the document about stability in the indices. It seems as though the places where you're picking up trends that either continued or have appeared since the benchmark, are on the edges of the range.

They're in the north and they're in the south, and the stability appears to be in the middle. I am left wondering a little bit about what we do with that information, if anything, because and here comes part two, as a lot of us I think around this table are really struggling to understand what is the right thing to do with eels? Either it has been discussions about where the cap is set and the triggers.

I wonder in the assessment, when we're using trend analysis, if those results that say not significant are actually masking some more positive news; because I guess I don't understand if those trend analyses can account for variability. For example, in an index where you have in recent years, it may not be consistently trending up. But you do see more frequency of higher abundance indices. That is my question; are all of these ticks down this table that say non-significant.

Some of those that say non-significant actually to me, I look at them and I say well that's great. Because there have been five episodes of higher than average recruitment in the last five years, compared to a flat line in the five years before that. My concern is how we are interpreting the results. I'm certainly not

questioning the results of the assessment. But I wouldn't mind hearing some commentary from you on what you think about that trend analysis; and the inherent variability in the system.

MR. BRUST: You are correct. The trend analyses are not providing, they are all lacking in terms of the amount of information that the trend analysis itself can give us; which is why we tried multiple different versions. All I can say though is that we used the ones that we thought were going to give us the information.

We have had conversations about the utility of each one. Yes, questions just like yourself, it looks like we've had five high years in a row followed by one low year. Is it that one low year that's influencing the result of that analysis? None of them are perfect. Again that is why we did multiple different trend analyses; hoping that collectively they would provide us the information we need. I don't know if that's a satisfactory answer or not.

CHAIRMAN JOHN CLARK: Does that answer your question, Lynn?

MS. FEGLEY: I think it did, Mr. Chairman. Thank you, I guess the challenge really is going forward with this, figuring out a way to make sure that we're adequately characterizing the trajectory of the populations. I know there is no real answer for that right now, so yes I am satisfied.

CHAIRMAN CLARK: Next we have Ritchie.

MR. G. RITCHIE WHITE: Jeff, wouldn't you expect constraining harvest like we have for the period of time that we have that that would show more positive effect? If the question is yes then are we possibly looking at a situation that is similar to many of our other species that are not responding to limiting fishing mortality? It's obviously other factors; then should we not then be looking at a different outcome, and not

trying to chase the replenishing the stock to the level that it used to be?

MR. BRUST: A couple of different ways to take that question. First, recognizing that the Board has restricted harvest and all that; and yes, if harvest is restricted enough then you would expect to see increases in population, if the population was able to do so. First point though is that as I've said a couple times, we don't know what's happening in fresh water; and we really don't know how productive this stock really can be, which is partly because of and partly the reason for us doing trend analyses.

One way to respond to that is yes, you've restricted harvest. But perhaps it hasn't been restricted enough. I'm not saying yes or no it has or it has not, because the second answer to that is we already discussed the impediments to migration and things like that; which might themselves be affecting the productivity of the stock.

To your point; perhaps we should not be expecting increases. Perhaps it's just fine where it is right now. On the one hand, perhaps it is other factors, and on the other hand perhaps we just don't have the information we need to have made the cuts required for the stock to come back. It's stable now; that's a good thing. It is no longer declining. The restrictions have at least moved us in the right direction. But I think it's hard for anyone to say if we know enough if that harvest is the one that will cause a stock increase.

CHAIRMAN CLARK: Follow up, Ritchie.

MR. WHITE: Then how long would you be comfortable if the stock continued as it is now? If we don't change mortality and the stock does not respond, how many years do we look at this way, before we say this is not working and we have to do something different?

MR. BRUST: Can I plead the fifth on that? I don't know if I want to give a personal opinion at this point. It's been a decade or so that it's been flat. These critters can live 20, 25, 30 years. It could be that the cuts we've made, the first cohorts after those cuts are just now reaching maturity. I don't know.

Again, we don't have great age data for the out migrating adults. But we know that males are I think it's like six or seven, and it depends where you are along the coast as well. It's different in the north than the south. But males are five, six, seven, and females it could be 20 before they're even migrating out. It could be a while.

CHAIRMAN CLARK: Kirby.

MR. KIRBY ROOTES-MURDY: Rich, just another thing in follow up to Jeff's comments, you know about a lot of uncertainty. I am going to go through this a little bit with the Allocation Working Group summary later. But effectively, you know we know that landings have increased coastwide; relative to the last stock assessment.

In looking at say baselines, if we incorporate that information it's actually been a higher removal than what we had previously. What that means for the population we don't know. We're in a hard pressed spot to try to provide any kind of speculation on that. But that is just something to keep in mind.

CHAIRMAN CLARK: If I could just interject before we go to our next question. Jeff, when you showed the commercial landings. I just wanted to make everybody aware that most of the landings are coming from estuarine waters. The lifespan of eels in the estuary where the yellow eel fishery is prosecuted, is typically from three to six years is where we see them emigrating.

Just that graph you showed with the stable landings that's probably four or five generations

of eels that have out migrated and produced more. That's just something to keep in mind. That upper lifespan is from fresh water, but where this fishery is prosecuted that is not how long they stay in the estuary. With that next question is from Lance Stewart.

DR. LANCE STEWART: The point I would like to make is that I think it's extremely difficult for us to look at young-of-the-year indices and think they're real. The amount of glass eel variation between all these tributaries is so dramatic and changes from year to year; that it's hard for us as scientists to capture a number that would relate even to the estuarine yellow eel stage.

