Atlantic States Marine Fisheries Commission

Tautog Management Board

October 16, 2017
1:15 – 2:45 p.m.
Norfolk, 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 *(A. Nowalsky)* 1:15 p.m.

2. Board Consent 1:15 p.m.
   - Approval of Agenda
   - Approval of Proceedings from August 2017

3. Public Comment 1:20 p.m.

4. Amendment 1 for Final Approval *(T. Kerns)* **Final Action** 1:30 p.m.
   - Review Regional Proposals
   - Consider Remaining Issues in the Draft
   - Consider Final Approval of Amendment 1

5. Consider Approval of 2016 and 2017 FMP Review and State Compliance Reports *(C. Starks)* **Action** 2:35 p.m.

6. Other Business/Adjourn 2:45 p.m.

The meeting will be held at the Waterside Marriott Hotel, 235 East Main Street, Norfolk VA; 757.627.4200

Vision: Sustainably Managing Atlantic Coastal Fisheries

MEETING OVERVIEW

Tautog Management Board Meeting
August 3, 2017
1:15-2:45 p.m.
Alexandria, Virginia

Chair: Adam Nowalsky (NJ) *Assumed Chairmanship: 05/15*	Technical Committee Chair: Jason McNamee (RI)	Law Enforcement Committee Representative: Jason Snellbaker
Vice Chair: Dan McKiernan	Advisory Panel Chair: VACANT	Previous Board Meeting: August 3 , 2017
Voting Members: MA, RI, CT, NY, NJ, DE, MD, VA, NMFS, USFWS (10 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from August 2017

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

4. Consider Amendment 1 for Final Approval (1:30-2:35 p.m.) Final Action

Background

- The Board approved Draft Amendment 1 for public comment in May 2017. (**Briefing Materials**)
- Draft Amendment I includes multiple management options to update the 1996 FMP and proposes a four-region management scenario. Additionally a commercial harvest tagging program was proposed in the document to combat illegal harvest and trade.
- Public Hearings were held in June 2017 and public comments were gathered through July 14, 2017. (**Briefing Materials**)
- In August, the Board approved several options in the Draft Amendment but delayed the management measures for each region until the states could develop additional proposals.
- States developed alternative proposals (**Briefing Materials**) and the Technical Committee reviewed the proposals on October 10.

Presentations

- Review public comment, management options, and additional state proposals by T. Kerns
- Advisory Panel Report
- Law Enforcement by J. Snellbaker

Board Actions for Consideration

- Select management options
- Approve final document

5. Fishery Management Plan Review (2:35-2:45 p.m.) Action

Background

- State Compliance Reports are due annually
- The Plan Review Team reviewed each state report and compiled the 2016 and 2017 FMP Review.
- Delaware and Maryland have requested and meet the requirements for *de minimis.*

Presentations

- Overview of the FMP Review Report by C. Starks. **(Supplemental Materials)**

Board actions for consideration at this meeting

- Accept 2016 and 2017 FMP Review and State Compliance Report.
- Approve de minimis requests *for Delaware and Maryland*

6. Other Business/Adjourn

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

TAUTOG MANAGEMENT BOARD

The Westin Alexandria
Alexandria, Virginia
August 3, 2017

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

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INDEX OF MOTIONS

14. **Move to approve option B in section 4.4 Commercial Harvest Tagging Program** (Page 20). Motion by John Clark; second by Russ Allen. Motion carried (Page 20).

15. **Move to approve option A in section 4.4.3 Tag Application** (Page 21). Motion by John Clark; second by Ray Kane. Motion carried (Page 21).

16. **Move to approve Dan McKiernan as vice chair of the Tautog Management Board** (Page 22). Motion by Russ Allen; second by John Clark. Motion carried (Page 22).

17. **Move to adjourn by Consent** (Page 22).

ATTENDANCE

Board Members

Dan McKiernan, MA, proxy for D. Pierce (AA)
Raymond Kane, MA (GA)
Sarah Ferrara, MA, proxy for Rep. Peake (LA)
Bob Ballou, RI, proxy for J. Coit (AA)
Eric Reid, RI, proxy for Sen. Sosnowski (LA)
Mark Alexander, CT (AA)
John Maniscalco, NY, proxy for J. Gilmore (AA)
Emerson Hasbrouck, NY (GA)
Russ Allen, NJ, proxy for L. Herrighty (AA)
Adam Nowalsky, NJ, proxy for Asm. Andrzejczak (LA)
Roy Miller, DE (GA)
John Clark, DE, proxy for D. Saveikis (AA)
Craig Pugh, DE, proxy for Rep. Carson (LA)
Rachel Dean, MD (GA)
Michael Luisi, MD, proxy for D. Blazer (AA)
Joe Cimino, VA, proxy for J. Bull (AA)
Cathy Davenport, VA (GA)
Kyle Schick, VA, proxy for Sen. Stuart (LA)
Lindsay Fullenkamp, NMFS
Mike Millard, USFWS

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

Ex-Officio Members

Jason McNamee, Technical Committee Chair
Mark Robson, Law Enforcement Representative

Staff

Bob Beal
Toni Kerns
Mike Schmidtke
Megan Ware
Katie Drew

Guests

Mike Armstrong, MA DMF
Matt Gates, CT DEEP
Arnold Leo, E. Hampton, NY
Jason McNamee, RI DEM
Derek Orner, NOAA
Jack Travelstead, CCA
Sherry White, USFWS

The Tautog Management Board of the Atlantic States Marine Fisheries Commission convened in the Edison Ballroom of the Westin Hotel, Alexandria, Virginia, August 3, 2017, and was called to order at 2:00 o'clock p.m. by Chairman Adam Nowalsky.

CALL TO ORDER

CHAIRMAN ADAM NOWALSKY: Good afternoon. I would like to convene the Tautog Management Board. Let me begin by thanking everyone that stuck around here. I'm not sure if we drew the ultimate short straw or the absolute vote of confidence here to get the last agenda item of the meeting.

APPROVAL OF AGENDA

CHAIRMAN NOWALSKY: We'll begin with going ahead and taking an approval of the agenda as presented. Are there any changes to the agenda that has been presented? I'll simply offer that it is my hope to bump these times up a little bit. We'll do the best we can. Seeing no changes to the agenda, is there any objection to accepting the agenda as presented? Seeing none; the agenda is accepted.

APPROVAL OF PROCEEDINGS

CHAIRMAN NOWALSKY: Our next order of business is to approve the proceedings from the May, 2017 Board meeting. Is there any objection to accepting those minutes? Seeing none; the previous proceedings stand accepted. The next order of business is public comment for any items that are not on the agenda. We have no one signed up, we have no hands up. We'll move along.

CONSIDER AMENDMENT 1 FOR FINAL APPROVAL

CHAIRMAN NOWALSKY: Just like that we're 14 minutes ahead of schedule. That brings us to Agenda Item Number 4, Consider Amendment 1 for Final Approval. Before we go ahead and get started with presentations, I'll first offer a word of thanks to Ashton Harp for her efforts in helping get us to this point. Apparently we scared her all the way across the country.

But we have Toni Kerns standing in today; thank you, Toni for your help in the last couple weeks and seeing this item through. I'll note that there has been some communication that has been sent out this week to members of the Board; regarding our plans. We do have this item here for final action today; so that is an option.

However, as per the memo that was sent out through a combination of summer schedules and response to public comment, there have been requests from just about every state involved in this amendment process for a little bit more time to develop some options. What our goal here today is going to be, to go through the presentations as we have them.

We'll review the presentation for the amendment, review the public comment presentations, AP report, Law Enforcement report, and then we'll go through the document. We had sent around a set of the items we would definitely like to see action taken on here today. We'll have discussion about those items that we think could wait until the annual meeting; with potentially not taking final action until then, but it will ultimately be up to the Board. Are there any questions about what we hope to do here today? All right, seeing none; I'll go ahead and turn the microphone over to Toni to present the presentation on the amendment, followed by public comment.

REVIEW PUBLIC COMMENT AND MANAGEMENT OPTIONS

MS. TONI KERNS: What I have done is I have actually combined the presentation of the options and the public comment into one; to be most efficient. I did pull, as Adam mentioned there were some items that we've had some requests from states to do delays on, basically most of Section 4.2, which is all of the regional management measures.

I pulled the public comment slides from those here. If you want me to go over them today I can, or I can wait to go over them at the next meeting when we actually are considering those options. For now I am not going to go through what the public comment was on those; unless I'm asked to, so moving on.

Even though it says we had a hundred and something comments in my summary, I apologize for the bad math. We really only had 36 written comments; 21 of those were from individuals, 8 were from groups, and 2 were form letters. Those form letters totaled 7 comments. We also had one petition with 317 signatures on it.

The document is a full amendment. It has revised goals and objectives, biological reference points, options for fishing mortality targets, probabilities of achieving the F target, F reduction schedules, and stock rebuilding schedules all in Section 2. First the management document, the goal is to sustainably manage tautog over the long term; using regional differences and biology and fishery characteristics as the basis for the management.

Additionally the amendment seeks to promote conservation of enhanced and structured habitat; to meet the need of all life stages of the tautog. That is what the revised goal is. There are two options; either to maintain the 1996 goal or to approve the revised goal. There were five written comments in favor of the 1996 goal, and two comments in favor of the revised.

In general the state of Rhode Island and Maryland were in favor of the revised goals, and the state of Massachusetts was in favor of the status quo goals. I was not at the public hearing, so I had to take the notes from the summaries to try to figure out counts and numbers. If I couldn't figure out exact counts from those hearings I just put exes where I thought there was general favorability for something. I apologize in advance if I misinterpreted what happened at your hearings; but it was hard for me, since I was not there.

MR. NOWALSKY: Did you want to stop for a question?

MS. KERNS: I'll go through the whole thing.

CHAIRMAN NOWALSKY: Give me just a minute. Dan, did you have –

MR. DAN McKIERNAN: Just a point of clarification. Toni, you said that the state had a position. But I think what you meant is people at a hearing in that state had a position, right?

MS. KERNS: Correct; the people at the hearings in those states. For objectives, the objectives options were to either maintain the 1996 objectives. Options B through G were specific modifications to objectives; and Option H would insert all of the modifications to the identified options in B through G. There were five written comments in favor of maintaining the 1996 objectives; as well as five individuals that had a range of favoring any of the options of B through G. One individual that favored changing all of the objectives and the state of Maryland's hearing attendees were in favor of changing all of the objectives, Option H.

For biological reference point, the document had two options. One is to stay status quo. The reference points can be modified via management document, and the second option was reference points can be modified via Board action. The TC or SAS could make a recommendation to alternative reference points; as long as the modification to the status determination criteria and their associated values were the result of a peer reviewed stock assessment.

In response to that the Board could take action to set new reference points based on that peer reviewed results. For the comments, we had nine comments in favor of maintaining that reference points had to be modified via

management document, and two commenter's in favor of making changes via Board action.

For the mortality targets, Option A is status quo. We would have a coastwide fishing mortality target; and Option B is to manage the regional target based on F. If the current F exceeds the regional threshold the Board would have to take corrective action via management document within a certain time period.

There are three sub-options here for the B option, one being no time requirement, two being action within a year, and three being action within two years. Based on the request from the states to delay some actions, it was staff's recommendation to not take action on the actual sub-options here today; but you could make a determination of whether or not you wanted to manage based on a coastwide F or a regional F, just as an FYI.

Public comment here; we had eight commenter's in favor of Option A, a coastwide target. We had ten people in favor of regional F targets. One person thought we should not have a timeframe, and then three people plus the folks at the Virginia hearing were in favor of the one year, and seven people were in favor of action within two years.

Next is looking at the probability of achieving the F target. There are two options; status quo and a 50 percent probability of achieving an F target. Currently under status quo there would be no probability associated. We had ten people in favor of remaining status quo, and five people in favor of the 50 percent probability; as well as the folks at the Rhode Island hearing were in favor of the 50 percent probability.

Next is looking at the F reduction schedule. This sets a timeframe for which the Board initiates a harvest reduction or the management response. Option A is looking at status quo; there is no timeframe. Option B is three years, and Option C is five years. For the commenter's we had three people in favor of three years, plus the folks at the Mass hearing, and eight people in favor of five years.

For how the stock rebuilding schedule is developed, we have Option A status quo, there is no required management response if SSB is below the threshold. Option B is a stock rebuilding schedule can be developed to be an addendum and Option C similar, it would be developed via an addendum; but it would not exceed ten years. There is no timeframe associated with Option B. We had seven folks in favor of Option A, status quo, no management response required. For B we had five people in favor plus the individuals at the Mass hearing, and Option C the addendum with the timeframe of ten years with three individuals.

Moving on to Section 4, which are the management measures, for today I think there are just a couple of things we're looking at here. First the concept of whether or not we would manage via a coastwide management, which is status quo Option A; or whether the Board would move to regional management based on the stock assessments, and it would be the four regions, the Mass/Rhode Island and then Long Island Sound, then New York/New Jersey Bight, and the DelMarVa area.

For Option A, status quo coastwide management, all of the participants at the New York hearing, which was roughly 80 individuals, were in favor; plus then the seven other commenters' as well as the individuals at the Connecticut hearing. Then for regional management, those individuals at the Mass and Rhode Island hearings expressed interest as well.

Then, sorry I didn't total these up so I'm counting in my head as I speak. It is 23 individuals were in favor of regional management. Then, if regional management is chosen, then looking at Long Island Sound and determining where we would want to break the boundaries for that Long Island Sound management over on the edges.

In both the Connecticut and New York hearings they were not in favor with regional management; or in the New York and New Jersey hearings they were not in favor of regional management, so they did not comment on which option they favored on where the split should occur. One of the folks at the Connecticut hearing they said either would work; as well as the AP members were also concurring with that exact sentiment that happened at the hearings as well.

Looking at commercial quota, Option A is status quo. We would not have any specified procedures to do commercial quotas. Option B puts forward commercial quota procedures. A state or region could implement an annual commercial quota following the procedures that are identified in the document and Board approval is granted.

The decision making to include a quota could be within that regional group, and then they would also have to make decisions about quota rollover, transfers and how to deal with overages; if a quota is utilized. For what we heard from the commenter's, and there were six people in favor of status quo; do not establish quota procedures.

Then there were four people in favor of establishment of quota procedures, and the folks at the Maryland hearing were generally in favor of this. Then next is looking at a possible commercial harvest tagging program and whether or not we would implement one or not. Status quo would be no tagging program, and Option B would be to implement a harvest tagging program.

The individuals at the New York hearing were not in favor of a tagging program; and there were eight commenter's not in favor of. Then for Option B, individuals at the Rhode Island, New Jersey, Delaware, and Maryland, hearings were generally in favor. Then we had 12 individuals that wrote in or commented specifically in favor. Then lastly is looking at how those tags would get applied. The tags could be applied either with the harvester application or either at harvest or prior to offloading. Either would suffice under this option, or under Option B the application would be done by the dealer. The majority of the commenter's were in favor of either harvester application at harvest, or prior to offloading.

Those individuals at the Mass hearings were the only ones that commented in favor of application by the dealer. Also in general, some of the comments that were heard were that folks were in favor of recreational and commercial spawning closures. Pot restrictions are needed, as well for the pots that fished for tautog constantly all the time, as well as there should be artificial reef programs funded that would help support tautog habitat; and help to rebuild the stock.

Then because we had the request to delay specifically the regional management measures, in order to have some additional time to either develop additional options, try to come to consistency, or to spread out the timeframe in which some of the reductions need to be occurring; particular in the Long Island Sound area.

Today what we're looking to do is approve some of the options; and then come back in October, look at the remaining options, and make choices and then do a final approval of the document in October. Mark would have the Law Enforcement Committee report if there are no questions on the actual public comments.

CHAIRMAN NOWALSKY: Okay, so thank you for that Toni. Before we go forward with the next report, let me ask if there is any objection to ending that presentation there and not covering those items that we don't expect to have final action on until the annual meeting; which would be the individual, regional measures.

Does anybody feel the need to see those presentations today, or those can wait until planned decision making on that? Okay, I'm not

seeing any objection to continuing as we are. Let me stop there for a moment. Are there any questions for Toni about the information presented about the contents of the Amendment sections as presented, or about the public comment? Raymond Kane.

MR. RAYMOND W. KANE: Toni, can you go back to that slide where we're talking about the tagging program, please?

MS. KERNS: Do you want the application or the actual tagging program?

MR. KANE: The application. Yes, so I see we're the lone state. Can the other states give us a suggestion at this table right now how they would plan on distributing tags to individual harvester's, so that might be something I could take back to our harvesters?

CHAIRMAN NOWALSKY: Well, I think that would be a question for the Board if there is anybody wants to chime in on that right now; or when we get to the section and decision making on that and we get a motion up. We would expect further discussion at that point, right; any additional questions right now? Dan.

MR. McKIERNAN: Not to rush ahead on this, but when would Toni like the states to submit the proposals for the biological measures?

MS. KERNS: The revised proposals?

MR. McKIERNAN: Yes.

CHAIRMAN NOWALSKY: It's probably me more than Toni. What my intention is; once we go through these items that we can hopefully come to decisions on today, will be to just go back to each of those sections and just generally bring the Board up to speed on what each of those regions is discussing.

I think the goal we would need by the middle of September, to answer your question directly, and I'll reiterate that again. Whatever revised proposals that would be a timeline we would be looking at. Again, my intent is to come back to each of those sections and just see if there are any general questions, and make sure everybody is onboard with how each region is hoping to proceed. Joe.

MR. JOE CIMINIO: With that timeline is the idea that once they're received the Technical Committee will have a chance to review; but the first time the Board will see them is at the November meeting?

CHAIRMAN NOWALSKY: The intent would be for TC to review them. Now whether these proposals are developed with TC membership as part of that decision making process, and get a general sense from the TC that that is acceptable review, or whether we submit the entire proposals for a formal TC review. I think is going to depend on the scope of what we get back at that point.

We can certainly go ahead and distribute those items for review prior to the Board meeting; which would be one of the goals of getting those ironed out, with substantial time left prior to the annual meeting. Are there any other questions before we go to Mark? Okay Mark, Law Enforcement report.

LAW ENFORCEMENT REPORT

MR. MARK ROBSON: We have provided a written memo for you; it should have been in the briefing package, summarizing Law Enforcement Committee comments. The date of the memo is July 11, but it actually covers a series of opportunities for the LEC to review this issue; in regards to defining a boundary line for the eastern end of Long Island Sound, which was first brought to us by Ashton back in March in a teleconference call.

Then at our May meeting we had an opportunity to actually look at some maps and discuss it at the LEC meeting in more detail. Then once again, in follow up on a June 29 teleconference call. At

that last teleconference call, we basically reiterated the position that we had taken previously, expressing some precautionary comments regarding how do you establish a line across open water that is clearly definable and clear to the fishermen and also supportable in court cases?

Once we looked at the two options for drawing that line on the east end of Long Island Sound, we suggested that both were acceptable; but it would be preferable, at the time we called it Option 6. I believe now in the document it's Option B2, Sub-Option B2, because that line has a few more island or land-based references that you can use for line of sight; making it a little bit clearer when you're trying to define where somebody is fishing, either on one side of the line or the other, which is important in making court cases. Again, some of the concern for this line in general was that you are looking at potentially different regulations in Long Island Sound; the ocean side of Long Island, and perhaps even in Rhode Island waters.

LEC members familiar with those waters report that vessels both recreational and commercial are regularly moving back and forth among those three areas. Depending on what kind of differences in regulations occur, that could have a bearing on how many resources are going to be required to maintain coverage for that boundary line at the east end of Long Island Sound.

It kind of segue ways into the other option that we did comment on; and that's regarding the commercial tagging program.

Of course we've been working with the Law Enforcement Subcommittee on the tagging issue. We still continue to support commercial tagging for tautog; and with this particular document we also wanted to reiterate that particularly in the case, where you have this eastern end of Long Island Sound and you have vessels moving back and forth in different zones.

Once again, it reinforces the point that we were making that the sooner that those fish are tagged from the point of harvest the better. Our recommendation would continue to be that you adopt a provision to have those fish tagged as close to the point of harvest as possible; recognizing that that may in the end not be possible.

There were a lot of concerns expressed by the LEC members with any dealer tagging as really reducing your ability to monitor compliance with those tag requirements. All of that is again summarized in the July 11 memo. That concludes my report, Mr. Chairman.

CHAIRMAN NOWALSKY: Thank you very much for that report. Are there any questions on the Law Enforcement report? Eric Reid.

MR. ERIC REID: Just one question. If you look at Page 69 you have Long Island Sound Option 5 and Long Island Sound Option 6, and you prefer Option 6. Is that what I'm getting out of that? Then if you look at New Jersey/New York Bight Option 5, it is different from Long Island Option 6; they are two different things.