I think that comparison is just hard to ever make. The most important thing is of course the silver eel; and we have very little data that is being collected on the silver eel abundance or most concerning, the mortalities that we could have some effect on changing. Downstream migration, turbines, all that mortality that occurs from man erected structures could extremely effect glass silver eel production; which completes the cycle.

I would like to see some of the states adapt a silver eel census; to go along with the young of the year yellow eel, which I don't think is a connect at all. It's how much it's being produced in silver eel output. That's the main thing. I think we're focusing on the wrong relationship, and trying to make the statistic work; and looking at controlling a local fishery that really doesn't, I think, generate the numbers of the stock that we're looking at increasing.

MR. BRUST: Thank you that's a great comment, and I believe it is included in our research recommendations. There have been a couple of states that have gone beyond just the glass eel surveys and started a yellow eel survey. The research recommendation was to do like full life history surveys; so glass eel, yellow eel, silver eel. I don't know if any state has actually

started a silver eel survey. But it's at least a research recommendation.

DR. STEWART: Now is the time. All the silver eels are migrating out to the Sargasso right within the next 30 days.

CHAIRMAN CLARK: I had Adam on the list next; but I don't see him here. Okay, so next is Pat.

MR. PATRICK C. KELIHER: Jeff that was a great presentation. I think the take home message for me in hearing it, both with the Subcommittee and now is we do have some stability. But I was going to kind of go in the direction that Lance just went. There is such a high variability of catch year to year within the, especially with the young of the year.

There are two elver fishermen here in the audience that could tell you that from where they fish there are wide ranges of product, elvers within those river systems from one year to the next, and why they have to move so much in order to reach their quota. How do we take that into account? I mean just adding a life cycle.

I mean we started our life cycle study within the state of Maine as a requirement of the FMP. Do we need to do more of this? Do we need to under the TC and the Plan Development Teams, are they taking into account temperature issues, flow issues? Sometimes during the spring we could actually miss that run; depending on staffing issues associated with it. How are we addressing those types of things?

MR. BRUST: When we develop the indices we are doing general linearized models; so yes we are trying to take into account those non abundance based factors that might be influencing how many eel come across that we see in the survey each year, so temperature and flow and things like that. I think if we go to, I think it's the first extra slide.

What I did is for the glass eels in particular, we did the long term and the short term combined glass eel indices; and I put them on the same plot here, and they're made up of totally different surveys. The long term is just three surveys, one in Beaufort, one in outside Atlantic City, and one in the Hudson.

Then the short term is all of the state surveys. They're showing a very similar pattern; except for one or two years that are 2008, 2009, maybe 2010. What you see from completely different sets of surveys we're shown a very similar pattern. In any one given system it looks like there is a lot of variability.

But certainly now the longer the time series we get, they are actually showing some consistency on a coastwide or a regional level. You're right though. It's always been a concern with the Technical Committee about the inter-annual variability in the glass eel surveys. But I was actually pleasantly surprised when I put these on the same plot.

They are showing some level of consistency among the two different combined indices at a coastwide level. That doesn't get rid of the concern, and I think every year the Technical Committee talks about the variability in the glass eel surveys. Should we drop some? Should we add more? What do we do with these? But at least the longer the dataset becomes, we're starting to see patterns.

CHAIRMAN CLARK: Next question is to Robert Boyles. Oh, you're resting your hand, okay then do we have Lynn? Did you have another question?

MS. FEGLEY: Yes, just a quick follow up into Ritchie's point, and a follow up to my original comment. I think Jeff had just said that you know the news is that we seem to have gotten ourselves into a place of stability. I think when you look at the regional differences; and one of the issues that we have in Chesapeake Bay.

When you look at that index, it is Figure 58 in the stock assessment. The Chesapeake Bay yellow eel index is increasing, so the availability of these things for whatever reason, in the middle of the range seems to be doing something different than it is on those edges. That sort of reaches a little bit to Ritchie's point on what are our management actions. What levers are we pulling to control this thing?

MR. BRUST: You're right Lynn. I'm looking at the plot right now; it's Slide Number 33, if you want to pull it up. It is increasing. I do have a note here that I unfortunately never followed up on. For some reason that index stops in 2010 in this slide. I don't recall why. But that doesn't mean it's not still increasing, I just don't know what's happening after that increase.

MS. ANSTEAD: It's because one of the surveys that that index is based on wasn't updated for the update. If you recall for one of the yellow eel regional Mann-Kendall's that it was positive in the benchmark; and still positive for that survey. It's because that survey was actually not updated, so it's the old dataset that went into that index, and that's why that's an abbreviated time series.

CHAIRMAN CLARK: Thanks. Jeff, I just had a question myself, and it kind of follows up on what Lynn was saying. Given that 90 percent of the yellow eel harvest is coming from the Chesapeake and the Delaware drainages, and those areas showed so little trend. Did the Subcommittee think about that? Why a panmictic species like this would only be showing declines in areas where it's not exploited or lightly exploited?

MR. BRUST: I don't recall getting into discussions like that but it's certainly worth looking into.

CHAIRMAN CLARK: Then just one other thing that I'm just a little confused about in there was why the power to detect negative trends was

better than it was to detect positive trends; and does that play out in the surveys you found significantly decreasing. Would a survey having a similar increasing trend not have been found to be significant because of those differences?

MR. BRUST: To be frank, someone told me why it is easier to detect a negative trend than a positive trend. But I don't recall what the answer was. John Sweka did the analysis and he can explain it. But the differences were very small between the power to detect a positive versus a negative trend. I don't think it would have influenced the results at all.

CHAIRMAN CLARK: Okay thanks, just curious; any further questions? Lance.