MR. ROBSON: Well, at the May meeting we looked at two maps identified as Option 5 and Option 6. I just noticed in the presentation today that it looked like they were identified as Sub-options B1 and B2. Sub-option B2, where the line for the Long Island Sound boundary is drawn using those points of land and the islands there. That's the one that Law Enforcement would prefer. Both of them are acceptable; they are going to create some enforcement challenges.

CHAIRMAN NOWALSKY: In the document itself, Eric, Long Island Sound Option 5 is Sub-option B1. The graphic labeled Long Island Sound option 5 is text Sub-option B1, and graphic labeled Long Island Sound Option 6 is labeled as Sub-option 2, and I believe Law Enforcement has expressed a preference, or at least has offered some advantages for what's text labeled Sub-option 2, and graphically labeled Long Island Sound Option 6.

MR. REID: Okay Mr. Chairman, I appreciate that. Basically, New Jersey/New York Bight Option 5, is not what Law Enforcement prefers at this time.

CHAIRMAN NOWALSKY: When you're looking at the New York/New Jersey Bight Option 5, you would only be looking at the purple area there.

MR. REID: Yes, but it is not the same as what they prefer.

CHAIRMAN NOWALSKY: Toni.

MR. REID: The one they prefer has basically the range of islands. They're different.

MS. KERNS: I will help, Eric. I think that when, I can't remember who actually created these charts for us, but when they were originally created we had only had the first Long Island Sound Option 5. They just automatically created the New York/New Jersey Bight based off of how we split Long Island Sound.

Whatever we decide to do with Long Island Sound, the New York/New Jersey Bight map will be altered appropriately to account either for that extra water body within the Bight or not. We didn't have the person recreate another map for us; since they had already done a lot of work for us.

CHAIRMAN NOWALSKY: Mark.

MR. ROBSON: Again, the reason they like what is Sub-option B2 there better than 1, is because it does have that chain of islands, so you have more line of sight on a line. Plus I believe that is the option that is essentially the colregs line; which is something a little easier to manage.

CHAIRMAN NOWALSKY: I can certainly understand your confusion, Eric, and the reality is that there is essentially two options from New York/New Jersey Bight based on what would be selected for Long Island Sound; we good?

MR. REID: Yes, we're good.

BOARD DISCUSSION

CHAIRMAN NOWALSKY: Okay, thanks for that; any additional questions? Okay. Seeing none; I believe that will take us into discussion about the document. Again, Toni was kind enough to send an e-mail around that basically itemized what sections, which apples we're going to take bites at here today. We'll go through each section. We'll get that slide back up on the screen. We will need a motion for each item.

Each of these individual items will simply require, I'll ask for whether or not there is any objections on those or not; and we'll see what progress we can make. The first item we would like to tackle would be reflected in Pages 48 and 49 of the Amendment itself; which if I jump over to the meeting materials, again keep in mind the page and the PDF may be different.

But these will actually be 48 and 49 in the amendment itself. We'll start out with the goals. We've got two options here, Option A for status quo; which would be to maintain the '96 goals, Option B, the revised goal statement as written in the amendment. Discussion and/or a motion on how to proceed with this section, I'll turn to John Clark.

MR. JOHN CLARK: Move to approve Option B; revise goal statement in Section 2.2.

CHAIRMAN NOWALSKY: Do we have a second to that; seconded by Mike Luisi? We'll get that up on the board here in just a moment.

MS. KERNS: While he's getting that up on the board, on the back table there is a cheat sheet of all of the items in the document; if anybody needs that staff could run over and grab those and get them, or you could run over and grab them. It doesn't matter, if anybody needs one. There are also copies of the draft, just the short version of the draft document; so you only have the stuff that we're actually taking up to vote, if you want that to cheat on as well.

CHAIRMAN NOWALSKY: Thirty seconds to grab cheat sheets. While we're grabbing cheat sheets, I'll turn for discussion on this motion. Emerson.

MR. EMERSON C. HASBROUCK: Does Option B lock us into regional management? I mean Option B says that we will use regional differences in biology and fishery characteristics; or whatever the exact language is, as a basis for management. Does that lock us into regional management?

CHAIRMAN NOWALSKY: It is my understanding that while it does in fact use those terms, it does not. We still have to select or have the option to select regional options moving forward. I would just offer that should we do something when we get to the regional management section, which we do intend to tackle today.

That may cause reconsideration on this topic. But it doesn't specifically lock us into it. Again, it's a goal. A goal doesn't necessarily mean it's what we do immediately. But something this Board has talked about striving for. Additional questions about this motion. Okay I'll read the motion; move to approve Option B, revise goal statement in Section 2.2, motion by Mr. Clark, seconded by Mr. Luisi. I'll give us five second to caucus.

Let me ask; is there any objection to this motion? We're going to give this 30 more seconds. Here is the route I'm going to take, given the discussion I see going on around the room. **We're going to do this with a show of hands. All those in favor of the motion please raise your hand. Put your hands down, please; anyone opposed to the motion raise your right hand, any null votes, and any abstentions? Okay motion carries.** Thank you very much.

Next section will be 2.3 Objectives; here we have one course of action would be Option A, status quo, maintain the 1996 objectives. Then we have a series of other options; which are Options B through H, B through G take individual actions with the objectives. Option H incorporates all of the changes that are incorporated in B through G.

Our options for action on this item would be Option A, status quo, Option H, which incorporates everything, or some combination of B through G. Those would be our three courses of action in this section; discussion and/or a motion on this section. I'll turn to John Clark.

MR. CLARK: Move to approve Option H; accept Options B through G into Section 2.3 objectives.

CHAIRMAN NOWALSKY: Okay motion by Mr. Clark, seconded by Eric Reid; discussion on the motion to accept Option H, which would accept Options B through G for the objectives. Seeing no hands; I'll read the entirety again. Move to approve Option H; accept Options B through G into Section 2.3 Objectives, motion by Mr. Clark, seconded by Mr. Reid. **Is there any further discussion on the motion? Seeing none; is there any objection to this motion? Seeing no objection the motion is approved by consent.** Thank you very much.

All right, our next section will be Section 2.5; Biological Reference Points. Just for clarities sake, we're not actually selecting biological reference points here. What we're specifying is how biological reference points can be modified moving forward. We've got two options here. Reference points would be required to go through a management document, which would be an addendum or an amendment; Option B, which would allow reference points to be modified via Board action.

Pages 53 to 54 basically spell out what that process might be; including how we would review scientific advice, peer review, et cetera. I would also like to point out that by selecting Option B this would not preclude the Board from initiating a management document; an addendum or an amendment, should they feel the need that that change in reference point is

significant enough that we need to go through some public process. Do I have any discussion on this section or a motion on these options? First hand up I saw was Roy Miller.

MR. ROY W. MILLER: I move to accept Option B; reference points can be modified via Board action.

CHAIRMAN NOWALSKY: Okay I have a motion for Option B, do I have a second for that; seconded by Emerson Hasbrouck? I'll give staff a moment to get that up on the board, also offer Delaware a word of thanks for taking the initiative on moving this along. Okay so we have a motion; move to approve Option B in Section 2.5 Biological Reference Points, motion by Mr. Miller, seconded by Mr. Hasbrouck; discussion on the motion.

Okay seeing no hands up are there any objections to the motion? Seeing none; the motion stands approved by consent. All right, our next item will be Section 2.7.1 Fishing Mortality Target. Again, this is not an item where we're selecting a specific F. But what we're selecting here would be how the Board would respond to scientific advice that we get that would call for a change to F.

We've got Option A, Status Quo; coastwide fishing mortality cannot exceed the F target of 0.15. That would be the first option. Option B would be managing to a regional F target, and selection of Option B would require selection of a time requirement, either no time requirement in B1, B2, Board action within one year, and Board action within two years.

I would just like to turn to staff for a moment to get clarification where these items state the Board must initiate corrective action via management document within either one year or two years. That would not call for that management action necessarily being completed in that time, nor would it call for that management action having those impacts go into effect. Typically we go through an addendum process takes multiple meetings, and then has an implementation date. Just to be clear, it is my understanding that both of these options would allow for the completion of those documents and the implementation date to go beyond these timeframes; but these specifically call for when those documents would be initiated.

MS. KERNS: You are correct, Adam.

CHAIRMAN NOWALSKY: Okay, hope that's clear; discussion or a motion on this section. I looked left, but I'm pulled back right. John Clark.

MR. CLARK: I've got the motion sheet in front of me; so I would like to move to approve Option B, managing to the regional target F. Oh, am I in the right one? Yes, okay, and Sub-option B2, Board action within one year in Section 2.7.1 Fishing Mortality Target.

CHAIRMAN NOWALSKY: Okay, motion by Mr. Clark for Option B, managing to regional target F with Sub-option B2, Board action within one year. I have a second from Bob Ballou. We'll get that up on the board; while that's going up, discussion, Mike Luisi.

MR. MICHAEL LUISI: Just a question, because we're not going to know F each and every year, if three years go by and we look back in retrospect to an assessment update, and we notice that a year prior to the terminal year F exceeded the threshold. However, the terminal year of the assessment F is maybe between the target and the threshold, or even below the target.

Are we going to be inclined to go forward with some type of action? Would a trigger be set in the event that the terminal year F is not above the threshold, yet a prior year is? Just having dealt with this with striped bass and the ongoing saga about where we stand regarding fishing mortality. For my own edification I would like to understand how assessments would be applied to this option.

CHAIRMAN NOWALSKY: I'm going to first say that the document specifies current F. But for clarity on what current F is, I'll turn to Toni.

MS. KERNS: I'm going to let Katie give me a head nod. But I believe what the TC has been doing is using the average of the last three years to give you your current F. Your current F would be the average of the last three years. Joe is giving me a head nod.

CHAIRMAN NOWALSKY: Katie is coming to a microphone.

MS. KERNS: I told her I wouldn't need her, but I guess I was wrong.

DR. KATIE DREW: Yes, it is the average of the last three years; so if the assessment ended in 2015, it would be the average of '15, '14 and '13 would be the value that you would compare, and need to bring down.

CHAIRMAN NOWALSKY: My interpretation of that is if the F in one of those years that would not be enough to trigger this management action. We would need the average of those three years, which we would call the current F, which is what the document refers to.

DR. DREW: Yes that is correct.

CHAIRMAN NOWALSKY: That's the most current information we can give you. Dan McKiernan.

MR. McKIERNAN: That is a great explanation, but is it necessary for folks who are going to read this document months and years from now to somehow have that in the document that F is going to be calculated on a three-year-moving average?

MS. KERNS: I can add it in.

CHAIRMAN NOWALSKY: I guess the question would be, since we're not planning to take final action today to either add that in, or do we leave that out should there be some future review of how the TC calculates current F, i.e. average of a longer period or a shorter period or something else?

I think that would be the question is that yes, we could put it in here so we clearly know or perhaps we could reflect it as of this document, current F the TC uses average of the last three years; but that may be subject to change in the future. Is there a preference from the Board on how we outline that right now? Again, we got an answer today, and I think that is very good to have that written in Microsoft Word or Adobe PDF. But that may change in the future. Katie.

DR. DREW: I think to that point, part of the reason that we are able to or allowed to is that three-year average was approved by the peer review process. If we go through another benchmark process and the definition of what the F should be changes based on peer review advice, and then maybe we would not want to include it; and just understand that current F is the reflection of the best available advice coming out of the stock assessment, whatever that is.

CHAIRMAN NOWALSKY: Okay, so what's the pleasure of the Board? A couple options I see here are one, to add nothing additional and just leave it as current F, another option would be to include information that that refers specifically to the three-year average. Then the question beyond that would be whether or not we're going to include in the document that that is just currently how it's done, and it may change in the future. I saw Emerson's hand.

MR. HASBROUCK: My hand was up for another issue, so why don't you resolve this first and then come back to me.

CHAIRMAN NOWALSKY: John, I saw your hand on this.

MR. CLARK: Same thing. I just realized the motion didn't include one part of this part of the document. Whether this is status quo, or we're going to put a 50 percent probability of achieving

F. Without having that in there I assume it falls to status quo.

CHAIRMAN NOWALSKY: Our goal is to make a decision on that at the annual meeting, because that will impact the projections. Eric Reid.

MR. REID: That being said, why don't we just leave it the way it is, because we can always fix it at the annual meeting.

CHAIRMAN NOWALSKY: Okay, so I've got a recommendation to just leave the document as is; referencing current F, and we've got a matter of record the discussion here today. Okay not seeing any desire to change that. Is there any further discussion on the motion; Emerson Hasbrouck?

MR. HASBROUCK: I have a question and then I have a motion. My question is, for both the status quo option and Option B. Where does that leave us if F is between the threshold and the target; because they're both managing to the target? Right, we can't exceed F target. But the F value can be higher, can exceed the F target value, but still be below the threshold.

CHAIRMAN NOWALSKY: The document offers that if current F exceeds the regional threshold, the Board will take steps to reduce F to the regional target level; with the timeline that we have in the motion. If the current F exceeds the target but is below the threshold, which is I think the area to which you're referring.

The Board should consider steps to reduce F; should not shall, not required to, and no specific timeline. That is what we have currently is if it is in that area that I think you're referring to, the advice that the Board should take action; but no further specific direction.

MR. HASBROUCK: Right thank you for clarifying that. I understand that for Option B. Under Option A, which is status quo, what happens if F is between the target and the threshold; because it says it shall not exceed F target? But we can be below the threshold, but the value is still going to be above the target.

CHAIRMAN NOWALSKY: Toni.

MS. KERNS: There is no threshold in the old amendment. It's just a target. That is all there was. There is only a coastwide target, and if you went above then you had to take action. Remember this plan has not been modified since 1996.

CHAIRMAN NOWALSKY: We had a single F. When we would get a new benchmark the Board would consider taking action; based on that benchmark. That is what we've been doing, well not me; that is what the Board has been doing for the last 20 years. I'm working on getting there.

MR. HASBROUCK: Then my motion then is to whatever the proper wording is, delay. I don't want to say table this motion, but to delay action on this motion.

CHAIRMAN NOWALSKY: I'm getting the sense you actually want to postpone it.

MR. HASBROUCK: Postpone, thank you. To postpone action on this amendment, or this issue rather, on this specific issue until we've decided what we're doing with regional management. I think in a way we're putting the cart before the horse a little bit here. Right, because this says that we're going to manage to the regional target F; and we haven't had any discussion about regionality yet, other than the question I asked before.

CHAIRMAN NOWALSKY: Okay, so motion to postpone action on this issue until the Board decides on whether we're managing this regionally. Is that what you're looking for? In that case, I would actually recommend a motion to table; since we plan to decide on regions today. We're going to have that discussion, so if you would like to do so I would entertain a motion to table this; and we've got one other

section to get through and we would then come back to this if you would like to do that.

MR. HASBROUCK: Yes, whatever is proper under Robert's Rules.

CHAIRMAN NOWALSKY: What Emerson is proposing is that we table action on this motion until we get through Section 4.1; which we hope to get through today, which would be the regional boundaries decision. We've got a motion to table. We would need a second, and just a reminder that that would not be debatable. We would immediately vote on that.

Motion to table action on this issue until Board decides on regional management, Section 4.1; motion by Mr. Hasbrouck, seconded by Mr. Ballou. Okay again there will be no discussion on this. I'll ask is there any objection to doing so? All right, seeing none; the motion to table passes, and we will temporarily move on from Mr. Clark's motion.

The next item going through here sequentially again was Probability of Achieving F Target; which again as per the discussion we had just a moment ago, the plan is to not tackle that today, unless there is anyone who wishes to do otherwise. Okay I'm not seeing any inclination to do so. The next section in the document would be 2.7.2, the F reduction schedule.

This is another area that we felt was best left to the annual meeting; which would provide some opportunity to develop those other options we've mentioned. Unless there is any objection, we're going to hold off on 2.7.2 until the annual meeting. Seeing no objection; that will bring us to 2.7.4 on Page 56 of the amendment, Stock Rebuilding Schedule. Again, the stock rebuilding schedule here, this section seeks primarily to define how the management action would be to achieve that rebuilding.

The first option is status quo, no management responses if SSB is below the threshold. Option B is a stock rebuilding schedule could be developed via addendum, and then Option C would say the rebuilding schedule can be developed via addendum. But that rebuilding schedule could not exceed ten years; discussion or a motion on this section. John Clark.

MR. CLARK: I'll try to get it right this time. I move to approve Option B in Section 2.74 Stock Rebuilding Schedule.

CHAIRMAN NOWALSKY: Motion from Mr. Clark in 2.74 Option B, a stock rebuilding schedule can be developed via an addendum; and that would not have a timeline on that rebuilding schedule. Do I have a second for that motion? Dan McKiernan. Is there discussion on the motion, Bob Ballou?

MR. ROBERT BALLOU: I would just ask the maker of the motion why you would not opt for Option C, and that would provide for a rebuilding schedule that would not exceed ten years. I'm just curious as to your reasoning for not favoring that approach.

MR. CLARK: Well, just personally when I looked at these. I mean we have made a decision with this amendment not to manage to rebuild SSB, but to manage F; at least my understanding of it is. I mean granted ten years is not really putting us in any type of straight jacket at all. But I just figure it's optional no matter what; but at least this gets us beyond the status quo of not having to do anything about SSB. This gives us the option to do something about SSB. But if the Board decides that they would rather go with Option C that is fine with me also.

CHAIRMAN NOWALSKY: Mark Alexander.

MR. MARK ALEXANDER: I support this option. I think even ten years for a fish with the life history of tautog could challenge us at times. I think this would be an appropriate option.

CHAIRMAN NOWALSKY: Emerson Hasbrouck.

MR. HASBROUCK: I would also like to move to table action on this motion until we've decided what we're going to do with regional management. This option specifically says; the Management Board will evaluate the current estimates of SSB with respect to the regional reference points.

CHAIRMAN NOWALSKY: Okay so that would be the next topic. I've got a motion from Mr. Hasbrouck to table this motion until we decide on regional management Section 4.1. Is there a second to the motion to table? Bob Ballou. **Okay this motion is non debatable. Is there any objection to the motion to table?**

Okay seeing none we're queuing things up like arrows in a quiver here. Hopefully we can get them all to come out as quick as we did the earlier ones. Okay, well that brings us to the regional boundaries, 4.1. That will be 65 and 66 in the document. Our first option here is status quo; to stay with coastwide management.

Option B would be regional management, the four region approach. Again I'll remind the Board that we had an awful lot of discussion about three versus four regions. The four-region approach was what has already been decided on as going forward in the document. There is pretty much no going back on that in this document at this point. That is what we would be deciding on. We'll take those two options up first; and then once that decision has been made, if Option B is selected we would then go ahead and decide on B1 or B2.

I understand that votes on the first part may be contingent upon that. I would entertain a motion that specifies both selecting whether you want status quo or regional management. If you select Option B, I would encourage inclusion of the selection of the sub-option at the same time, since I think that's going to help inform that decision for people; discussion or a motion? John Maniscalco, welcome!

MR. JOHN MANISCALCO: I move to make a motion to adopt Option A; status quo Coastwide Management.

CHAIRMAN NOWALSKY: Move to adopt Option A; status quo. Do I have a second to that motion? All right I'll ask one more time; is there a second to the motion? Okay seeing none; that motion fails for lack of a second. The floor is open; John Clark.

MR. CLARK: Move to approve Option B; Regional Management, and Sub-option B2 in Section 4.1 Regional Boundaries.

CHAIRMAN NOWALSKY: Okay, I have a motion from Mr. Clark to approve Option B; Regional Management, and Sub-option B2, which would set the Long Island Sound boundary from Orient to Watch Hill. Do I have a second for that motion? Joe Cimino. Sorry Russ, we'll get you for one of these; discussion on the motion. Mark Alexander.

MR. ALEXANDER: Connecticut and New York hope to, in their deliberations on a proposal that we will bring forth in October, may want to have some discussions about the boundary and how that may ease our transition into a 47 percent reduction. I would not like to take action on what the boundary is at this meeting. I would like to make a motion to amend; to remove the words "and Sub-option B2" from this motion.

CHAIRMAN NOWALSKY: Okay, I have a motion from Mr. Alexander to remove Sub-option B2. Again, if I understand your intent right now would be to remove that now with a pending discussion on that and decision at the annual meeting.

MR. ALEXANDER: Yes, Mr. Chair that is correct.

CHAIRMAN NOWALSKY: Do I have a second to that motion? Eric Reid. Let me ask the Board; given that we've had some discussion and that original motion is the property of the Board. Is there any objection from the original maker or

anyone else from the Board about making that modification?

MR. CLARK: No objection, I just had a question for Mark. Is Option B1 what the New York and Connecticut are considering, or is there something different from that also?