DR. STEWART: Just a concern about the young-of-the-year index, whether it's real or not. If the states are doing it, what type of consistency between states in the type of sampling gear they're using; the length of time they're using to generate that young-of-the-year quantity is extremely important. It is very variable; if you've ever fished glass eels.

They pulse. It's a night fishery. Whether you use fyke nets or dip nets could be entirely different on what you get as a quantity. I was just wondering if there is some coordinating aspect other than this Board of using a gear that are comparable state to state, or any particular stream to stream. What you pick as an indicator stream is extremely important. I guess if we had more glass eel fishermen they would be able to guide us. Given the lack of that we have to take that into our own management methods within the states. Type of gear, stream selected, to have any confidence whatsoever in young-of-the-year values.

MR. BRUST: You're right. Again, the TC has talked about all these different issues. Right now the way the plan is written is I believe it is up to the state to determine the location and

the gear type. Each state probably went with what was easiest for them; because we're all under financial and staffing difficulties.

I would expect we all went with the lowest common denominator. Right now it is not dictated location or gear type. I guess if we went that route and everyone had to use the same gear and all that we would lose the time series that we have now. We would have to start over. Recognizing it as a concern, but also there are cons to taking it to the next step as well.

CHAIRMAN CLARK: That's right, Jeff. When the plan was first passed, because this is the first time a plan mandated a fishery independent survey like this, there was a lot of concern about having it as easy for the states to do as possible; and to use whatever was being used there. Do we have any further questions for Jeff?

Seeing none; thank you again very much for that great presentation. You'll see the second part of this agenda item is to consider management response to the stock assessment update. I thought we would hold that off until the Item 6, where we're going to be discussing broader management responses to American eel.

#### **CONSIDER THE 2018 GLASS EEL QUOTA FOR MAINE**

CHAIRMAN CLARK: With that; let's move it on to Consider the 2018 Glass Eel Quota for Maine. If you will recall from Addendum IV, Maine's glass eel quota was set for three years; which expired in 2017. Then there is the option in the Addendum to renew Maine's quota for 2018 at the same level as the Addendum IV level.

But to do that the Board has to vote to make that motion to do so. If we can take care of that then we can get on to discussing in the next item management responses that would take

care of some of these issues. Oh well that's even better, Kirby has got a presentation on this.

MR. ROOTES-MURDY: I'll go through this pretty quickly. John highlighted some of the main points I was going to go over. There are the Addendum IV provisions, there is the prior Allocation Working Group recommendations that I think are important to keep in mind. There is the current Allocation Working Group recommendation that was formed at the last Board meeting, and then next steps and I'll take any questions.

Maine's glass eel quota was established through Addendum IV. Currently that is at 9,688 pounds. It's based on the 2014 landings level. That was a recommendation that came from the last Allocation Working Group. The quota was specified for three years, for 2015, '16, '17, and the quota would be as stipulated in the addendum; to be reevaluated after the three years, but prior to the 2018 fishing season.

The 2014 Allocation Working Group laid out four main reasons for why that allocation should be set where it was. The first was uncertainty in the added conservation benefits with a lower quota. The second was the social-economic impacts that would potentially play out for local communities that are fishing on this resource. The third was expected increased levels of poaching and enforcement problems by lowering the quota further; and the fourth, and I'm going to just make sure this is noted or caveated at least. There is an expected inability for Maine to complete an important life cycle study. As you all know, part of Addendum IV lays out that Maine is to do that.

They have been carrying that out. They have 2016 data that I believe they're getting ready to share with the Technical Committee soon; so that's just something to note there. Now, when the Allocation Working Group met, we reviewed the glass eel harvest over the last 11

years, and I've got up on the screen now what those landings were.

These landings were validated with the state as part of the stock assessment process; in part thanks to the work of ACCSP staff. As you can see, there is generally good tracking with what the Addendum IV numbers were versus what the numbers were validated through 2017; 2016 and 2017 are still preliminary. Please keep that in mind when looking at these.

But you can generally tell that in 2016 and '17, landings tracked very well with the quota, approximately 94 percent for those two years of Maine's quota; 2015 is an outlier year. When the Allocation Working Group that was formed at the last Board meeting met in September via conference call, there was one recommendation by one of the Working Group members to increase Maine's glass eel quota back to the 2014 quota level of 11,479 pounds.

But overall the group recommended that Maine's glass eel quota should be maintained for 2018 at the current level that has been in place the last three years of 9,688 pounds. With that for the Board's consideration to specifying Maine's glass eel quota for 2018, again as John alluded to, maintaining the same quota level is allowed under the provisions of Addendum IV. An increase in the quota level would require a new addendum. With that I'll take any questions.

CHAIRMAN CLARK: Any questions for Kirby on Maine's 2018 quota? Mark.

MR. MARK ALEXANDER: Kirby, I don't know the details of the previous Addenda, but is there a default value to which it would fall if the Board doesn't do anything, or what happens?

MR. ROOTES-MURDY: I would just point out we kind of had a similar discussion about this with menhaden before, which is right now without a specified quota. There isn't a quota, so

therefore harvest could continue; but under no restrictions, effectively.

CHAIRMAN CLARK: Any further questions? Emerson.

MR. EMERSON C. HASBROUCK: Kirby thank you for your presentation. I'm not clear as to what the reasoning is behind the Working Group's recommendation that the quota be maintained at the same level and not increased.

MR. ROOTES-MURDY: There are a number of Allocation Working Group members around the table; and they may be able to speak better to why they felt that it should be maintained for the 2018 season. Again, this is just the recommendation for 2018 only. The second part of my presentation that is under the next agenda item, will lay out the other points that were raised by the Working Group.

CHAIRMAN CLARK: I would just reiterate, Emerson, it's in the Addendum. The Addendum gives the Board the ability to extend Maine's Addendum IV quota for one additional year; which would be 2018. That's why the Working Group recommended that. Michelle.