MR. ALEXANDER: This is based on a discussion I had with Jim right before he had to leave, so I don't have a lot of answers to that. Perhaps John does. But Jim, as I understood it, did indicate to me that we would like to at least maintain the possibility of the boundary line consideration during our discussions.

CHAIRMAN NOWALSKY: Mark, let me ask you this. Did he leave it with there is discussion that you would like to have or were there specific points offered? I would ask that question, because from my perspective we basically have a range right now of Orient in the west and Montauk in the east. Is it your understanding that some other point is to be discussed; or is it your belief that that point for discussion would be between those two points?

MR. ALEXANDER: There were no specific alternatives indicated to me, so my understanding is that we just don't want this solidified at this moment; and that it would be helpful if it remains an option to be considered during our discussions.

CHAIRMAN NOWALSKY: We would certainly have the opportunity to go back, reconsider, and the goal is to take action on these items and hopefully not have to reconsider any of them at the annual meeting. That would certainly be the goal; but none of these are final actions here today. It would be my belief, and I'll let staff chime in if they feel somehow differently; that given that we took this document out to public comment with an east and a west range that that would be the range of the boundary that we would need to consider. If we were moving that line further west of Orient to Watch Hill that would not be within the bounds of something we've taken out for public comment. I'll turn to staff if they have some other feeling about it.

MS. KERNS: I think you are correct. I think the path of last resistence, in terms of how we choose an option for this would be to just delay action on this particular one until annual meeting. If it is a friendly amendment, we could remove that from the original motion that John made.

We could just take action on regional boundaries or not, and then determine the Long Island Sound boundary at the next meeting, once Mark has more information from what Jim said. But there is a narrow window of where that boundary would be as informed in this document. If we need to take another document out for public comment we'll have to face that down at annual meeting.

CHAIRMAN NOWALSKY: Let me get back to procedure here. Mark had asked for a motion to amend. We went around and looked. Let me first get back to what we have to deal with. Is there any objection from the Board about striking the sub-option from Mr. Clark's original motion? Okay seeing none, we don't have a need for Mr. Alexander's motion, and we're going to modify the original motion to remove "and Sub-Option B2."

That brings us back to the motion before the Board; move to approve Option B, Regional Management in Section 4.1 Regional Boundaries. That is the option presently before the Board; discussion on the motion, Eric Reid.

MR. REID: It's my understanding that the only boundary that would be in question, if this were to be voted favorably, is that line. All the other boundaries are set. It's only a question of how we're going to define that west end of Long Island going forward. Is that correct?

CHAIRMAN NOWALSKY: West or east end, depending on how you're looking at it. That is my understanding, correct.

MR. REID: One end of the rainbow or the other, or something in between. It's up to Connecticut and New York to come up with a proposal that would be acceptable to the Board. Is that how this is going to have to go?

CHAIRMAN NOWALSKY: That's our goal. Further discussion on the motion, okay seeing none; is there any objection to the motion? Okay, so we'll go ahead and we'll take a vote on the motion. Did you have anything else to add? John, go ahead.

MR. MANISCALCO: Yes, I would just like to explain New York's reason for objecting to the motion; while we're largely in favor of regional management under species like tautog, where 90 percent of the harvest, at least in Long Island Sound region is recreational. The resolution, which means we're highly relying upon MRFSS or MRIP data, and the resolution of approximately 1.5 states to base an assessment on and a 47 percent reduction on is inappropriate.

CHAIRMAN NOWALSKY: Again, the goal is, well we'll have more discussion about what the goal is under Long Island Sound management. All right, any further discussion on this motion? Seeing none; we'll provide 30 seconds to caucus. **Okay, motion to approve Option B; Regional Management in Section 4.1 Regional Boundaries. Motion by Mr. Clark, seconded by Mr. Cimino, all those in favor of the motion please raise your right hand, looking for right hands. Well I saw a left, a right, then none, then the other person. Okay, you can put your hands down please. All those opposed to the motion raise your right hand; abstentions, null votes. The motion carries; 7 in favor, 1 opposed, 2 abstentions, 0 null votes.**

Okay, so this now brings us back to two previously tabled motions. We'll take the first motion that was tabled first. Okay, move to approve Option B; managing to the Regional Target F, with Sub-option B2, Board action within one year in Section 2.7.1 Fishing Mortality Target, motion by Mr. Clark, seconded by Mr. Ballou.

Discussion on the motion, seeing no discussion is there any objection to the motion? Okay seeing none; that motion carries. We'll give staff a moment to bring up the next tabled motion. **Move to approve Option B in Section 2.7.4 The Stock Rebuilding Schedule. That would allow for the stock rebuilding schedule to be developed via an addendum without a timeline.** Discussion on the motion, okay no discussion on the motion, here we go, Joe.

MR. CIMINO: I think as John mentioned, you know it is not much of a box necessarily, but it is a long timeframe if we had a ten year tie in here. I would also assume that during that time we might see one or two new assessments coming through from when we started. I'm not sure how, we might be playing an entirely different ballgame if we were shooting for a ten year timeframe and then got a new benchmark assessment. I would rather leave it without.

CHAIRMAN NOWALSKY**: Further discussion on the motion? Okay seeing none; is there any objection to the motion? Okay seeing none; the motion carries by consent.**

REGIONAL UPDATES

CHAIRMAN NOWALSKY**:** Next up that brings us to the balance of Section 4. What I'm going to do is I'm going to go to each region that we have. I'm going to turn to Toni briefly to give an update on where we are and what we hope to accomplish with each of those regions; between now and September 15, to then pass information around to the Board ahead of the annual meeting.

Also I would like the individual states within that region to chime in with any comments that would be helpful to the Board. Again, the intent is not to make motions on these today, but if there is some action the Board wishes to take it is certainly within the purview of the members

here today. With that Toni, I'll turn to you 4.2.2 Mass and Rhode Island recreational measures.

MS. KERNS: The states of Massachusetts and Rhode Island are interested in exploring possible consistent regulations between the two states fisheries. There was some conflicting advice that came out during the public comment period on how to accomplish this; and the two states want additional time to craft possible measures and analyze those measures, as well as discuss those possible measures with their advisory councils/advisory bodies within the two states.

CHAIRMAN NOWASLKY: I'll look to Mass and Rhode Island for further comments. Dan McKiernan.

MR. McKIERNAN: Yes, when we first saw this brought forward it made sense; and I credit Jay and the other folks who put it together for having done the calculations. But upon further reflection, we would really like to test the potential of allowing a single fish during the popular summer fishing months; since the stock we have up our way is not overfished, and overfishing is not occurring. It seemed overly harsh to go from three fish during our prime fishing months to zero, so we would like to see if we can't retain a single fish during those months. We don't expect this to amount to a lot of harvest.

But I think in terms of accommodating the lower end casual anglers, the families, kids, and those who aren't as familiar with the rules, it's a better public policy in terms of maintaining access to a resource. That's our goal. What we want to do is work with Ray, our Chairman, and talk to Rhode Island and their council; and see if we can't craft a better set of rules that still would be the same.

Having the identical rules is really going to be valuable for the fishermen who fish the upper part of Narragansett Bay. In Massachusetts we have the Fall River, Mount Hope Bay area, which are state waters; that's part of Narragansett Bay. We have problems with enforcement and compliance when the rules are different. It also will help MRIP, because you'll have more consistent rules between the two states and less confusion and less what would appear to be poaching, but is just ignorance of the rules.

CHAIRMAN NOWALSKY: Any further discussion, any questions from the rest of the Board? Next up we have Long Island Sound; again, as a result of the regional assessment assuming a 50 percent probability of achieving the F target, which will remain a decision point in the document that would call for a 47.2 percent reduction in harvest. Not surprisingly the public hearings certainly were adventurous to say the least.

I wish to thank staff for doing the best they could, as well as staff from New York. I'm sure it wasn't easy for them there as well. But I think that that certainly was a cause, from my conversations with New York and Connecticut, to have some further discussion and see what could be done to ameliorate that type of reduction; specifically when some of the recent assessment information gave us some hope for some good news there.

Based on discussions with staff as well as the states, there were a couple of different ideas that came forward for how to work through that. Again, I'll turn to Toni and then to the states of New York and Connecticut to further discuss it.

MS. KERNS: As Adam said it is a 47 percent reduction. This would be a severe social and economic impact on the fisheries and the communities in New York and Connecticut along Long Island Sound. They are looking for some flexibility in achieving the reduction. The states are requesting that a more modest harvest reduction on the scale of 20 to 30 percent be explored.

The states would work with the TC to determine what impacts such of a lessened reduction would have on the probability of achieving an F target

in a reasonable amount of time. Their rationale for lowering the 47 percent reduction includes that the assessment indicates a strong 2013 and 2015 year class.

Biomass has been increasing since Addendum VI measures were implemented in 2012. The three-year-average harvest has an 18.3 percent, percent standard error in the recreational data; which is somewhat large for a three-year average. They are also looking to moderate what would be otherwise an extremely disjointed interregional management measure. How they plan to approach this is looking at an alternative probability of achieving the target. This would likely be a lower probability; and as well as extending the period in which the F reduction would be achieved from three years to five to ten years.

They also would like to examine the sensitivity of the Long Island Sound assessment; specifically in the context of the ACCSP facilitated percent standard error workshop and modeling efforts that have recently been held, as well as setting a required reduction considering both the three-year average of harvest as well as the percent standard errors informing a lower bound relative to the harvest target.

They would then bring back revised management options that would include, but aren't limited to, measures that might look at a three to four fish bag limit, and consideration of a broader slot limit. They'll work with the TC and the SAS to do this.

CHAIRMAN NOWALSKY: Thanks for that, Toni. That gives some information on a region for skipping over the probability of achieving F target; as well as the reduction schedule, because both of those variables could impact the reductions. I'll turn to New York or Connecticut to provide any other information they want to at this time.

MR. ALEXANDER: I'll say a few words. I just want to express my gratitude to the Chairman and his initiative in working with Toni to reach out to us with an opportunity to try to mitigate the impacts that we're going to feel in trying to achieve this 47 percent reduction. As Adam indicated, our hearings were interesting.

I think New York's probably more so than Connecticut. This will cause some pretty severe social and economic impacts in Connecticut. I think it is not an understatement to say that our party charter industry is traumatized by the prospects of this. Tautog makes up an important or a key part of their fall fishery, and they stand to lose quite a bit of business with regard to this.

Also our bait and tackle shops enjoy a robust business based from tautog in the fall fishery. It brings people into their stores at a time when there is not much else going on. Anything we can do, or anything that the Board could accommodate for us to ease our transition into this period of rebuilding, would be greatly appreciated.

CHAIRMAN NOWALSKY: Okay, any other questions, discussion about Long Island Sound and how we plan to move forward? Again that is probably the heaviest lift that we've got here right now. I'll certainly be encouraging staff to encourage the states, again to move forward as expeditiously as we can, so we can get information out to the entirety of the Board in advance of the annual meeting; and make sure the appropriate reviews are done to inform that decision, New Jersey/New York Bight, Toni.

MS. KERNS: Not much there, because three of the four regions decided to delay, we thought we would just delay all of these measures.

CHAIRMAN NOWALSKY: Any comments, discussion on New York/New Jersey Bight. Okay, Delaware, Maryland, Virginia.

MS. KERNS: I hope I get this straight. These guys will correct me if I'm wrong. But out of the, I think it was the Maryland Charterboat Association had suggested a revision to some of

the regulations, and then the other areas might be interested in taking on those regulations as well; or having somewhat consistent regulations amongst all of the states. We needed time to go back and evaluate what that change in those regulations would mean and see if there is the possibility to have those consistent regulations.

CHAIRMAN NOWALSKY: Comments from those states, Mike Luisi.

MR. LUISI: I'll just add an explanation to where we stand. At our public hearings the options presented before us that would put Maryland, Delaware, and Virginia into a region had a seasonal closure for two months beginning on May 1, and ending at the end of June. The public hearing that we had in Maryland, fishermen were quite upset at the fact that because black sea bass does not open until May 15, that there would be a two week period of time when they could not fish for anything.

Our transition in our state is from a tog fishery to a black sea bass fishery. Delaware and Virginia and Maryland I think, plan to put forth some alternative options to present; which close that gap of a closure period for the charter fleet, and not just the charter fleet, but recreational anglers as well. It does not liberalize our fishing effort from where we currently are. There would still be a slight reduction; even though we would open up those two-weeks time. We'll follow up with staff on a proposal to include in the next round of discussions.

MR. CIMINO: Virginia has a different situation with the commercial fishery, so I think I will be putting forward something. I may reach out to the TC right from the very beginning; to figure out the best way forward with that.

CHAIRMAN NOWALSKY: Any further discussion on Delaware, Maryland and Virginia's development of their measures? Okay, seeing none; we'll move along to the next Section 4.3 Commercial Quota. In Section 4.3 Commercial Quota; that contemplates two options. A would be status quo; no specific commercial quota procedures.

Option B would be commercial quota procedures; which include 4.3.1, 2, 3, 4, and 5. I'll turn to staff for further clarification; but as I understand this section, if Option B is selected that doesn't immediately implement quotas. But it would allow for the regions to come together, form a working group; basically a representative from each of the state in the regions to then design the quota proposal program, which would be reviewed by the TC, and then approved by the Board.

MS. KERNS: That is correct, Adam. It also actually allows for an individual state within a region to develop a quota themselves. They would just need to bring it to their region to get approval by their region; and then it would come to the Board and the TC. That individual state would need to follow the procedures that are outlined in the document.

CHAIRMAN NOWALSKY: With regards to the other options here, rollover would be an option that would be offered in a given proposal; and ultimately approved or disproved by the Board in consideration of that proposal. Transfers would be allowed, and overages would have deductions.

MS. KERNS: Correct.

CHAIRMAN NOWALSKY: Okay, John Clark.

MR. CLARK: Move to approve Option B; Commercial Quota Procedures in Section 4.3 Commercial Quota.

CHAIRMAN NOWALSKY: Motion from Mr. Clark, do I have a second to that motion? Bob Ballou. Move to approve Option B, Commercial Quota Procedures in Section 4.3 Commercial Quota. Motion by Mr. Clark, and seconded by Mr. Ballou. Thanks to staff for getting these up so promptly; discussion on the motion, Mark Alexander.

MR. ALEXANDER: I would just like to get some clarification on this. Under Option B, you said that would not immediately mean that a state would have to implement quotas, it would mean that within a region the regional partners would decide what they're going to do, right, whether or not that includes a quota.

CHAIRMAN NOWALSKY: Or not, or an individual state could put forward that commercial quota program proposal for Board approval. **Further discussion on the motion; is there any objection to the motion? Seeing none; the motion is approved by consent.** Next Section 4.4 Commercial Harvest Tagging Program on Pages 84 through 86.

Option A; status quo, no commercial harvest tagging program. Option B; implement a commercial harvest tagging program. Then depending on how we proceed here, we may have Section 4.4.3; which would discuss tag application, discussion on this section, Commercial Harvest Tagging Program. Eric Reid.

MR. REID: We've heard a lot of discussion in the past about the black market for tautog, and I think we would be foolish to go down this road without a tagging program.

CHAIRMAN NOWALSKY: Did you want to beat Delaware?

MR. REID: I like Delaware. They were good to me. I don't need to beat anybody, I suppose. He's doing such a fine job; I'll let him finish it off. Go on.

MR. CLARK: Well, if you insist Eric.

CHAIRMAN NOWALSKY: Hang on; I've got John Maniscalco first.

MR. MANISCALCO: Don't worry; I'm not going to make a motion. My question is does having a tagging program mandate a quota?

MS. KERNS: No. You don't have to. But if you do implement a quota, and you do the tagging program, then you don't have to do the size limits et cetera to do any reductions if those were required. But you don't have to; all fishermen would still have to use the tags though.

CHAIRMAN NOWALSKY: Dan McKiernan.

MR. McKIERNAN: A question for Toni. There are other species within the ASMFC list that have tagging, and those tags have to be accounted for. Would we envision a requirement that tags would have to be returned that weren't used?

MS. KERNS: I think if we moved forward with the tagging program, we will have to do some additional work in order to make sure that the tagging program does not have any loopholes, such as accounting for those tags that are not used. I think there might be some additional work that we'll have to do; in terms of the implementation plans for the tagging programs.

MR. McKIERNAN: Would that be a future addendum?

CHAIRMAN NOWALSKY: There are some specifics outlined here with regards to tag allowance, tag accounting. The document specifically says unused tags would be returned by February 15. There is that element. There is also the annual commercial tag report here that would be part of the compliance report.

Then there are some specifics about what the tag would be, same single use tag inscribed with year of issue, state of issue, unique number. Those items would be here. In terms of how the program was further developed, I think management action via an addendum or something is certainly an option moving forward. Does staff have any other thoughts about it?

MS. KERNS: No, I don't think I have any other thoughts. I think that when the state's put

together their state implementation plan for the tagging program that we can, if there are issues that come up that are not specified in the document that would provide for loopholes. Then we may have to go forward with another document. But if we've covered it all here then we should be okay. But I think the crux of it will be in how the states implement the tagging program themselves.

CHAIRMAN NOWALSKY: Spoiler alert, I think I know why Dan is questioning that; but we'll get to that in the next agenda item. Further discussion on the tagging program, and we still don't have a motion on it. But I know how to fix that. John Clark.

MR. CLARK: This is motions, yes okay, move to approve Option B in Section 4.4 Commercial Harvest Tagging Program.

CHAIRMAN NOWALSKY: Do I have a second to the motion? Russ, thank you. Move to approve Option B in Section 4.4 Commercial Harvest Tagging Program; motion by Mr. Clark, seconded by Mr. Allen, discussion on the motion? Mike Luisi.

MR. LUISI: I'll be very brief. I just want to go on the record by saying that we absolutely support the need for this program. But I just want to be clear that it just adds another small but, it's one of those little pains that kind of sticks in your ribs. The burden to the agency again, we've probably have five people that harvest tog in Maryland commercially; and they can only bring in a recreational limit. At some points in the year they can bring two fish back to the dock.

That guy is going to have to go find this little special gun, wherever it might be, and grab a tag or two and apply it, keep track of it all throughout the year and return everything to the agency after the year is over. It's not a big deal. It's just a little stick in the ribs. It's just one more thing. We're going to support it. Our fishermen actually support it, but on our end it's just one more thing to account for each year. I just want to go on record by saying that.

CHAIRMAN NOWALSKY: Further comments, Mark Alexander.

MR. ALEXANDER: In Connecticut we're kind of facing the inverse of what Mike was just describing. You know we have a few more than five fishermen. But according to the amendment our commercial harvest target is, I don't know two thousand something hundred pounds, which equates to about 7 to 900 fish.

Implementing the infrastructure within our department to administer these tags for such a small number of fish, and figuring out how we're going to equitably distribute them to the available fishermen, is just going to be a challenge for us. It's a lot to do for what we see as such a small commercial harvest potential. It's just too much for us to try to administer for what we see getting out of it.

CHAIRMAN NOWALSKY: Further discussion on the motion? Okay seeing no further hands; I'll just go ahead and ask for, well first I'll say take a couple seconds to caucus, and then I'm going to ask for a show of hands on this one. If you're done caucusing you can check traffic maps. Okay, I'll go ahead.

Move to approve Option B in Section 4.4 Commercial Harvest Tagging Program. Motion by Mr. Clark; seconded by Mr. Allen, all those in favor of the motion please raise your right hand. Thank you, you can put your hands down. All those opposed please raise your right hand. Thank you put your hand down, abstentions, null votes. Motion carries; 9 to 1.

With that that would then open the floor for Section 4.4.3 Tag Application. Option A would be Harvester Application, at harvest or upon landing. Option B would be Application by Dealer; discussion on this section and/or motions. Start with Eric Reid.

MR. REID: In my day job I'm a fish dealer. In Rhode Island we tag striped bass, and the dealer does the tagging and the dealer does its own paperwork. Then we do the accounting for the tags at the end of the year; or at any period where we have to re up tags. There is some pretty good accountability there.

I'm pretty sure New York does something different with striped bass tags, where the fishermen actually get the tags. That's the only other fishery I have any experience with that the fishermen actually get the tags. I'll qualify my remarks with that I buy dead fish. I don't buy live fish, and tautog is a live fish.

Whether or not the harvester has to apply the tag, because you get the trauma out of the way, and then you know the fish survives better. I can't even begin to speak to that; but as far as the accountability of the tags, unless there is some enforcement issue with the location of the fishermen; although it says at the time of harvest or prior to unloading, so that kind of throws that argument out of the way.