DR. MICHELLE DUVAL: Yes I was going to reiterate that as well as, I think once Kirby gives his presentation that if the Board should choose to move forward with an Addendum, I think it will be revealed that the Working Group's recommendation was that Maine's glass eel quota would then be reconsidered through the course of another addendum.

CHAIRMAN CLARK: Yes, Emerson.

MR. HASBROUCK: Follow up. Then my understanding is that in terms of process, the main reason was keeping it at the same level so that we didn't have to initiate another addendum at this point in time; unless we decide to do so under the next agenda item? Is that right?

CHAIRMAN CLARK: Obviously it takes a while to pass an addendum; so there probably wouldn't be an addendum in place for 2018; which would mean Maine would have no quota during 2018. The thinking was if we initiate an addendum now, Maine will fish under this quota during 2018, the Addendum IV quota, and then there will be an Addendum V for 2019. Are there any further questions? Cheri.

MS. CHERI PATTERSON: I don't have any questions. I would like to make a motion.

CHAIRMAN CLARK: Let me just let Toni get in on this.

MS. TONI KERNS: It's the charter that allows us to extend the provision of this addendum. You can extend a provision of an addendum for six months, and then you can extend it again for another six months; while working on a revision to the document, because the Addendum actually for the glass eel harvest expires at the end of this year. We said we would revisit it in 2018. It would be using that charter provision, so it would just be for six months that you would extend it; and then if we need to we could extend it.

CHAIRMAN CLARK: It was written right into the Addendum; wasn't it, Toni? I mean it says it right in the Addendum that it could be extended for an additional year.

MS. KERNS: I don't see it in the document, John.

CHAIRMAN CLARK: In any event, it can be done, right? Okay, Cheri do you want to go ahead and make a motion?

**MS. PATTERSON: Yes. I would like to make a motion that Maine's glass eel quota shall be maintained for 2018 at the status quo level of 9,688 pounds and leave it at that for now.**

CHAIRMAN CLARK: Do we have a second? Pat Keliher. Toni has just informed us that we need a two-thirds vote for this. Before we get to that though, are there any comments or questions about this? It will be a roll call, okay. Ritchie White.

MR. WHITE: Just to clarify comments that you made that if this does not pass it doesn't mean that Maine does not have any quota; it means they have unlimited quota.

CHAIRMAN CLARK: I'll throw that back to Toni.

EXECUTIVE DIRECTOR ROBERT E. BEAL: It's a good question, Ritchie, and we debated that for a while in menhaden. It's unclear. The plan is silent. There are two perspectives that came out in the menhaden conversation; which were there is unlimited quota or there is zero quota. The plan doesn't help us clarify that. It's unclear what happens if a motion similar to this or some other action isn't taken to set a quota for Maine.

**CHAIRMAN CLARK: Is there any further discussion of this item? Are there any objections to this motion? Seeing there are no objections therefore it obviously passes by a two-thirds majority, so the motion is passed.**  
Bob.

EXECUTIVE DIRECTOR BEAL: Now that the vote has been taken, just a technicality. Since the charter only gives Board's the authority to extend for six months, six months from now we're going to have to revisit this just essentially revote on it, or verify at the Board level that they want to extend it through the end of the calendar year. It's a technicality; but I think the Board's intent is clear; we'll just have to go through that technicality.

CHAIRMAN CLARK: Yes, Cheri.

MS. PATTERSON: I would just like to get some clarification. Are we looking at a year from

now, if we go six months, in six month increments, or do we need to have this start January 1?

EXECUTIVE DIRECTOR BEAL: I think based on the conversation it is clear the Board wants to, you know it's for 2018, so the quota that's in place right now continues through the end of this calendar year and the 2018 quota starts on January 1, 2018. I think the record is pretty clear that the intent of the Board is to start this at the beginning of 2018; carry it half way through '18, revisit this as a technicality, and then complete 2018.

CHAIRMAN CLARK: Okay that should conclude that agenda item.

#### **AMERICAN EEL ALLOCATION WORKING GROUP REPORT AND RECOMMENDATIONS**

CHAIRMAN CLARK: Now we're on to the American Eel Allocation Working Group Report and Recommendations; and Kirby has a report on that.

MR. ROOTES-MURDY: I think that hopefully my presentation will outline kind of the overall goals that the Working Group was trying to get at; and might alleviate any concerns that were raised on the timetable for the motion that just passed. There is an Allocation Working Group that was formed as I said; coming out of the last Board meeting. I'm going to go through a little bit of background. The issue items and recommendations as we've now dispensed with Maine's 2018 glass eel quota.

There are just two parts to it that I was going to walk through fairly quickly; and then take any questions. First is background. We have Addendum IV that was passed in 2014 that laid out yellow eel quota management and allocation, and the glass eel management for Maine. In the summer of 2016 we had a proposal from New York to change the state-by-state quotas; that was shelved until after the

stock assessment update. In the summer of 2017 we provided the Board with an update on 2016 preliminary yellow eel landings; effectively 1A of one of the management triggers we have in Addendum IV. Based on that information, if it held up through finalized landings for 2016, we will have triggered the first part of one of our management triggers.

In September of this year we had this Allocation Working Group meet. Just a typo I have up here, it says Rec. It's actually Allocation Working Group. I deal with a lot of other Rec working groups, so sorry about that. But they met by conference call twice; and developed some recommendations.