I guess all that being said from my standpoint in what I do, and I've tried to qualify that. I would just as soon that the dealer applied the tag. I think at the end of the year when you've got a fisherman who is trying to find his tags that he can't find, and however they're going to be attached. I think it's problematic. I would prefer that the dealer does the tagging. That would be my preference.

MR. McKIERNAN: I'm going to argue counter to Eric. The model for tagging fish is the striped bass system that was developed by the state of Maryland; and if you recall one of the findings is that there was a lot of poaching and interstate shipping of fish, and the tagging system was identified as being really weak.

Most states have a fishermen applied tag. Massachusetts has a dealer applied tag, and we're fairly confident about that. But I think with the small number of fishermen that we have. I think with the propensity for storing up live fish, which often is done in this fishery. A lot of the times these fish are card in the water. I just think that this fishery needs some serious accountability, and so I would prefer it go to a fisherman applied tag.

CHAIRMAN NOWALSKY: Thanks Dan, John Clark.

MR. CLARK: I agree with Dan. In a state like Delaware, we don't really even have dealers that buy the live tog. I mean it's going to be a very small harvest anyhow. But we would prefer that the tag be applied at the time of harvest by the fishermen.

CHAIRMAN NOWALSKY: Something else you would like to add, John?

MR. CLARK: It's that time again, huh? Okay, move to approve Option B, oh excuse me Option A. Move to approve Option A in Section 4.4.3 Tag Application.

CHAIRMAN NOWALSKY: Is there a second to the motion; Ray Kane. Move to approve Option A in Section 4.4.3 Tag Application. Motion by Mr. Clark, and seconded by Mr. Kane, further discussion on the motion? Okay we'll give it 30 seconds to caucus. All right, we'll go ahead and take a vote on the motion.

Move to approve Option A, in Section 4.4.3 Tag Application, motion by Mr. Clark, seconded by Mr. Kane; that might have been the third time I've read that. All those in favor please raise your right hand. Okay you can put those down, thank you. All those opposed raise your right hand, thank you, abstentions, and null votes. The motion carries 9 to 1. Okay thank you very much. That completes all of the discussion items and options in the draft amendment.

I want to thank everybody for getting through them as well as we did. I think we had good discussion on a lot of them. Again, for those region-specific options, I'll be encouraging staff on a regular basis to make sure we get those on

a timely basis. Again, I ask all the states to respond to those requests in a timely manner as well, so we can get things out to the Board.

ELECTION OF VICE CHAIR

CHAIRMAN NOWALSKY: Is there any further discussion on any of the Amendment 1 topics? Okay seeing none; that will complete that agenda item and take us to Agenda Item 5, **Motion to approve Dan McKiernan as vice chair of the Tautog Management Board.** Motion made by Mr. Allen and seconded by Mr. Clark. Motion carries unanimously.

The Vice Chair is currently vacant. We had Dave Simpson, who has since retired from his position, so that is vacant. I'm going to turn to Russ Allen for a motion.

MR. RUSS ALLEN: **It would be my pleasure to nominate Dan McKiernan Vice-Chair of this Board.**

CHAIRMAN NOWALSKY: Do I have a second to that; John Clark; thank you Russ, thank you, John. Dan, do you have anything you would like to add?

MR. McKIERNAN: Thank you, I think. This plan was amended once in 21 years; sounds good.

CHAIRMAN NOWALSKY: It hasn't been amended yet, Dan. We're getting there. All right thank you very much. Is there any objection to that motion? Okay seeing none; congratulate Dan on Vice-Chair, and thank you very much.

CHAIRMAN NOWALSKY: Is there any other business to come before the Board today? We never had that on the board.

Motion to approve Dan McKiernan Vice-Chair of the Tautog Management Board, motion made by Mr. Allen, seconded by Mr. Clark; motion carried without objection by consent.

ADJOURNMENT

CHAIRMAN NOWALSKY: All right, having completed the business of the Board we stand adjourned. Thank you very much, safe travels home.

(Whereupon the meeting adjourned at 3:50 p.m. on August 3, 2017.)

Atlantic States Marine Fisheries Commission

DRAFT AMENDMENT 1 TO THE INTERSTATE FISHERY MANAGEMENT PLAN FOR TAUTOG FOR PUBLIC COMMENT

ASMFC Vision: Sustainably Managing Atlantic Coastal Fisheries

Atlantic States Marine Fisheries Commission Seeks Your Input on Tautog Management

The public is encouraged to submit comments regarding this document during the public comment period. Comments will be accepted until **July 14, 2017.** Regardless of when they were sent, comments received after that time will not be included in the official record.

You may submit public comment in one or more of the following ways:

1. Attend public hearings held in your state or jurisdiction.
2. Refer comments to your state's members on the Tautog Management Board or Tautog Advisory Panel, if applicable.
3. Mail, fax, or email written comments to the following address:

Ashton Harp
1050 North Highland St., Suite 200 A-N
Arlington, VA 22201
Fax: (703) 842-0741
aharp@asmfc.org (subject line: Tautog Draft Amendment I)

If you have any questions please call Ashton Harp at 703.842.0740.

Draft Amendment 1 Timeline

Winter 2015	Board Reviews the 2015 Benchmark Stock Assessment that Evaluates Stock Status Across Three Regions
Fall 2015	Board Solicits Public Comment on a Public Information Document (PID)
November 2015	Board Reviews PID Comments and Tasks Plan Development Team (PDT) to Develop Draft Amendment I
Spring 2016	Board Tasks Technical Committee to Develop a Regional Assessment to Evaluate Stock Status Across Two Additional Regions
August 2016	Board Reviews Regional Assessment and Tasks TC to Develop a Four-Region 2016 Stock Assessment Update that Includes Data through 2015
Winter 2016/17	Board Tasks TC and PDT to Develop Management Measures for Each Region Respective to Regional Stock Status
May 2017	Board Reviews Draft Amendment 1 and Considers Approval for Public Comment
June/July 2017	Board Solicits Public Comment on Draft Amendment 1 and States Conduct Public Hearings
August 2017	**Board Reviews Public Comment, Selects Management Options and the Commission Considers Final Approval of Amendment I**

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1.0 INTRODUCTION

The Atlantic States Marine Fisheries Commission (ASMFC) is responsible for managing Tautog (*Tautoga onitis*), under the authority of the Atlantic Coastal Fisheries Cooperative Management Act (ACFMA). The management unit consists of the coastal states from Massachusetts through Virginia. ASMFC has coordinated interstate management of tautog in state waters (0-3 miles) since 1996. Responsibility for compatible management action in the Exclusive Economic Zone (EEZ) from 3-200 miles from shore lies with the Secretary of Commerce through ACFCMA in the absence of a federal fishery management plan. If approved, Amendment 1 would consolidate the fishery management plan (FMP), subsequent addenda (Addendum I-VI) and new management measures into a single document.

1.1 STATEMENT OF THE PROBLEM

Since the Tautog FMP was implemented, in 1996, the resource has experienced changes in stock status, as well as management measures used to control harvest. Based on the 2015 Benchmark Stock Assessment and Peer Review Report (2015 assessment), tautog is overfished and overfishing is occurring on a coastwide scale.

The 2015 assessment suggested the delineation of separate, regional stock units as management areas to reduce the risk of overfishing and account for tautog's very limited coastwide movement. It explored multiple regional definitions for management purposes, including a three-region delineation of Massachusetts-Rhode Island-Connecticut, New York-New Jersey, and Delaware-Maryland-Virginia. The Tautog Management Board (Board) accepted the 2015 assessment for management use, but expressed concern with the proposed three-region stock delineation that would split Long Island Sound (LIS) into two assessment and management areas. This was seen as an issue because recent landings indicate a concentration of the effort in the LIS and fishermen from Connecticut and New York routinely cross states lines when fishing.

Therefore the Board requested a new regional assessment that would examine the population dynamics in Connecticut-New York-New Jersey in more detail. This regional assessment proposed two additional stock unit boundaries for consideration at a finer regional scale: Long Island Sound (LIS), which consists of Connecticut and New York waters north of Long Island, and New Jersey-New York Bight (NJ-NYB), which consists of New Jersey and New York waters south of Long Island. The Board approved the regional assessment for management use and selected a four-region management approach (Table 13) for inclusion in Draft Amendment 1.

Draft Amendment 1 updates the 1996 FMP with new fishery management principles and consolidates associated addenda into a single document. The document proposes regional management for tautog to address overfishing and overfished stock status present in some regions. In addition, a commercial harvest tagging program is proposed to address an illegal, unreported and undocumented fishery that has persisted for more than a decade. If approved,

Draft Amendment 1 would be the comprehensive management document for tautog management in state waters.

1.2 BENEFITS OF IMPLEMENTATION

Unlike previous assessments, which assessed the stock on a coastwide basis, the 2015 benchmark stock assessment and 2016 regional assessment evaluated stock status regionally to reflect differences in life history characteristics and harvest patterns. Regional management of the species has been suggested since the onset of management, however the tools and data to run a regional stock assessment to determine regional stock status were not available until recently. The 2015 benchmark stock assessment peer review panel, 2016 regional assessment peer review panel and tautog technical committee consider the regional assessments to be a significant advancement from prior assessments.

The regional stock unit definitions are based on localized biological and socioeconomic trends, which allow managers to better address the management needs of each region. Evaluating stock status by regions allows managers to develop targeted management measures that restrict effort only where necessary. Whereas a coastwide assessment and management measures, required the entire coastwide fishery to take reductions regardless of where fishing effort was highest. Regional management is expected to have a positive impact on the resource and fishery.

1.2 DESCRIPTION OF THE RESOURCE

Tautog, a member of the wrasse (*Labridae*) family, is a stout fish with an arched head, large lips broad tail and a lack of scales on the gill covers. They are regionally referred to as blackfish, in reference to its common overall coloration. Juveniles and females more often exhibit a mottled and brown toned appearance, while males are most often grayish in color. Adults can live more than thirty years and stay close to a preferred home site moving only short distances longitudinally, if at all, during seasonal migrations. A sedentary life history and aggregation around structure makes tautog relatively easy to catch, even when biomass levels are low. Catchability and slow growth rate make tautog highly susceptible to overfishing and slow to rebuild.

1.2.1 Species Life History

1.2.1.1 Distribution

Tautog are distributed along the northeast Atlantic coast of North America (Figure 1) from the outer coast of Nova Scotia to Georgia (Collette and Klein-MacPhee 2002, Parker et al. 1994); although, most abundant from Cape Cod to Cape Hatteras (Bigelow and Schroeder 1953). They inhabit coastal and estuarine waters throughout this range. North of Cape Cod, they are usually found within 4 miles of shore in waters less than 60 feet deep (Bigelow and Schroeder 1953). South of Cape Cod, they can be found up to 40 miles offshore and at depths up to 120 feet (Hostetter and Munroe 1993).

Figure 1. Tautog Distribution

1.2.1.2 Life History Stages

Eggs and larvae have been collected on the inner continental shelf and within estuaries from May through August (Berrien et al. 1978, Colton et al. 1979, Ferraro 1980, Bourne and Govoni 1988, Monteleone 1992, Able and Fahay 1998, Witting et al. 1999). Viable eggs are 1 millimeter (mm) in diameter, buoyant and are found in the greatest numbers at the water surface. Hatching occurs in 81 hours at 15°C and 42 hours at 20°C (Auster 1989, Perry 1994). The larvae (2 mm at hatching) stay near the surface during the day and may go deeper at night (Malchoff 1993). After approximately 3 weeks, larvae undergo metamorphosis and settle out of the water column as juveniles (Sogard et al. 1992, Dorf 1994).

As juveniles, tautog begin a bottom dwelling (demersal) existence that continues for the remainder of their lives. Newly settled juveniles look similar to miniature adults and assume the color (green to mottled or striped brown) of the habitat they occupy. It is unknown if tautog

larvae settle out of the water column in offshore locations or if small juvenile tautog are found in offshore habitats.

Tautog are attracted to some type of structure in all post larval stages of their life cycle. These habitats include both natural and man-made structures, such as submerged vegetation, shellfish beds, rocks, pilings, jetties, shipwrecks and artificial reefs (Olla et al. 1974, Briggs 1975, Briggs and O'Connor 1971, Orth and Heck 1980, Sogard and Able 1991, Dorf and Powell 1997, Steimle and Shaheen 1999). Juvenile tautog are found in estuaries and bays where newly settled individuals are reported to prefer areas less than 1 meter (m) deep (Sogard et al. 1992, Dorf and Powell 1997), and vegetated areas to unvegetated regions. Vegetation can include sea grass and various types of macroalgae (Briggs and O'Connor 1971, Sogard et al. 1992). With growth, these young-of-the-year move to deeper waters but are not usually found deeper than around 25 feet (Cooper 1964).

Larger juveniles become associated with various reef-like habitats and hard surfaces as long as the main habitat requirement of shelter is met. Young tautog may establish home sites, ranging within a few feet during the day and returning at night when they become dormant (Olla et al, 1979). Dixon (1994) found juvenile tautog showed a size-specific preference when choosing a shelter. Juvenile tautog remain inshore during the winter (Cooper 1964, Stolgitis 1970, Olla et al. 1974). When water temperatures drop below 4.5°C some large juveniles may move to deeper, more protected locations. Juveniles remaining inshore in shallow water can be found in a variety of shelters including grass and macroalgal beds, shells, discarded soda cans and bottles, fish pots, crevices and bottom depressions covered with silt (Cooper 1964, Olla et al. 1978, Olla et al. 1980). By the end of their first year juveniles reach a length of around 60 mm in Rhode Island waters (Cooper 1967) and 140 mm in Virginia waters (Hostetter and Munroe 1993).

During summer months, adult tautog are found in both inshore embayments and coastal waters in habitats similar to those of large juveniles (Cooper 1966, Briggs 1969, Briggs 1977, Steimle and Shaheen 1999, Arendt et al. 2001). They can be found in a variety of complex, structured locations including vegetation, rocks, natural and artificial reefs, pilings, jetties and groins, mussel and oyster beds, shipwrecks, submerged trees, logs and timbers (Steimle and Shaheen, 1999). Tautog exhibit diurnal activity and enter a torpid state at night during which they seek refuge in some type of structure. Adults stay relatively close to their preferred home site and, while moving away during the day to feed, they return to the same general location at night where they become dormant (Olla et al. 1974).

The mouths of estuaries as well as other inlets and artificial reefs may be extremely important habitats for tautog (Zawacki 1969, Briggs 1975), particularly south of Long Island where there are fewer natural rocky outcrops to provide shelter than in the more northern portion of the range. Localized populations form during the summer, in co-existence with large juveniles (Olla et al. 1974).

1.2.1.3 Age and Growth

Larval growth rates have been estimated to be between 0.25 - 0.76 mm per day (Malchoff 1993, Dorf 1994). During summer, young-of-the-year juveniles grow around 0.5 mm per day (Sogard et al. 1992, Dorf 1994). The size attained at the end of the first year increases along the coast from north to south. Since juvenile daily growth rates appear to be similar in all areas during the summer, size differences may be due to the longer duration of warmer water temperatures in southern portions of the species range (Sogard et al. 1992, Dorf 1994). Juvenile growth rates have been observed to be higher in vegetated than in unvegetated habitats. Among vegetated habitats, juvenile growth was higher in sea lettuce beds than in eelgrass beds in New Jersey (Sogard et al 1992).

Adult male tautog grow faster in length than adult females (Cooper 1967, Simpson 1989, Hostetter and Munroe 1993). In Rhode Island waters (Cooper 1967), the mean length of a seven year old male was 358 mm (14.1 inches), while a female was 335 mm (13.2 inches). Faster adult male growth has also been documented in Long Island Sound (Simpson 1989) and Virginia waters (Hostetter and Munroe 1993). Adult growth is relatively slow and varies with the season. Slowest body growth rates occur during maturation of the gonads in the spring prior to spawning. Maximum body growth occurs after spawning during the summer and fall followed by a period of slow or no winter growth associated with reduced water temperatures and feeding activity during the torpid period (Hostetter and Munroe 1993).

Mean adult growth rates are similar for tautog in northern and southern waters until the age of 13. After that age, growth rates decrease more rapidly in the northern part of the species range, with growth rates in Virginia being almost double those of tautog in Rhode Island waters (Hostetter and Munroe 1993). In Rhode Island, male annual growth rates were reduced to less than 12 mm (0.5 inches) per year after age 12 and to 2–4 mm per year after age 20. For females, annual growth decreased to less than 10 mm per year after age 13 and to 3–4 mm per year after age 17 (Cooper 1967) Tautog are long-lived fish with males living longer than 30 years and females around 25 years (Cooper 1966, Hostetter and Munroe 1993). Fish as old as 30 years have been caught in Rhode Island, Connecticut, and Virginia, but the majority of fish caught are four to eight years old.

As stated above, many variables may affect the observed length of an individual tautog at a given age. Age-length keys show significant overlap of age groups by length. On average, Table 1 provides a reasonably accurate guide.

Table 1. Tautog length-at-age relationship

Length (Inches)	Age (Years)
3	1
5.5	2
9	3
10.5	4
12.5	5
14	6
15.5	7
17	8
18	9
19	10
21	15
22	20

1.2.1.4 Spawning

Adult tautog generally migrate inshore in the spring from offshore wintering locations to spawn in April through July (Chenoweth 1963, Cooper 1966, Stolgitis 1970, Olla et al. 1974, Hostetter and Munroe 1993, White et al. 2003). Spawning usually occurs within estuaries or in nearshore marine waters (Chenoweth 1963, Sogard et al. 1992, Hostetter and Munroe 1993, White et al. 2003).

Surveys and tagging data suggest tautog spawn seasonally at specific locations. In Rhode Island, tagging studies showed that adults returned to the same spawning locations over a period of several years (Cooper 1966, Lynch 1991) and spawn in discrete groups in May and June (Cooper 1964, 1967). Studies in New York waters suggest adults from different populations may mix at specific spawning locations from year to year (Olla et al. 1980). Tautog collected from offshore hard bottom sites in Maryland and Virginia were found to be in spawning condition seasonally (Eklund and Targett 1990, Hostetter and Munroe 1993).

Some adults remain offshore throughout the year, particularly in the southern part of the range (Olla and Samet 1977, Eklund and Targett 1990, Adams 1993, Hostetter and Munroe 1993). Eggs and larvae collected in continental shelf waters from Georges Bank to North Carolina, with especially high concentrations off of southern New England and New York, suggest tautog spawn offshore as well as inshore locations (Ferraro 1980, Sogard et al. 1992, Hostetter and Munroe 1993, White et al. 2003). Tautog have been found in spawning condition 12 miles off the coast of Virginia in 60 feet of water (White et al. 2003).

1.2.1.5 Reproduction

Tautog normally reach sexual maturity at 3 to 4 years of age and 177 to 304 mm in length (7 to 12 inches), although there are some sexually mature 2 year old fish (Chenoweth 1963, Olla and Samet 1977, Hostetter and Munroe 1993). Tautog in Rhode Island waters reach sexual maturity

at a smaller size of 190 to 200 mm (7.5 - 7.9 inches, Cooper 1966) than in New York at 215 to 241 mm (8.5 - 9.5 inches, Briggs 1977) or Chesapeake Bay waters at 271 to 289 mm (10.7 - 11.4 inches, Hostetter and Munroe 1993). The difference in size is likely related to the length of time which the water remains warm and growth occurs (Hostetter and Munroe 1993).

Spawning occurs in heterosexual pairs or in groups of a single female with several males. In laboratory studies, the type of spawning depends on the number of mates available for the female, the male dominance hierarchy, and the availability of shelter and food. Pair spawning is usually the dominant process (Olla and Samet 1977).

Spawning begins in the spring when water temperatures reach at least 9° C. Peak spawning varies annually with temperature. Generally spawning reaches peak in June, and continues throughout the summer (Bigelow and Schroeder 1953, Cooper 1964, Colton et al. 1979, Eklund and Targett 1990, Sogard et aL 1992, Hostetter and Munroe 1993). Chenoweth (1963) reported peak spawning in Narragansett Bay during the first two weeks of June 1961 and the last two weeks of May 1962, when average water temperatures were 13-14°C. Malchoff (1993) reported peak spawning in the New York Bight during July 1988. In Maryland and Virginia, reported peak spawning is between April and June (Eklund and Targett 1990, Hostetter and Munroe 1993, White et al. 2003). GSI off the south shore of New York has been found to peak in mid-June to mid-July when temperatures reached 11-12°C (Dumais 2005).

Tautog are batch spawners with a prolonged spawning season (White et al. 2003, Dumais 2005, LaPlante and Schultz 2007). Batch fecundity varies with female size (Chenoweth 1963, White et al 2003, Dumais 2005, LaPlante and Schultz 2007). In Rhode Island waters, estimates of batch fecundity for tautog between 200-685 mm were 5,000 to 637,500 mature eggs. (Chenoweth 1963). Similar results were found in Long Island Sound with batch fecundity for females 250 – 600 mm estimated between 8,000 and 600,000 eggs (LaPlante and Schultz 2007). Off the south shore of Long Island, batch fecundity for females 213 – 455 mm was estimated as 778 to 69,500 eggs (Dumais 2005). Batch fecundity in Virginia was estimated to be between 2,800 and 181,200 eggs for females 259 - 516 mm.

Larger females were found to spawn more frequently than smaller females and have a longer spawning season (LaPlante and Schultz 2007). During the peak part of the season, larger females were found to spawn almost daily (White et al. 2003, LaPlante and Schultz 2007).

Total annual fecundity has been found to vary yearly as well as with fish size (LaPlante and Schultz 2007, White et al 2003). Estimates of annual fecundity were higher in Long Island Sound (LaPlante and Schultz 2007) than those reported for Virginia waters (White et al. 2003). In Long Island Sound, female tautog in the 500 mm size range produced around 26 to 55 million eggs where as a female in the 250 mm size range produced 0.6 to 1 million eggs. In Virginia, annual fecundity ranged from 160,000 eggs to 10 million eggs for females 259 mm and 511 mm respectively.

1.2.1.6 Migration

Tautog typically migrate offshore when water temperatures drop below approximately 50°F in the late fall. Migration behavior includes schooling to rugged bottom topography 80-150 feet deep. Tautog do not appear to make extensive long-shore migrations, although some fish from Long Island bays have been reported to overwinter in New Jersey coastal waters (Briggs 1977).

Seasonal migration is not uniformly exhibited. Some adults remain inshore and active throughout the year, particularly in the southern portion of the range (Auster 1989, Eklund and Targett 1991, Adams 1993, Hostetter and Munroe 1993, Arendt et al. 2001). Juvenile tautog have been collected in Maryland's Coastal Bays submerged aquatic vegetation (SAV) in September (Doctor et al 2015), and spawning tautog have been collected on artificial reefs near Ocean City in May. In Maryland and Virginia, populations of adults have been observed 12 - 40 miles offshore in 30 - 225 feet of water throughout the year (Eklund and Targett 1990, Hostetter and Munroe 1993). Offshore distributions decline toward the northern part of the species range (Chesapeake Bay Program 1994).

When water temperatures are very low, adults become torpid (Cooper 1966, Briggs 1977). This may allow tautog, a member of a mostly tropical family, to survive cold winter conditions in northern regions (Curran 1992). Suboptimal conditions (i.e., high water temperature, decline in mussel abundance) will cause adult and large juvenile tautog to leave an area (Olla et al. 1979, Adams 1993, Steimle and Shaheen 1999).

1.2.1.7 Feeding

Juvenile tautog feed primarily on small benthic and pelagic invertebrates including copepods, amphipods, isopods, ostracods, polychaetes, crabs and mussels (Olla et al. 1975, Festa 1979, Grover 1982, Sogard et al. 1992, Dorf 1994). The composition of the juvenile diet changes with fish size. In Narragansett Bay, Rhode Island, small young-of-the-year (20 - 50 mm total length) primarily consumed amphipods and copepods. Juveniles 50 - 68 mm in length consumed a variety of invertebrates. The largest young-of-the-year (68 - 99 mm) ate mainly small shrimp and crabs (Dorf 1994). Similar diets were reported in New Jersey (Festa 1979, Sogard et al. 1992), Chesapeake Bay (Orth and Heck 1980) and Connecticut waters (Clark et al. 2006). In New York waters, juveniles 104 - 205 mm in length fed primarily on blue mussels *(Mytilus edulis)* throughout the year (Olla et al. 1975). Larger juveniles (200 - 320 mm) in New Jersey were observed to feed on xanthid crabs (Festa 1979).

Adult tautog feed primarily on the blue mussel and other shellfish throughout the year. The diet can be extremely varied depending on location and availability. The following items have been found in the diets of adult tautog: hydroids, barnacles, various crabs, sand dollars, amphipods, isopods, polychaete worms, shrimp, lobster, periwinkles, jingle shells, scallops, soft shell clams and razor clams (Bigelow and Schroeder 1953, Olla et al. 1974, Steimle and Ogren 1982, Auster 1989, Dumais 2005).

Tautog have been found to select a limited size range of blue mussels as prey (Lankford 1999) which is 45-50% smaller than the size mussel the fish is capable of ingesting. Adults grasp

mussels using their large canine teeth, tearing them from the surrounding surface by shaking their heads. Small mussels are swallowed whole, while larger, hard-shelled ones are crushed by the pharyngeal teeth prior to swallowing. The canine teeth are not used for crushing shells (Olla et al. 1974).

Tautog are visual predators and therefore, do not feed at night (Olla et al. 1974, Deacutis 1982). Tautog leave their home sites and begin actively searching for food at dawn (Briggs 1969, Olla et al. 1974, 1975). Generally venturing up to 1,500 feet away, although there have been reports of tautog traveling as far away as 10 kilometers from their home site (Olla et al. 1974, Arendt et al. 2001). Tautog have been observed to follow an incoming tide above low water levels to feed on concentrations of mussels in the intertidal, returning to deep water as the tide ebbs (Bigelow and Schroeder 1953). Most fish move to areas with large concentrations of mussels during the day and return to their home site at evening twilight (Olla et al. 1974). Food intake may be reduced due to high water temperatures (Olla et al. 1978), low winter temperatures (Cooper 1966), and during spawning (Bridges and Fahay 1968).

Tautog's high dependence on blue mussels creates an important trophic link influencing distribution, behavior, and perhaps, growth and survival. Periodic recruitment failure of mussels in tautog habitat can cause tautog to move to other feeding areas (Steimle and Shaheen, 1999). If they do not move, or the failure is widespread, tautog inhabiting the area may suffer some effects of an inadequate diet. Heavy consumption of mussels can cause a depletion of this food source before new prey recruitment occurs, especially if tautog are concentrated in an area for some climatological, water quality, or behavioral reason.

1.2.2 Stock Assessment Summary

The first tautog stock assessment was performed in 1995 using the ADAPT virtual population analysis (VPA) model (available through NMFS NEFSC toolbox, http://nft.nefsc.noaa.gov/). In order to incorporate perceived regional differences in biology and fishery characteristics throughout the range of the species, the Technical Committee (TC) attempted separate regional models for northern (Massachusetts to New York) and southern (New Jersey to Virginia) states. The assessment underwent peer review through the NMFS NEFSC Stock Assessment Workshop/Stock Assessment Review Committee (SAW/SARC) process. Although the assessment was not accepted by the peer review panel, the resulting fishing mortality estimate from the assessment was incorporated into the initial FMP (ASMFC 1996).

The next benchmark stock assessment, performed in 1999, was also conducted using the ADAPT VPA. The regional approach was used for data consolidation, application of age keys, and preliminary VPA runs of the model. Unfortunately, results for the southern region were unreliable. The preferred run, therefore, was based on catch at age (CAA) developed separately for north (MA-NY) and south (NJ-VA) regions and combined for a total coastwide CAA. The assessment derived coastwide estimates of F, spawning stock biomass, and recruitment. In addition, tag based survival estimates were included in the assessment as corroborative

evidence. A peer review of the model through the SAW/SARC process determined the model was suitable for management purposes. That assessment indicated the terminal F rate had dropped to 0.29, which was attributed to increases in minimum size required in the original FMP. This terminal F was close to the interim FMP target of 0.24, but well above the final plan target of F = 0.15.

A stock assessment update conducted in 2002 using the methods from the 1999 assessment found that recreational catch rates had returned to levels observed prior to the minimum size limit increase, and F had increased to F = 0.41. The Board responded by implementing reductions in recreational harvest in 2003, in an attempt to return F to the FMP target value. The target was revised to $F_{SSB\ 40\%}$ = 0.29 by Addendum III (ASMFC 2002), based upon updated recruitment and weight at age parameters and a desire to adopt a target with more management flexibility.

A benchmark stock assessment conducted and peer-reviewed in 2005 (ASMFC 2006) continued the use of the coastwide ADAPT VPA model based on separate regional (north/south) CAA. The assessment indicated the coastwide population of tautog had declined about four-fold from 1982 to 1996 and had then remained relatively stable through the terminal year. The stock was considered overfished and overfishing was occurring with a 2003 coastwide fishing mortality estimate of F=0.299. In response to concerns from the Management Board and TC regarding the utility of a coastwide model on a mostly sedentary species, the 2006 assessment also presented results of state-specific assessments (primarily catch curves) of local tautog populations. The peer review panel generally agreed local or regional methods were more appropriate given the life history of the species, but expressed reservations about the paucity of data available at small regional scales and the use of catch curves for management purposes. The panel approved the coastwide model for use in management, encouraging further development and refinement of more localized models for future use (ASMFC 2006).

A “turn of the crank” update assessment was completed in 2011 using the same methodology as the 2006 assessment, with data through 2009. Fishing mortality was estimated as F = 0.23 in 2009, with the three-year average F = 0.31. Both estimates were above the Addendum IV target of F_{target} = 0.20. SSB was estimated to be 10,663 MT in 2009, well below Addendum IV’s target of 26,800 MT and threshold of 20,100 MT. Therefore, the 2011 stock assessment update concluded tautog was overfished and experiencing overfishing.

A benchmark stock assessment was completed and peer-reviewed in 2014 (ASMFC 2015). The assessment was conducted at a regional level. The TC used life history information, tagging data, fishery characteristics, and data availability considerations to split the coastwide population into three regions. Each region was assessed independently using the statistical catch-at-age model ASAP. All three regions were found to be overfished, with overfishing occurring in two regions (Massachusetts-Rhode Island and Connecticut-New York-New Jersey).

While the three-region approach in the benchmark stock assessment was applicable, there was interest in assessing and managing the Long Island Sound as a discrete area. A regional stock

assessment was completed and peer-reviewed in 2016 (ASMFC 2016a). This regional assessment analyzed two additional regions (Long Island Sound and New Jersey-New York Bight) to comprise a four-region management scenario. The Long Island Sound (LIS) region includes harvest in Connecticut and New York LIS. The New Jersey-New York Bight (NJ-NYB) region includes harvest in New York's south shore and New Jersey. The two regions were found to be overfished and overfishing was occurring.

In 2016, the Board reviewed stock status across the three and four region management scenarios, ultimately electing to separate management into four regions. A four region stock assessment update was conducted using data through 2015 (ASMFC 2016b). The assessment estimated the maximum level of harvest (per region) in order to achieve the F target for each region by 2021 (Table 2). Spawning potential ratio (SPR) based reference points were utilized for all regions, except LIS, which used maximum sustainable yield (MSY) based reference points (See Section 2.5).

Table 2. 2013-2015 Average Landings Compared to the Proposed Maximum Removals by Region when Applying a 50% Probability of Achieving F Target in 2021. Parenthesis indicates the necessary harvest reduction to achieve the associated level of harvest. (ASMFC 2016b)

Region	Status quo (mt) 3 yr avg: 2013-2015	50% Probability of Achieving F Target (mt)
Massachusetts-Rhode Island	390	-
Long Island Sound	500	264 (-47%)
New Jersey-New York Bight	461	450 (-2)
Delaware-Maryland-Virginia	77	-

1.2.2.1 Massachusetts-Rhode Island

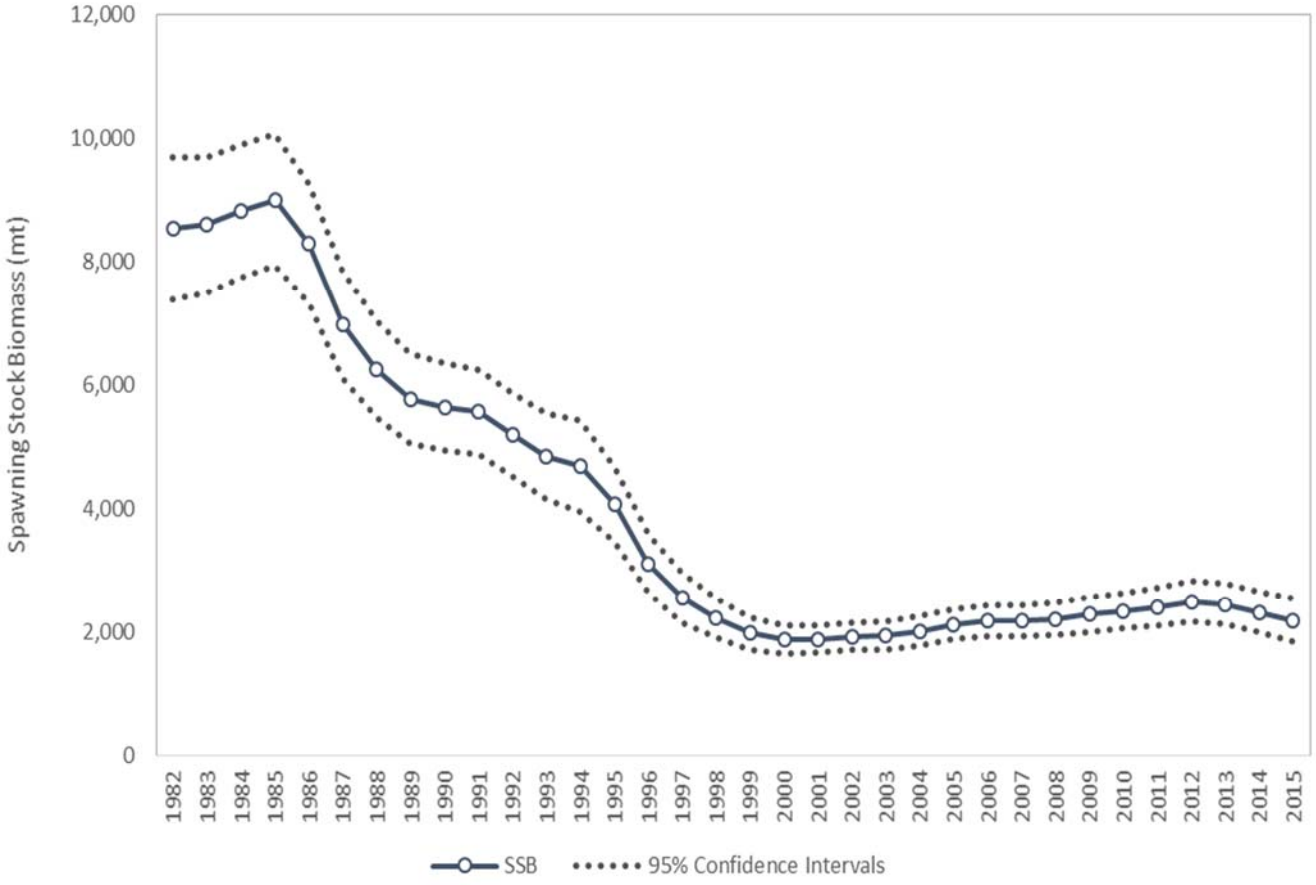
The 2016 stock assessment update indicates the Massachusetts – Rhode Island (MARI) stock is not overfished and overfishing is not occurring.

Fishing Mortality: For SPR estimates, the 3-year average value of F_{3yr} = 0.23 was below both F_{Target} = 0.28 and $F_{threshold}$ = 0.49, this stock is not experiencing overfishing and the fishing mortality rate is below the target.

Figure 2. Fishing mortality estimates for the MARI region.

Spawning Stock Biomass: For SPR estimates, the point estimate of SSB_{2015} = 2,196 mt is below the SSB_{Target} = 2,684 mt but is above the $SSB_{threshold}$ = 2,004 mt, indicating the stock is not overfished but is not yet rebuilt to the SSB target. Total abundance and spawning stock biomass declined rapidly from 1982 until 2000. Spawning stock biomass decreased from 8,994 mt in 1985 to the current estimate of 2,196 mt in 2015.

Figure 3. Spawning stock biomass estimates for the MARI region.



Recruitment: Recruitment was generally highest in the early years of the time-series, with a couple of average recruitment years in the mid-2000s. Observed recruitment has increased from time series lows during the 2013 – 2015 period, but remain below average in general.

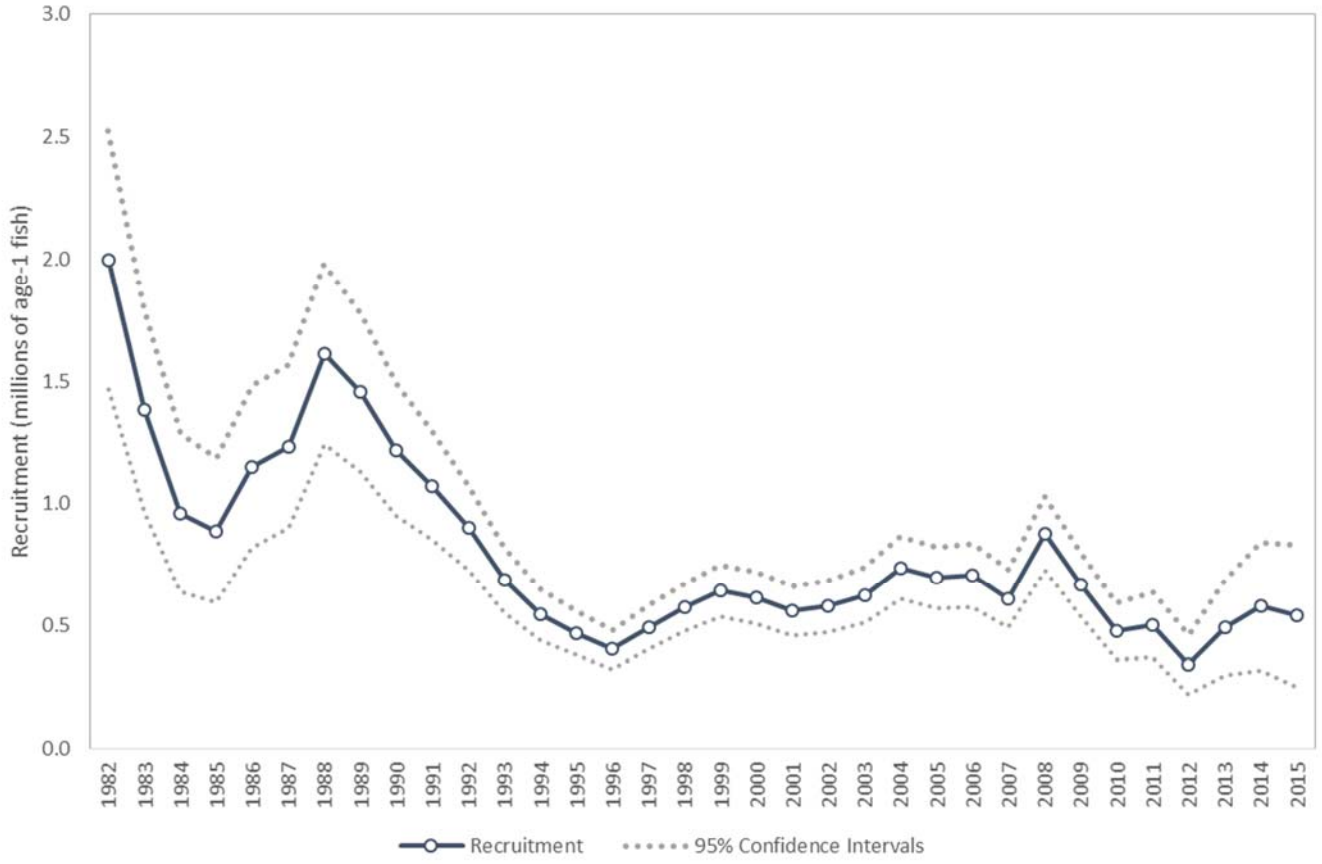


Figure 4. Recruitment estimates for the MARI region.

Abundance: Total abundance and spawning stock biomass declined rapidly from 1982 until 2000. Despite a period of slightly increased abundance in the early to mid-2000s, the overall trend has been flat from 2000 until 2015. Total abundance declined from a high of 10.9 million fish to the current estimate of 2.8 million fish in 2015.