Addendum IV's provisions for yellow eel, we have a coastwide cap of 907,671 pounds. It's based on average landings from 1998 to 2010. There is also a filtering approach that I can try to provide a little bit more clarity on, if there are any further questions. But basically under this coastwide cap there are no state-by-state quotas currently. But if the coastwide cap is exceeded, either by one of the two management triggers we go to that.

The first one is if the coastwide cap is exceeded by more than 10 percent in any given year, so 998,438 pounds. The second trigger would be if the coastwide cap was exceeded for two consecutive years; so either by a pound or 50 pounds or 1,000 pounds. Two years of consecutively exceeding the coastwide cap per the Addendum IV provisions, means automatic triggering of state-by-state quotas.

The new coastwide quota would be 907,669 pounds under that approach. If a state had a quota overage, the following year there would be pound-for-pound paybacks. There would be quota transfers that are allowed between states to cover those overages; but just to be clear that if there were no transfers granted, then that state would be liable for dealing with that pound-for-pound payback.

It's also important to keep in mind that since Addendum I to this FMP, there has been an effort to try to improve the accounting, the monitoring of landings across the coast. Addendum IV had implementation plans to further get at better accounting of the commercial eel landings. States needed to demonstrate that they would both be able to monitor landings in a situation where we moved to state-by-state quotas if needed, as well as have metrics in place to close their fishery.

Many states still are on a monthly reporting basis; and it's a little confusing, because in some instances states may have daily reports, but those aren't collated until the month level. We aren't effectively really treating that as daily or weekly reporting. Many states rule making process would create challenges if an automatic triggering of two years exceeding the coastwide cap, or one year exceeding it by 10 percent caused an automatic tripping of the management trigger and implementing state-by-state quotas.

With the help of ACCSP staff, I just want to call them out for all their hard work on going through a process with the states as part of the stock assessment; to get as much of an updated set of information across the coast. The stock assessment lists the information as preliminary; it's an important distinction.

Today I'm offering up what we call validated yellow eel landings. They are not final yellow eel landings. Validated means that ACCSP staff has worked with the states to go back and verify that these landings are in fact true; looking at compliance report information. ACCSP will finalize data later this fall; so that's just an important distinction. I have up on the screen now landings for most of the states and the coastwide total. There are three states that are either at zero or confidential level of landings; and so I don't have those listed here.

Some other important caveats when it comes to looking at the landings information that has been validated. It's from the states during the period of mid-August through early October, 2017. It includes validated landings from all of the state partners; with the exception of Connecticut, whose landings were not included as being updated and validated, due to not responding to the request for validation.

Potomac River Fisheries Commission data is not validated by gear type; and the data is provided using state landings from Maryland and Virginia that have validated their state landings. But in turn those landings that are attributed to PRFC obviously take place either in Maryland or Virginia; because you can't land in Potomac River Fisheries Commission.

New York also provided updated information for 2015 and 2016. They added any non-dealer fishery landings to their dealer landings; and since the dealer reports don't always list the correct gear type, they distribute the total dealer landings amongst the gears reported by fishers that are sold to a dealer.

The Allocation Working Group discussed the concerns around automatically triggering the state-by-state quotas; given the timetable of when landings are actually finalized in a given year. As you are aware for 2016, as I said, we would not know for sure that final landings indicate that the coastwide cap either exceeded by 10 percent, or two consecutive years, until later in the fall.

Trying to implement something like that midseason presented a lot of concerns. The two recommendations that the Allocation Working Group make are to move to implement state-by-state quotas beginning January 1, 2019, if the management triggers have been exceeded based on final 2017 landings information.

That should be available in the fall of next year. The second is to initiate a new addendum to consider alternative allocations, management triggers, and coastwide caps to the current management program for both the yellow eel and glass eel fisheries. Additionally there are the commercial yellow eel state-by-state quotas.

The Allocation Working Group noted that based on the stock assessment information that was provided to them; at that point preliminarily in September there was interest in considering different baselines for basing allocation on for landings from the years of 1998 to 2016. The interest largely stems from regulatory changes that have been put in place since 2014.

It's important to note that the prior Technical Committee recommendation, when asked as part of Addendum IV what the coastwide cap should be set at, recommended a 12 percent reduction from the baseline period. That was ultimately not implemented. The last thing I just wanted to share with this group regarded validated landings for 2016.

If, say we were under a situation where state-by-state quotas were implemented, comparing the states quota to their validated 2016 landings, there are a number of states that would potentially be over in the future if landings were consistent between now, and say next year, if the same harvest level was seen in 2017 as we're seeing in 2016. That would apply to Maine, Connecticut, New York, Maryland, PRFC, Virginia, and then obviously coastwide there is a slight overage. That is just something to keep in mind. This is a hypothetical; I want that to be clear. We are not obviously under state-by-state quotas at this point. With that I'll take any questions.

CHAIRMAN CLARK: Okay do we have any questions for Kirby about the Working Group's recommendations? Bob Ballou.

MR. ROBERT BALLOU: Regarding the first recommendation. I get the point of extending out to January, 2019, the implementation of state-by-state if that trigger were hit. Does the Addendum allow for that?

MR. ROOTES-MURDY: Currently it does not. This is another part of the Commission's process where per the charter requirements, I believe, and I'll look to Bob and Toni to give some more clarity on it. But that we can extend through emergency action the ability to respond to management, effectively delaying based on that.

Now, keep in mind that there are two parts. There is the first recommendation regarding if the coastwide cap was triggered. The second is to initiate a new Addendum. Keep in mind that if a new addendum were to be initiated, and say approved in spring, 2018. That would then possibly change what the coastwide cap is, what the allocations are, and the response. That's something to keep in mind that this is another kind of stop gap or emergency rule type of approach.

CHAIRMAN CLARK: Toni.

#### **CONSIDER MANAGEMENT RESPONSE TO STOCK ASSESSMENT UPDATE**

MS. KERNS: Emergency action has a series of definitive things that go along with it to justify the emergency action; and I'm not sure we would meet those criteria here. I mean the coastwide cap is set in Addendum IV for yellow eel, and it doesn't have an expiration date like the glass eel quota does. But the Board obviously can work on an addendum to make a change to that cap, and the provisions of that cap.

The Working Group obviously did talk about the ability to implement if the cap is exceeded two years in a row, when they could actually do that; because we don't have final data until the

end of the year. It wouldn't come into play until later on, and if the Board does do an addendum this year, I would assume it would be finalized before the end of the year; which then would replace the Addendum IV provisions, and hopefully work out the problems.

CHAIRMAN CLARK: Are there any other questions for Kirby? Kirby, would you just once again, did you mention where the cap was set? Was it the 2010 landings level?

MR. ROOTES-MURDY: I would have to double check on the exact number. I believe there was a filtering process that was applied; because it's not simply just the average number of years of 1998 to 2010. That was the base years, and then those were kind of augmented based on some more recent year's data, and then a filtering approach, as I said.

CHAIRMAN CLARK: Yes, Jim.

MR. JAMES J. GILMORE: Kirby, can you put up that last slide, the hypothetical overages? If we got into transfers to cover this thing there is obviously not enough transfers to cover all the overages. We would get into an issue of who can get to North Carolina faster. Has there been any thought to how we would deal with that whole issue?

CHAIRMAN CLARK: If I could take that. Yes I mean one of the questions at the Working Group was wrestling with was these problems we know exist in the state-by-state allocations that went back. The difficulties of implementing all this, and of course the first problem being we won't even know for sure whether we have to do it until later next year.

That is why as long as we have to go to an addendum process anyhow, to address the glass eel situation in Maine. The Working Group thought it would be a good idea for the Board to consider including in the addendum

the yellow eel provisions also; just look at everything in the yellow eel.

As we saw in the presentation, our landings obviously went above the cap in 2016, but overall they've been steady for over 20 years. I mean fluctuating in a pretty narrow range. For most other fisheries that would be seen as a pretty good thing; but I'm inserting my opinion here, and I don't mean to do that. Anyhow, I guess at this point, Lynn, do you have a question?

MS. FEGLEY: I was prepared to make a motion, Mr. Chairman; and if I get a second, I would speak to it.

CHAIRMAN CLARK: That would be great. Please proceed.

**MS. FEGLEY: I move to initiate an addendum to consider alternative allocations, management triggers, and the coastwide cap, relative to both the yellow and glass eel commercial fisheries; starting in the 2019 fishing season.**

CHAIRMAN CLARK: We have a second, Marty Gary. Lynn, would you like to speak to the motion?

MS. FEGLEY: Yes, thank you. Just briefly, I really wanted to just speak a little bit, and obviously I come from a state with a fairly large dog on the field. You know Addendum IV was in a way very well done, because by implementing this cap it bought us some time, but also provided the impetus to control annual mortality to constrain the harvest a bit on eels.

I think that was effective. It is clear when you go back through Addendum IV that there was a lot of discussion about what would happen when we go to a state or jurisdiction specific allocation that it's problematic; because of the variations in the market and in the environmental conditions.

Here we are staring down the barrel of a trigger, which maybe in retrospect wasn't as well thought out, because now we're in a situation where if we go over by just one eel, we're going to find ourselves in the situation where we have jurisdictional quotas that can be very hard to create a lot of legislative and administrative burden to monitor. I would hope that with this addendum we can really start to address some of these issues that maybe Addendum IV didn't quite get to; and I would also say that because allocation is what allocation is, all of us are looking at what's going to happen when that trigger is fired. But I think I would encourage us collectively, as we travel down this road, to think really hard about what the specific allocation problem is that we're trying to fix; and target the fix rather than just open up for another spicy discussion about, actually the discussion can be spicy. But the point is that we just really try to focus on fixing where the issues are.

CHAIRMAN CLARK: Do we have further discussion of the motion? Rob O'Reilly.

MR. O'REILLY: I would just like to ask if the alternative allocations include exploring a different baseline. When 2010 was chosen, it was on the basis of that was the last data year from the benchmark. We've now had an update, so is it possible that the alternative allocations also include exploring a different baseline?

CHAIRMAN CLARK: I think that was the intent of the Working Group, Rob, to put all options on the table; any further discussions? **Okay, in that case we can put this motion to a vote. Are there any objections to this motion, first of all? Oh, well seeing no objections, the motion therefore will pass unopposed. Okay, so that settles that. We'll be going to a new addendum.**

**OTHER BUSINESS**

CHAIRMAN CLARK: That ends that item of the agenda, and brings us to other business. A couple of quick items, we have been in contact with a representative, the Minister of Canada's Department of Fisheries and Ocean, Minister Le Blanc, and there is a possibility the Minister will be coming to the winter Board meeting in February; to address the Board and discuss invigorating the MOU between, I think it was between Canada and Atlantic States, Great Lakes Fisheries Commission, and NOAA and the U.S. Fish and Wildlife Service.

That should be an interesting possibility for the winter meeting. Other than that the only other new business we had is once again, if you can look at included in the supplemental materials is a little summary by staff of the activity level needed for American eel. Right now it's at low, since I guess the assessment was just completed. But now that you're doing an addendum are you going to adjust this, Kirby?

MR. ROOTES-MURDY: That's another point that as we had this morning with Shad and River Herring, our diadromous double header for today, to keep in mind when making changes or tasking the TC or initiating new management documents; that it adjust what we say the activity level is for some of these groups.