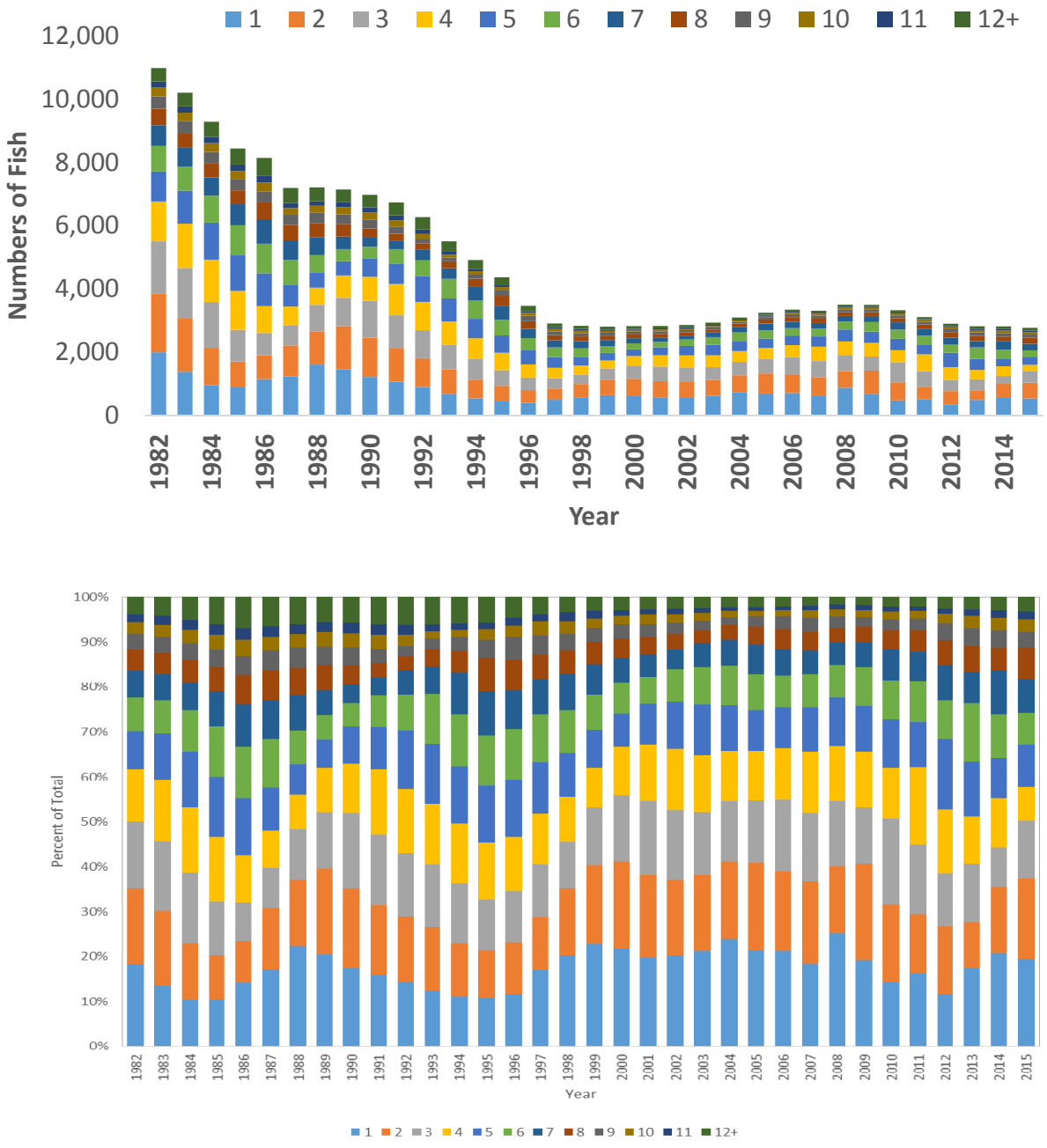


Figure 5. The top graph is the abundance at age for the MARI region in total numbers of fish. The bottom graph illustrates the data in terms of the overall percentage of fish at age within each year.

1.2.2.2 Long Island Sound

The 2016 stock assessment update indicates the LIS stock is overfished and overfishing is occurring.

Fishing Mortality: F_{target} is defined as F_{MSY} and $F_{threshold}$ is defined as the F rate that would maintain the population at 75%SSB_{MSY}. F_{target} for LIS was 0.28 and $F_{threshold}$ was 0.49. In 2013-2015, F ranged from 0.35 to 0.59. The 3 year-average estimates of F (F_{3yr} = 0.51) exceeded the MSY target and threshold.

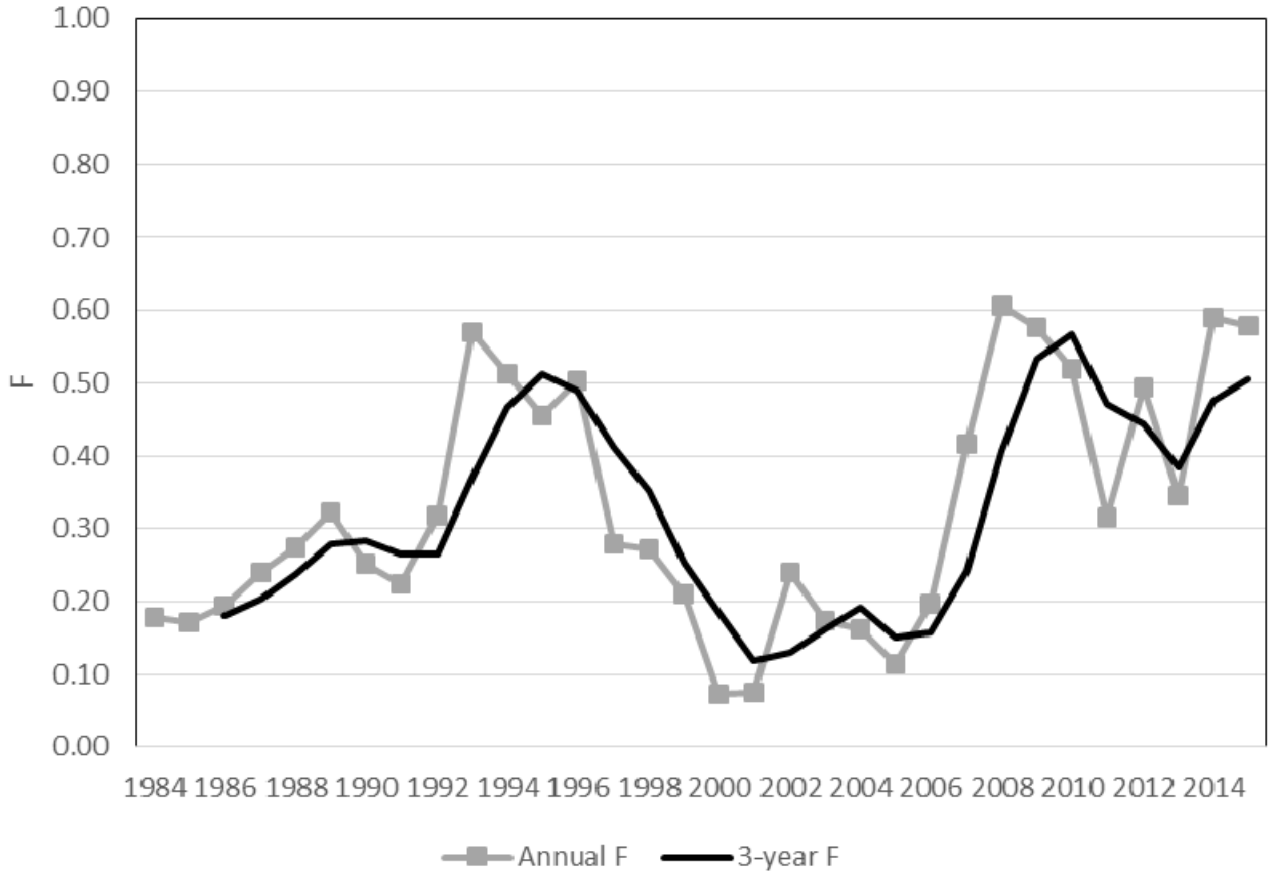


Figure 6. Annual fishing mortality (F) and 3-year average for LIS

Spawning Stock Biomass: SSB_{2015} (1,603 mt,) is below MSY target and threshold (SSB_{MSY} = 2,865 mt and $SSB_{75\%MSY}$ = 2,148 mt), indicating the stock is overfished.

Total abundance and spawning stock biomass declined rapidly from 1984 until the mid to late 1990s. Spawning stock biomass decreased by more than 75%, from over 6,350 mt at the beginning of the time-series to the current estimate of 1,551 mt.

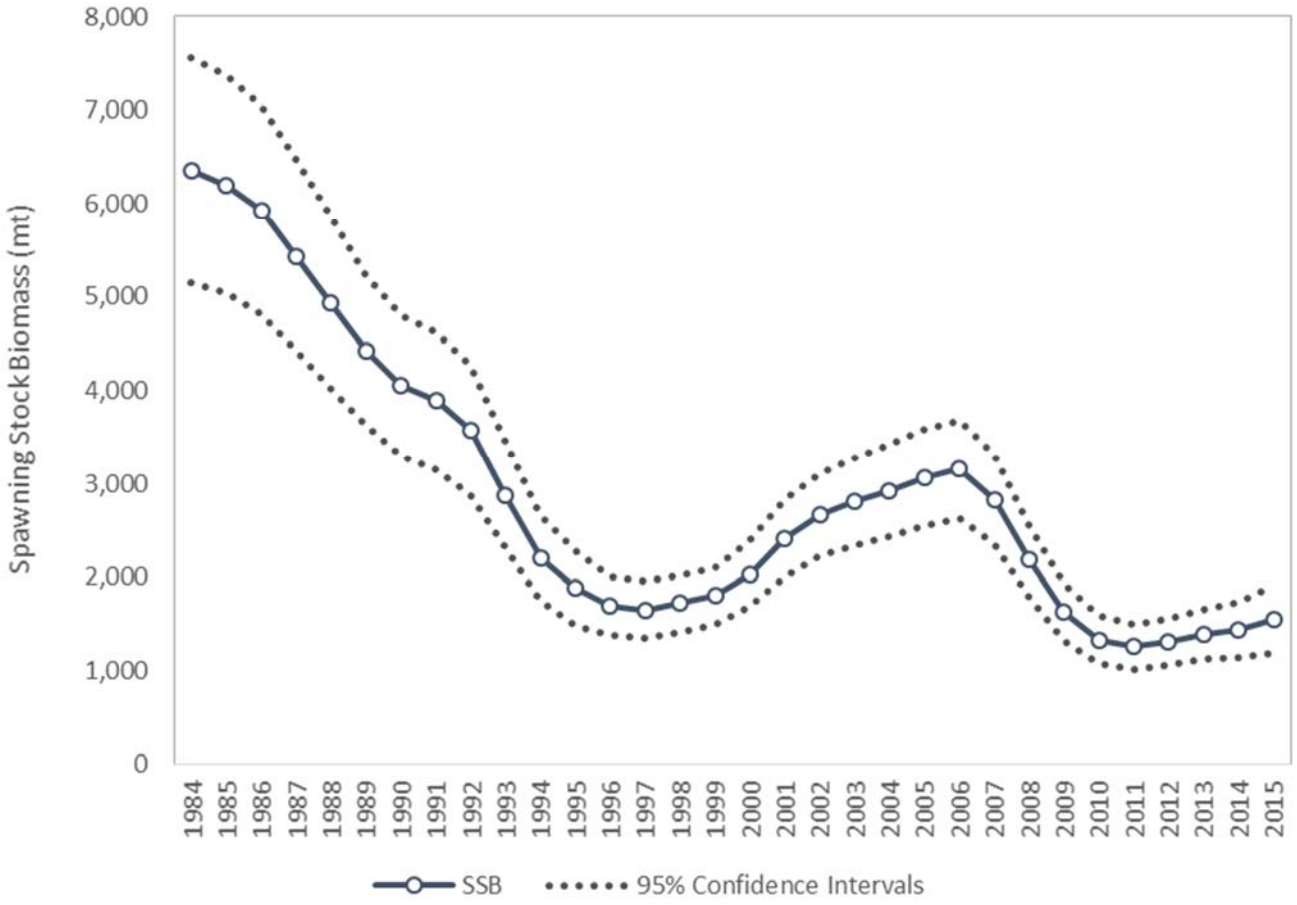


Figure 7. Estimates of spawning stock biomass for the LIS region.

Recruitment: Recruitment was highest in the early years of the time series and again in 2013 and 2015. The two recent peaks in recruitment bracketed the lowest recruitment year on record.

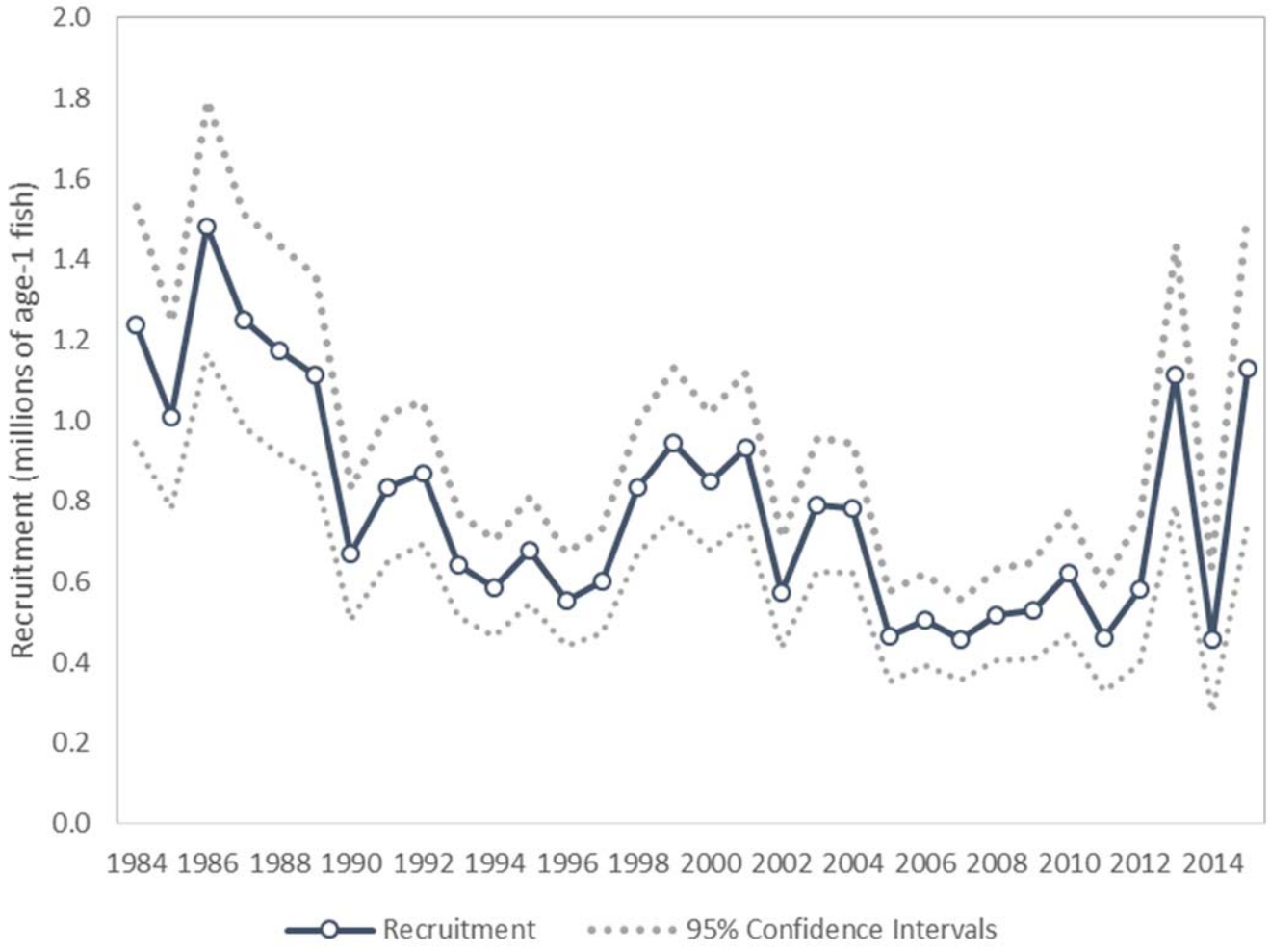


Figure 8. Recruitment estimates for LIS region

Abundance: Total abundance and spawning stock biomass declined rapidly from 1984 until the mid to late 1990s. Despite a period of slightly increased abundance in the early to mid-2000s, the overall trend has been a slower but consistent decline since 1995. Total estimated abundance declined by more than half, from 8 million fish (1984) to 3.5 million fish (2015). Abundance at age in the stock of the terminal year (2015) shows a dominance of fish aged 1 and 3, fewer age 2 fish and declining abundance from age 4 through age 12.

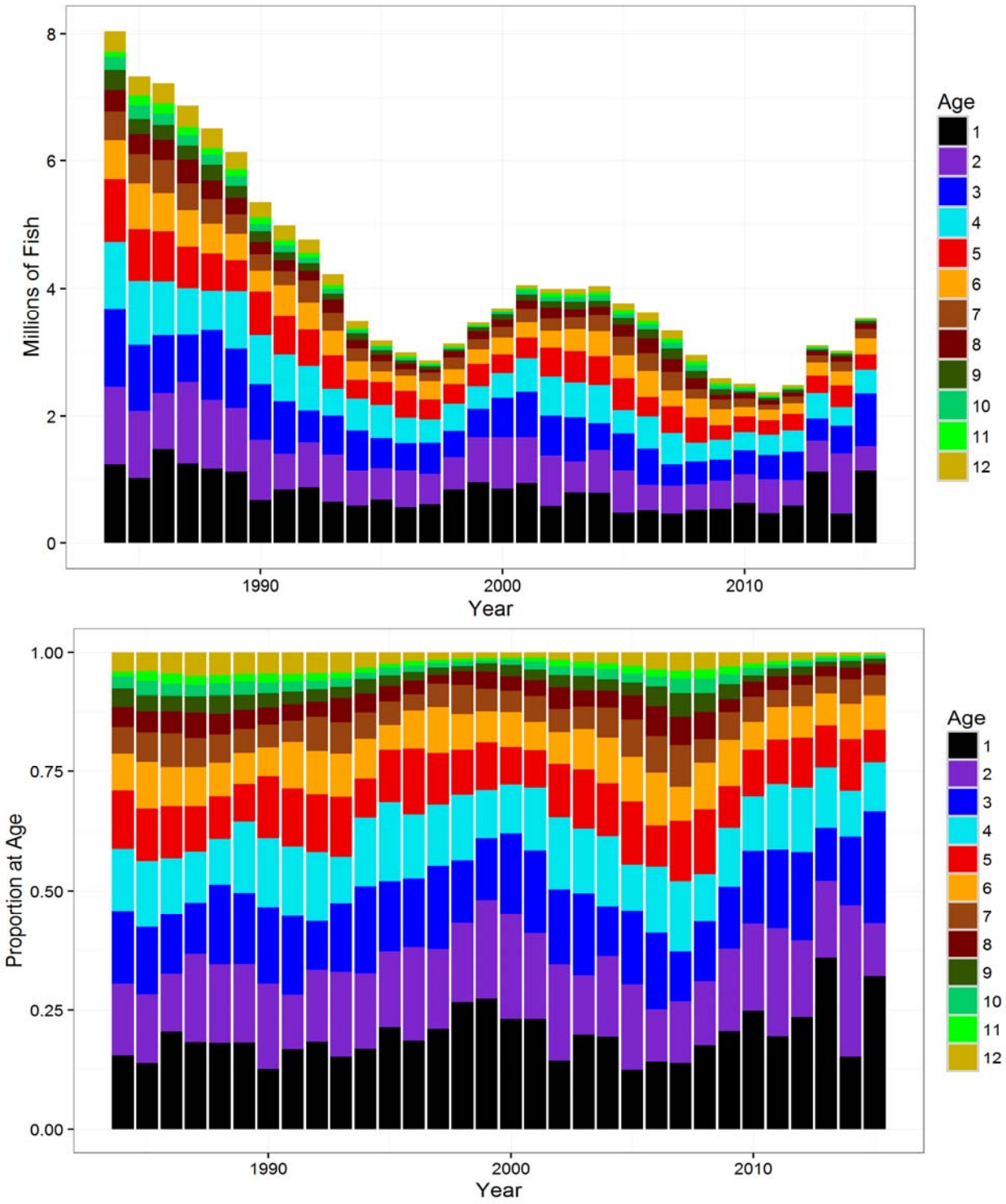


Figure 9. The top graph is the abundance at age for the LIS region in total numbers of fish. The bottom graph illustrates the data in terms of the overall percentage of fish at age within each year.

1.2.2.3 New Jersey – New York Bight

The 2016 stock assessment update indicates the New Jersey-New York Bight (NJ-NYB) stock is overfished and overfishing is occurring.

Fishing Mortality: Fishing mortality target and threshold reference points in the NJ-NYB region are defined as $F_{40\%SPR}$ and $F_{30\%SPR}$, respectively. ASAP model estimated values for the target and threshold are $F_{40\%} = 0.20$ and $F_{30\%} = 0.34$. The ASAP model runs indicated overfishing was occurring in the NJ-NYB region in 2015. Both the point estimate of $F_{2015} = 0.45$ and the 3-year average value of $F_{3yr} = 0.54$ were above the fishing mortality threshold.