CHAIRMAN CLARK: Ritchie.

MR. WHITE: Thinking over this motion. This really is starting from scratch; the way I read it. The last time we started from scratch it took a lot of work of a Working Group to come to something that the Board would agree to. I'm wondering whether that makes sense to start with a working group on this right out of the gate.

CHAIRMAN CLARK: That's a great suggestion, Ritchie. Michelle.

DR. DUVAL: I think that's really what Lynn was alluding to, Ritchie, is to really focus on what the heart of the issue is. I mean I think clearly fisheries wax and wane. I mean the intent of the coastwide cap was you know to constrain harvest. Certainly in some areas the fishery has grown, and in other areas it's waned a bit. I think a lot of that at least in North Carolina's instance, has to do more with market than availability of the resource, and so it's really how do we address the waxing and waning needs of the fishery; and perhaps try to avoid having to implement state-by-state quotas in the first place. I think that's really kind of what Lynn was getting at as we move down this road.

CHAIRMAN CLARK: Russ.

MR. RUSS ALLEN: Just following up to what Ritchie said about the Working Group. I'm sure as hell glad I'm retiring, and I don't have to be on that Working Group.

CHAIRMAN CLARK: We can pull you back in, Russ. Maybe we'll get Des on there for you too. Lynn.

MS. FEGLEY: Just one quick follow up. I think that it is true; when we went through the allocation process last time that the Board really wound up doing the best that they could possibly do to mitigate damage equitably to the different jurisdictions. That's one of the reasons why I think it's important for us to focus on the problem.

Like Michelle said, you know how do we get at this fluctuating variability? I would also hope, what I didn't say is I would like to think that there is a way to responsibly manage eels without state-by-state quotas. That's just something for everybody to ponder; if they can think of a way to do that let somebody know.

CHAIRMAN CLARK: Thanks Lynn, and with that is there any further business? Oh, Bob.

EXECUTIVE DIRECTOR BEAL: Just a thought. When we're looking at the overages or the hypothetical overages from 2016, some of the individual state overages percentage wise was pretty large. But when you look at the whole coast, I think the coastwide overage was barely 2 percent. There wasn't this flagrant exceeding the coastwide quota.

Overall the fishery was constrained to the quota, more or less. I think that's something to be proud of. Potentially triggering a very expensive state-by-state quota system and a state-by-state monitoring system, and everything that comes along with it for about 2 percent of a quota that's a lot of effort; the value of the eels that we went over is much less than the expense of the monitoring system we would have. Trying to figure out some way to work within the coastwide quota, we're not that far off right now. We just need to shuffle the deck a little bit, maybe.

CHAIRMAN CLARK: I hear that Bob. Loren.

MR. LOREN W. LUSTIG: Perhaps this is out of order, but I did see Mitch's hand up. Would it be possible to hear what he has to say regarding public comment?

CHAIRMAN CLARK: Sure, come on up Mitch.

MR. FEIGENBAUM: Thank you, Loren, and thank you Mr. Chairman. I just wanted to make a quick point and then ask one quick question. Everyone should remember that in 2014, when we struggled when the Working Group struggled with these very issues, we also had the Fish and Wildlife Service second endangered species assessment being done. Obviously the fact that that has been completed now, and completed with a pretty definitive statement should provide some further clarity as we go forward. My question was you heard two people during the public comment mention that the aquaculture provision in Addendum IV,

as currently written, is implicating future decisions made by people in the industry.

I'm aware that the Technical Committee has in fact struggled with criticisms or concerns about the aquaculture quota that exists now. I know that a party from another state has been before the Technical Committee several times addressing concerns. I just was hoping, could we clarify or could we assume that consider alternative allocations is language broad enough to contemplate the fact that that would be a subject of discussion during the plan development.

CHAIRMAN CLARK: Well Mitch, we're going to be considering the glass eel quota and all the glass eel items also in the addendum. I'm sure that will be part of it. One other issue that Kirby has looked into, and can speak to now, is trying to get better data on the exports of eels. He has some information about site ease.

MR. ROOTES-MURDY: U.S. Fish and Wildlife sitting at the table might be able to speak to this better than I. But Kristen and I were approached about the recent stock assessment update as part of the Site Ease Process that took place last year. There was a request to better evaluate the trade of *Anguilla* species worldwide.

U.S. Fish and Wildlife, I believe, is going to be trying to work with whoever the appointed contractor is of Site Ease, to compile a report of landings; and in turn export/imports of eels leaving the U.S. and going to other markets. That is something that is going to start to rev up, my understanding is in the early part of next year.

But that was the extent of the information we were given on our call; and there may be an opportunity for those representatives from the Fish and Wildlife Service to come and maybe give some more clarity on how that report is going to be generated, and what the potential

implications of it are regarding the Site Ease Process.

CHAIRMAN CLARK: Sherry, do you have any information on that?

MS. SHERRY WHITE: I don't have any information other than what Kirby presented. I think that was accurate, and we would be happy to have Fish and Wildlife Service staff come and update the Board.

**ADJOURNMENT**

CHAIRMAN CLARK: Thank you, great. Is there any other business to come before this Board? Seeing none; we are adjourned.

(Whereupon the meeting adjourned at 4:16 o'clock p.m. on October 17, 2017)



# Atlantic States Marine Fisheries Commission

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## MEMORANDUM

January 8, 2017

**To:** American eel Management Board  
**From:** Kirby Rootes-Murdy, Senior FMP Coordinator  
**RE:** AP Call Summary (December 2017)

**List of AP Participants:** John Pedrick (PA), Mari-Beth Delucia (Chair; TNC), Tim Brush (NH), Mitch Feigenbaum (PA)

**Staff:** Kirby Rootes-Murdy (ASMFC), Dr. Kristen Anstead (ASMFC), Jeff Brust (SAS Chair; NJ)

The Commission's American eel Advisory Panel (AP) met on Thursday December 21<sup>st</sup> 2017 to receive a presentation on the 2017 Stock Assessment Update, recent Technical Committee (TC) work, and management actions.