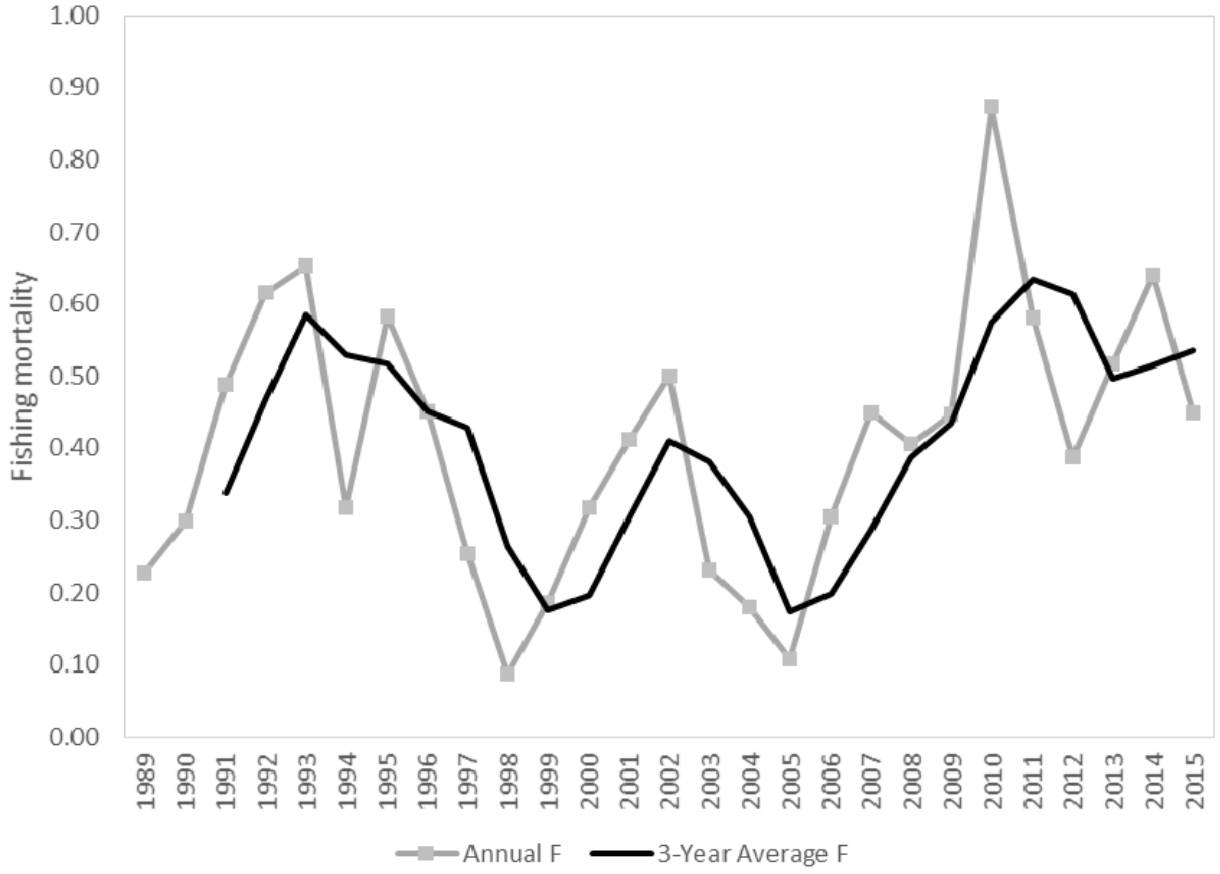


Figure 10. Fishing mortality estimates for the NJ-NYB region.

Spawning Stock Biomass: SSB_{2015} was estimated at 1,809 mt, approximately 23% below the SSB threshold (2,351 mt) and 43% below the target (3,154 mt), indicating the stock is overfished.

SSB shows a general decline from approximately 6,000 mt in 1989 to around 1,900 mt by 1996. Regulations in 1997 and 2003 allowed slight increases in SSB in subsequent years, but these gains were short lived as F rebounded. From 2006 to 2011, SSB declined from around 2,000 mt to 1,000 mt, but has since recovered to 1,835 mt (90% confidence intervals 1,352 - 2,489 mt).

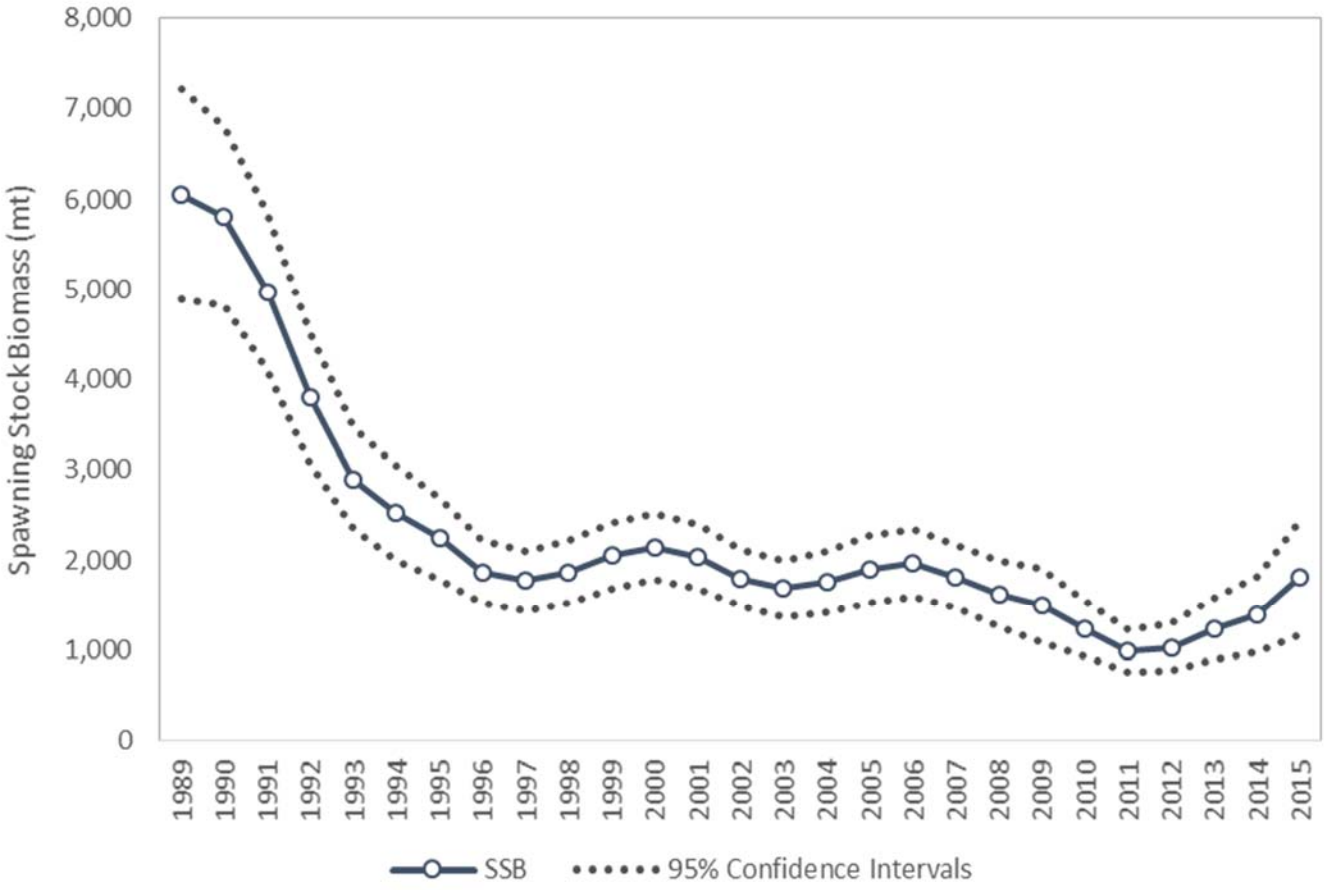


Figure 11. Spawning stock biomass estimates for the NJ-NYB region.

Recruitment: During the early 1990s, recruitment (age 1) follows a similar pattern as SSB, declining from 1.5 million in 1989 to less than 1 million by 1993. From 1993 to 2011, recruitment varied without trend between approximately 560,000 and 1,010,000 fish annually. Estimates of recruitment in the last four years of the model were above 950,000 fish, with an apparent strong year class in 2014, estimated at 2.26 million.

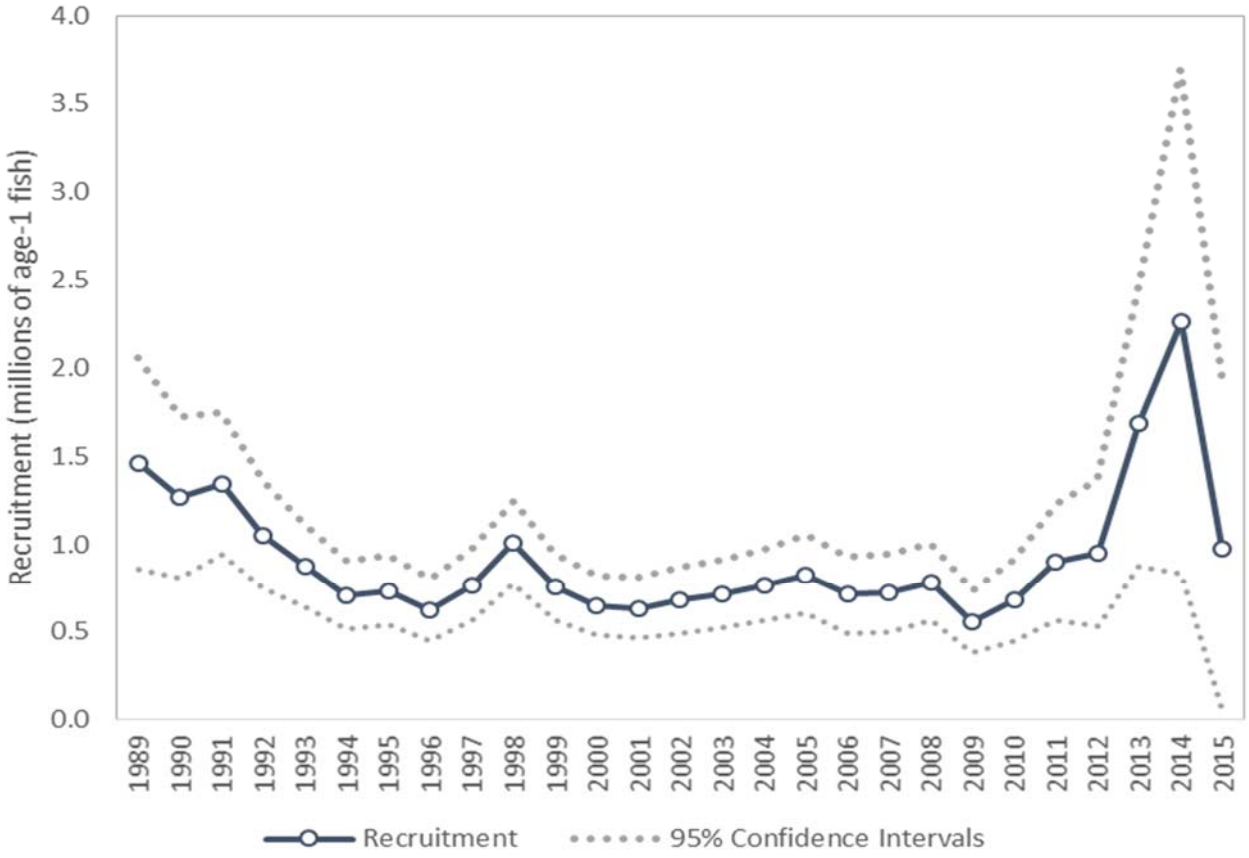


Figure 12. Recruitment estimates for the NJ-NYB region

Abundance: Abundance at age in the stock of the terminal year shows a dominance of fish aged 1 through 3 with declining numbers from age 4 through age 12.

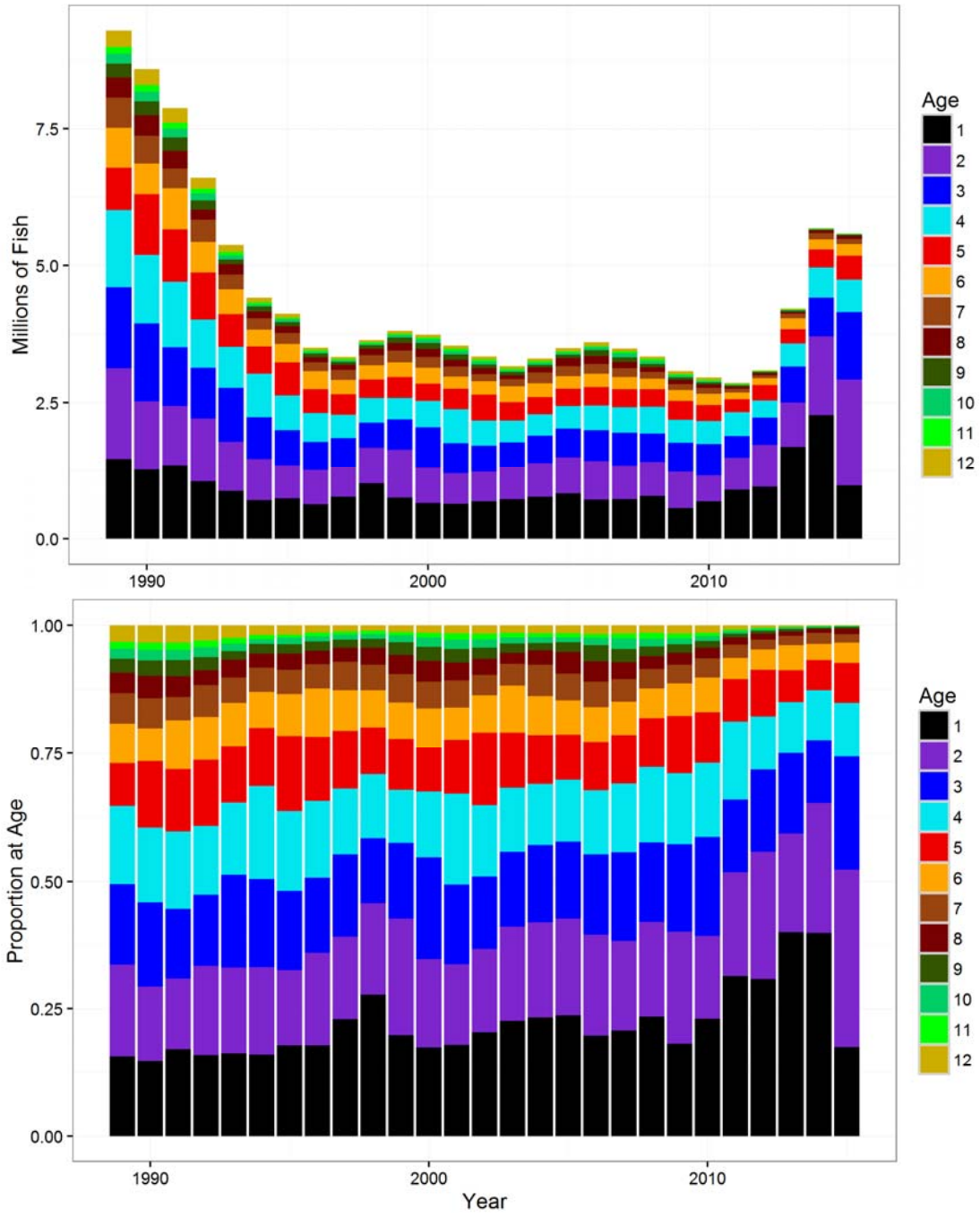


Figure 13. The top graph is the abundance at age for the NJ-NYB region in total numbers of fish. The bottom graph illustrates the data in terms of the overall percentage of fish at age within each year.

1.2.2.4 Delaware-Maryland-Virginia

The 2016 stock assessment update indicates the Delaware-Maryland-Virginia (DelMarVa) stock is overfished and overfishing is not occurring.

Fishing Mortality: F_{target} is defined as $F_{40\%SPR} = 0.16$, and $F_{threshold}$ is defined as $F_{30\%SPR} = 0.24$. The three year average F from 2013-2015 was 0.16, equal to the target and below the threshold, indicating overfishing is not occurring.

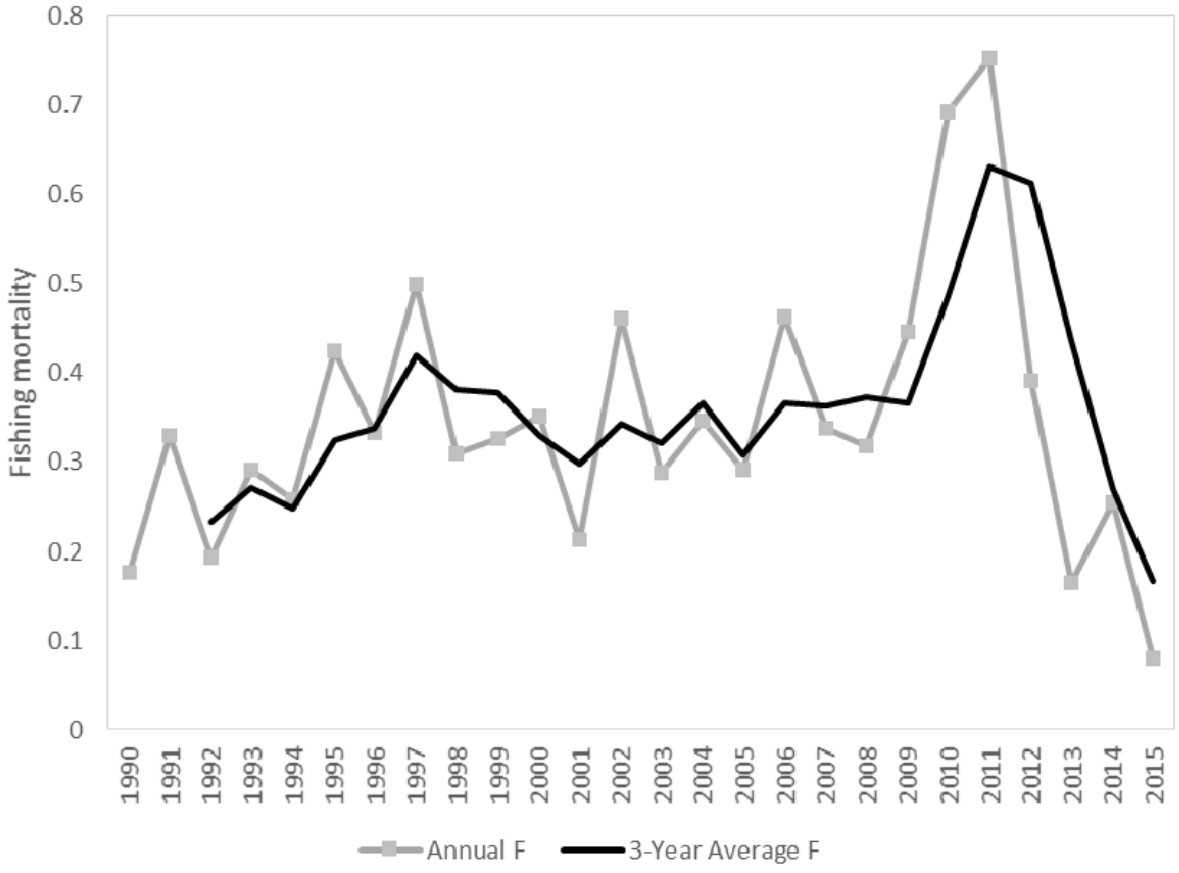


Figure 14. Fishing mortality estimates for the DelMarVa region

Spawning Stock Biomass: The SSB target for DelMarVa is the long-term equilibrium SSB associated with $F_{40\%SPR}$, equal to 1,919 mt. The SSB threshold is the SSB associated with $F_{30\%SPR}$ = 1,447 mt. Terminal year SSB 2015 estimate is 620.9 mt, below both the target and the threshold, indicating the stock is overfished.

Both total abundance and spawning stock biomass have declined steadily in the DelMarVa region since 2009, and SSB reached historically low level of 609 mt in 2015.