Jeff Brust the Stock Assessment Subcommittee (SAS) Chair presented the Stock Assessment Update. The assessment updates the 2012 American Eel Benchmark Stock Assessment with data from 2010-2016. Trend analyses of abundance indices indicated large declines in abundance of yellow eels during the 1980s through the early 1990s, with primarily neutral or stable abundance from the mid-1990s through 2016. Total landings remain low but stable. Jeff highlighted that based on these findings, the stock is still considered depleted though no overfishing determination could be made based on the analyses performed.

Based on the presentation a few AP members had questions on whether any information from fishing license and effort information could help demonstrate what the stock size was in the 1970s; Jeff noted that most states did not start collecting eel license and harvest data until the 1990s (prior to that NOAA fisheries primarily collected only landings information), which in addition to other data issues, is why the SAS wasn't been able to ascertain a historic stock size.

Next the group discussed efforts in Canada to also conduct a range-wide stock assessment. Commission staff indicated that they were aware of these efforts and are planning to reach out in 2018 to better understand both the approach and data that Canada Department of Fisheries and Oceans (DFO) plan to use in better assessing the American eel population. The AP encouraged Commission staff to work with Canada DFO complete a new stock assessment.

Kristen then presented some of the recent items the TC has been working on; these items include planning for upcoming Ageing Workshop, Nematode Research conducted by VIMS graduate student Zoemma Warshafsky, and analysis on how well young of year (YOY) fishery independent surveys track regional and coastwide abundance. Kristen highlighted that ageing, as with other marine species, is an important component of trying to better understand the age structure and growth rates of eels. Currently, many of the labs that age eel otoliths have varying levels of experience in reader of the otoliths and that there is generally poor precision and agreement

between the labs in coming up agreed upon ages. The aim of the upcoming ageing workshop is to identify potential biases as well uniform readings protocols.

Over the last two years, Zoemma Warshafsky has provided the American eel TC with updates of her research that has focused on *Anguillicoloides crassus*, a non-native swim bladder parasitic nematode. This type of nematode has been found to decrease swimming ability, decrease survival, reduced growth, cause migration failure. Zoemma's research has demonstrated that glass eel life stage eels have a lower infection rate than yellow life stage eels; the probability of swim bladder damage increases with the size (length) of the eel; the timing of when eels become infected with disease caused by the nematode is most common around age 2 and during the winter months of on November through February; and the disease increasing mortality. Zoemma is developing a quick reference field guide so that state samplers who collect biological data for American eels can score the rate of infection using the same protocol coast-wide; if ready, it will be presented at the ageing workshop in January.

Next, Kirby presented on recent management actions. Starting in 2016, the Commission's American Eel Management Board (Board) approved North Carolina's American Eel Farm (AEF) aquaculture program, allowing the harvest of up to 200 pounds of glass eels for domestic aquaculture purposes. In 2017, AEF harvesters captured 775 glass eels, approximately 0.25 pounds. North Carolina submitted a revised plan for continuing the aquaculture program through 2019, with the Board set to review results of the 2018 fishing season later this year. In discussing this item, AP members asked whether North Carolina's aquaculture program requires the state to conduct a life cycle survey; Commission staff clarified that given aquaculture program only harvest update to 200 pounds, neither North Carolina nor South Carolina- which since the implementation of Addendum IV in 2014 has had a negligible harvest of glass eels (i.e. much less than 750 pounds) – are not required to have a life cycle survey.

Also in 2017, the Management Board initiated a draft addendum aimed at addressing the coastwide cap, the management triggers, and the state by state allocations for the yellow eel fishery as well as Maine's glass eel quota. Commission staff indicated to the group that once the draft addendum document has been approved by the Board for public comment, staff will organize a conference call for the AP to provide comment on the document. Mitch Feigenbaum requested that the addendum consider including options that allow for the states to collectively pool 200 lbs harvest allowances for aquaculture programs (i.e. NJ, DE, PA, would be able to harvest 600 lbs collectively for domestic aquaculture purposes). Commission staff indicated that the Board had formed an allocation Working Group that is working with staff were developing potential options around this concept. Kristen did remind the group that Addendum IV contained language regarding the allowance of glass eel harvest for aquaculture purposes so long as areas where the eels are harvested from have a minimal contribution to the spawning stock, and cautioned that pooling harvest allowances across multiple states, if allowed, so keep this consideration in mind. In further discussing this idea and other approaches, such as purchasing glass eels from Maine dealers, Mitch indicated that the market price right now is cost prohibitive for the purposes of purchasing for stock aquaculture facility.

Last, Mari-Beth brought up that American eel is scheduled to be re-assessed by the IUCN in 2018. The IUCN currently lists American eel on its red list, which indicates species it deems are at risk of extinction and uses the designation to conservation activities of governments, NGOs and

scientific institutions. The IUCN does not have regulatory authority and its conservation status determination of species does not have explicit implications for countries that current manage American eel or other *Anguilla* species, but the conservation status can impact the international public perception of a species as well as influence trade. Any new information or status determination made by the IUCN will be shared with AP members once available.

If you have any questions, please contact Kirby Rootes-Murdy, Senior FMP Coordinator by phone: 703-842-0723 or by email to [krootes-murdy@asmfc.org](mailto:krootes-murdy@asmfc.org)