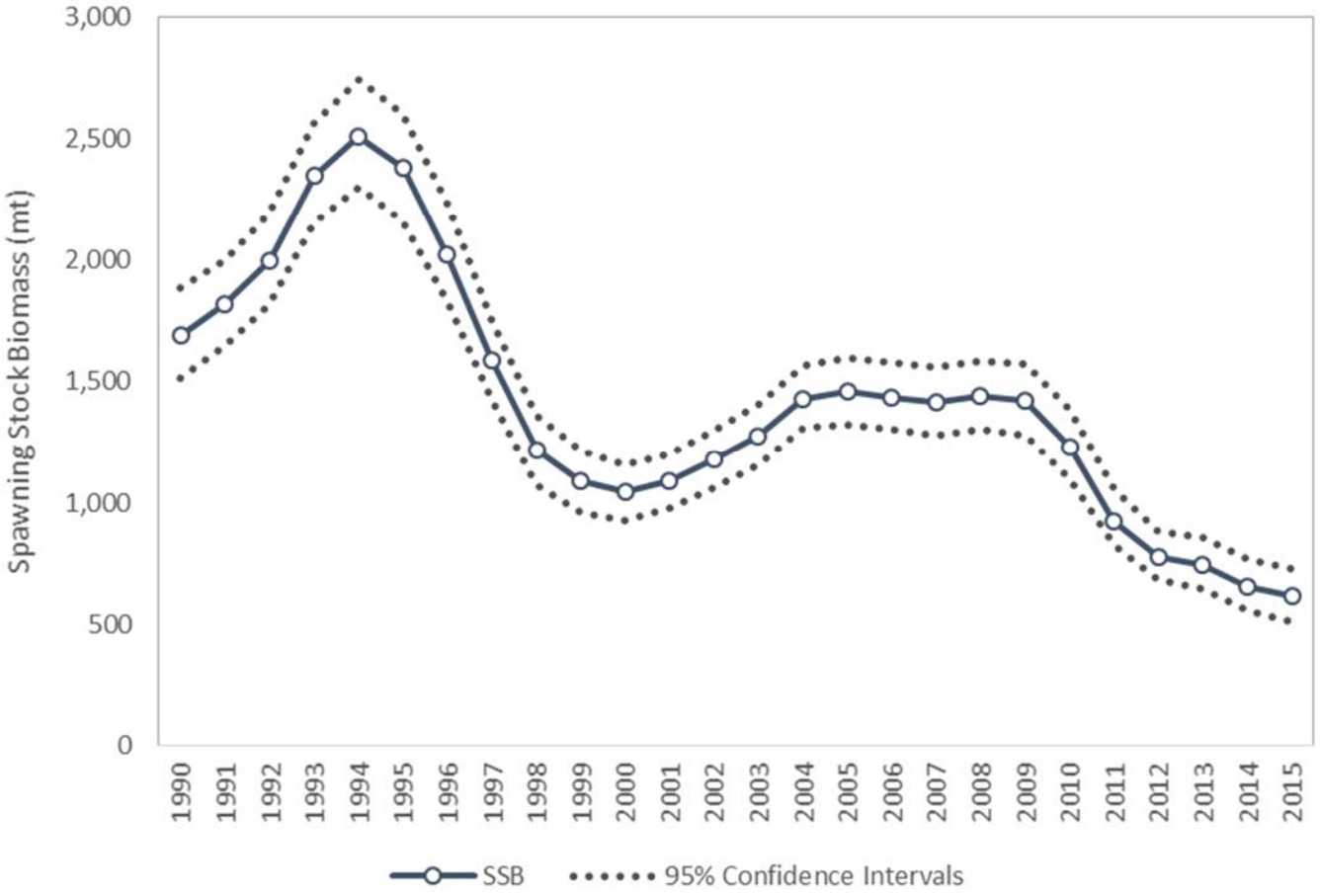


Figure 15. Spawning stock biomass estimates for the DelMarVa region

Recruitment: Recruitment appears to have been on the decline since 2009, reaching the lowest level in 2013 at 110,620 fish, but began to increase thereafter. Overall, recruitment has exhibited low variability and a lack of sharp inter-annual changes.

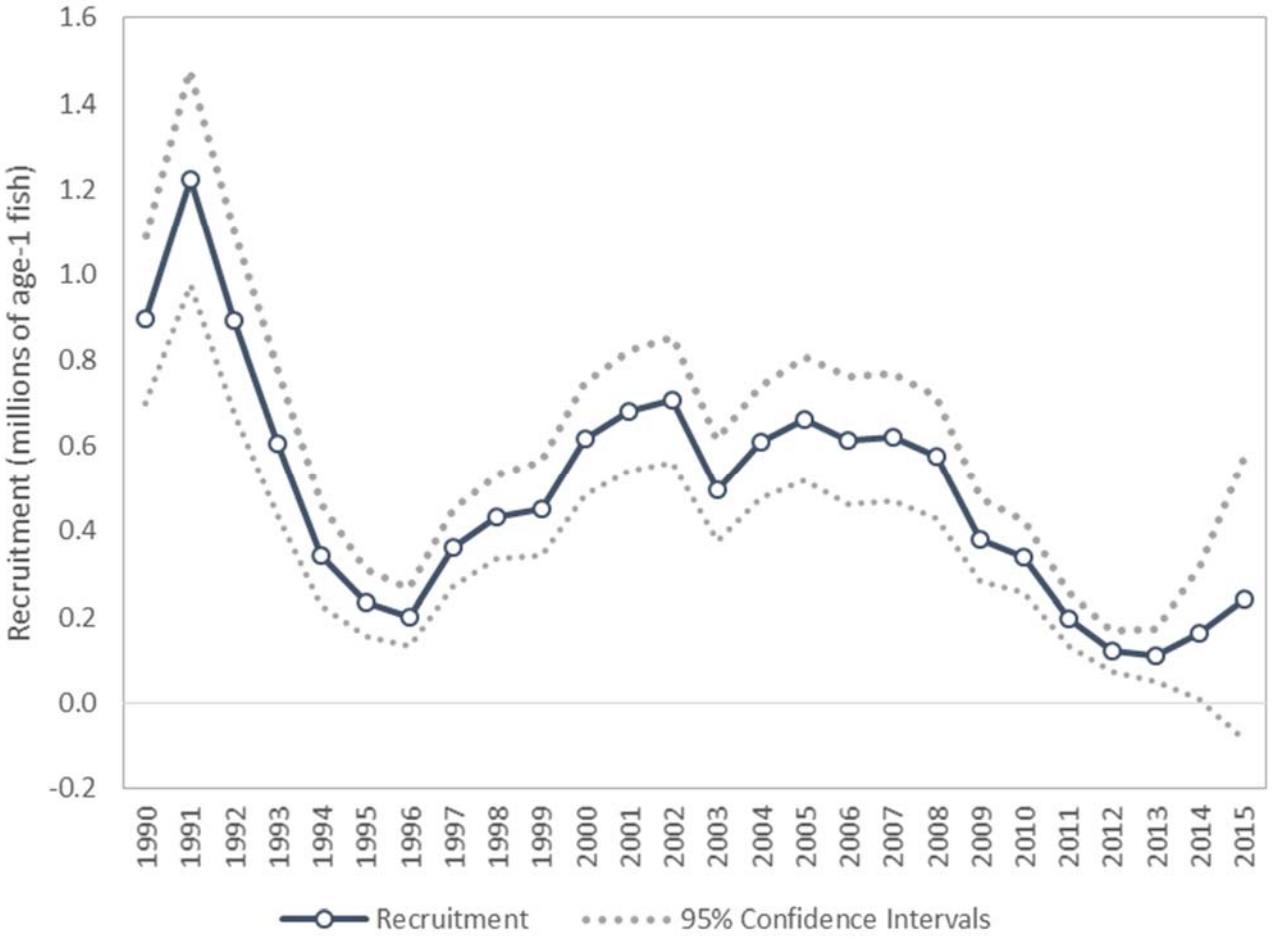


Figure 16. Recruitment estimates for the DelMarVa region

Abundance: Both total abundance and spawning stock biomass have declined steadily in the DelMarVa region since 2009. Total abundance declined from a stable level of about 2.5 million fish in 2002-2009 period to the current low of 0.86 million fish in 2015.

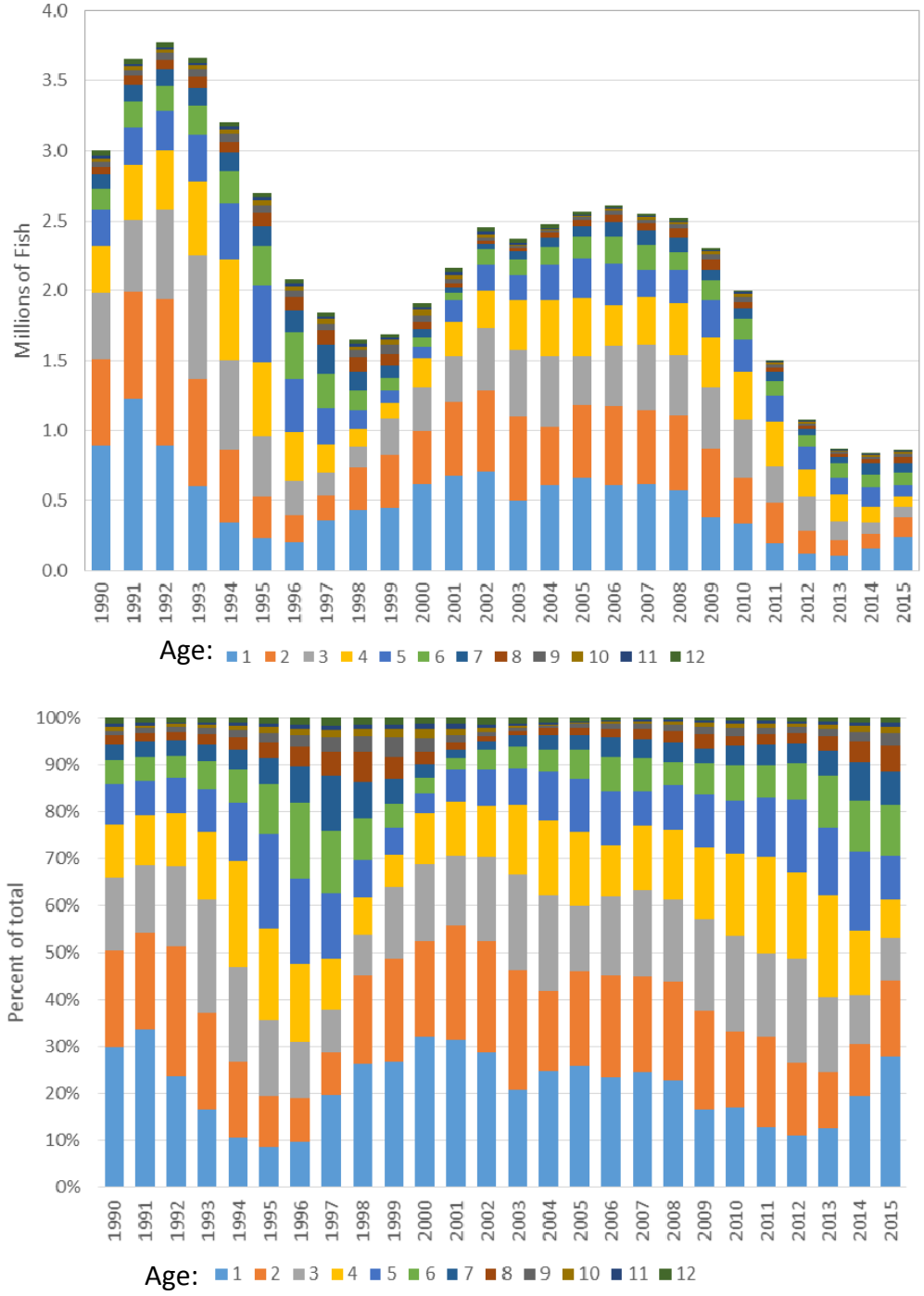


Figure 17. The top graph is the abundance at age for the DelMarVa region in total numbers of fish. The bottom graph illustrates the data in terms of the overall percentage of fish at age within each year.

1.3 DESCRIPTION OF THE FISHERY

The proportion of harvest from each region has fluctuated somewhat over the years (Figure 18), with the DelMarVa's proportion declining in recent years and the LIS region's proportion growing. From 2013-2015, MARI accounted for 27% of coastwide removals, LIS accounted for 35%, NJ-NYB accounted for 32%, and DMV accounted for 5%.

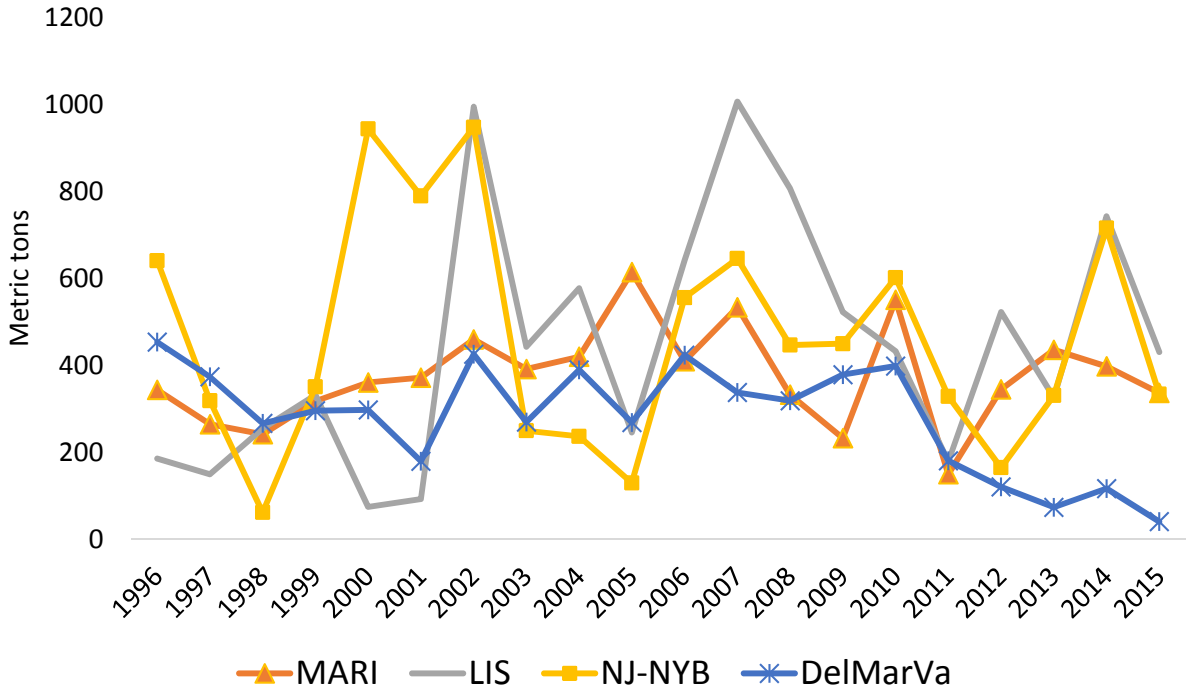


Figure 18. Harvest by Region (1996-2015); including recreation harvest, recreational release mortality, and commercial landings

Coastwide recreational harvest peaked in 1986 at over 7 million fish and since declined. Average recreational harvest from 2013-2015 was 708,136 fish, with 2014 nearly double the harvest of 2013 and 2015. In 2014, over 1 million fish were harvested compared to approximately 545,282 fish in 2015. The 2014 estimate was also more uncertain than the 2013 and 2015 estimates, with a PSE of 24.7% compared to 16-17% in 2013 and 2015.

Coastwide commercial harvest showed a similar pattern to recreational harvest, although the magnitude is smaller, representing approximately 9% of the total harvest over the entire time series. It peaked in the late 1980s at 1.2 million lbs (525 mt), and declined to an average of 273,373 lbs (124 mt) in 2013-2015. Commercial harvest in 2014 was 284,396 lbs (129 mt), not significantly different from the 2015 harvest of approximately 260,000 lbs.

1.3.1 Massachusetts and Rhode Island

Recreational anglers account for upwards of 90% of landings in this region. In the MARI region, recreational landings peaked in 1986 at nearly 2.7 million fish and fell sharply to about 13% of

its peak by the mid-1990s. Since then landings have remained low and have varied in the range of approximately 52,000 to 242,000 fish. The 2013-2015 average recreational landings are 167,085 fish. The majority (nearly 75%) of tautog recreational harvest in the MARI region comes from the private/rental boat mode. The remaining 25% is split relatively evenly among the shore and for-hire (party/charter boat) modes.

Commercial landings in the MARI region peaked in 1991 at approximately 725,300 lbs (329 mt), declined to 97,000 lbs (44 mt) in 1996, and since then has varied in the range of 110,000 – 200,000 lbs (50 to 90 mt). The 2013-2015 average landings in the MARI region were approximately 121,250 lbs (55 mt).

Total removals in the MARI region, including recreation harvest, recreational release mortality, and commercial landings averaged 390 mt from 2005-2015; 337 mt were taken in 2015 (Figure 19).

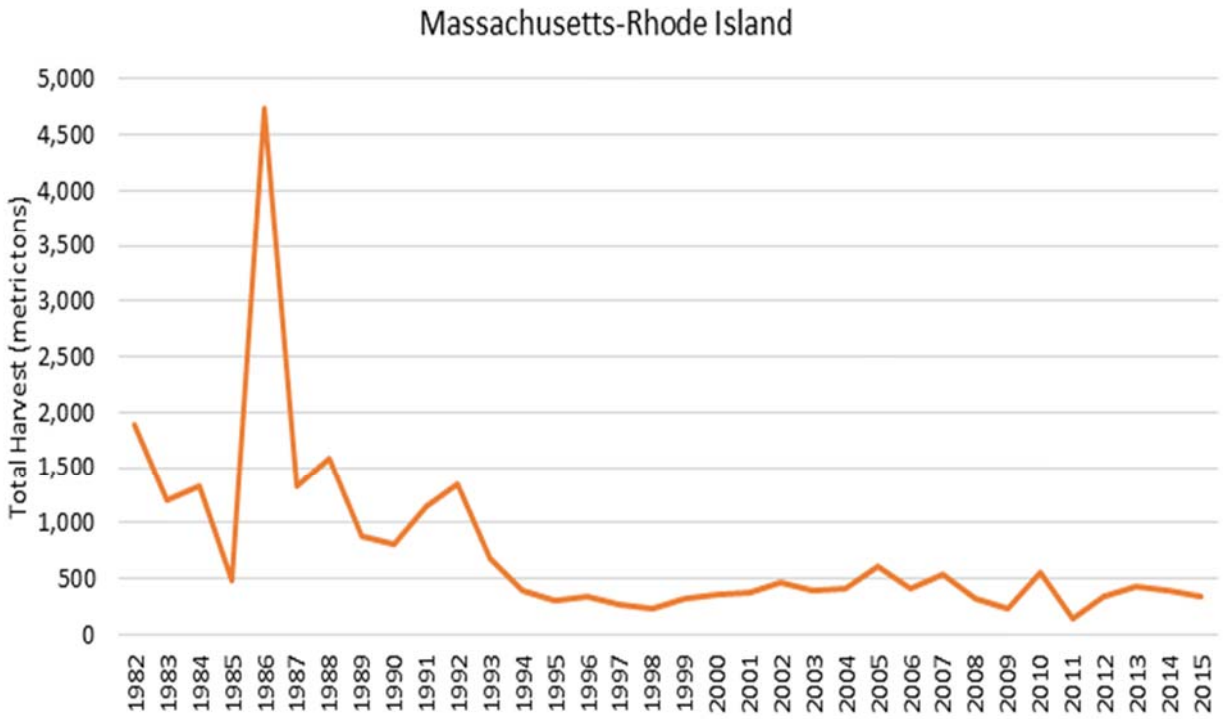


Figure 19. MARI Harvest; including recreation harvest, recreational release mortality, and commercial landings

1.3.2 Long Island Sound

Recreational anglers account for approximately 88% of harvest in this region (landings and dead discards). In the LIS region, recreational landings peaked in 1988 at 667,000 fish and declined to 29,000 fish in 2000. Since then landings have increased and have varied in the range from 76,000-514,000 fish. The 2013-2015 average recreational landings are 220,000 fish.

Commercial harvest accounts for approximately 12% of total harvest. In the LIS region, commercial landings peaked in 1987 at 350,535 lbs (159 mt), declined to 33,069 lbs (15 mt) in

1999 and 2000, and since then have stabilized in the range of 88,185 lbs (40 mt). The 2010-2014 average landings in LIS are 82,894 lbs (37.6 mt).

Total removals in the LIS region, including recreation harvest, recreational release mortality, and commercial landings averaged 1.16 million lbs (530 mt) from 2005-2015; 950,192 lbs (431 mt) were taken in 2015 (Figure 20).

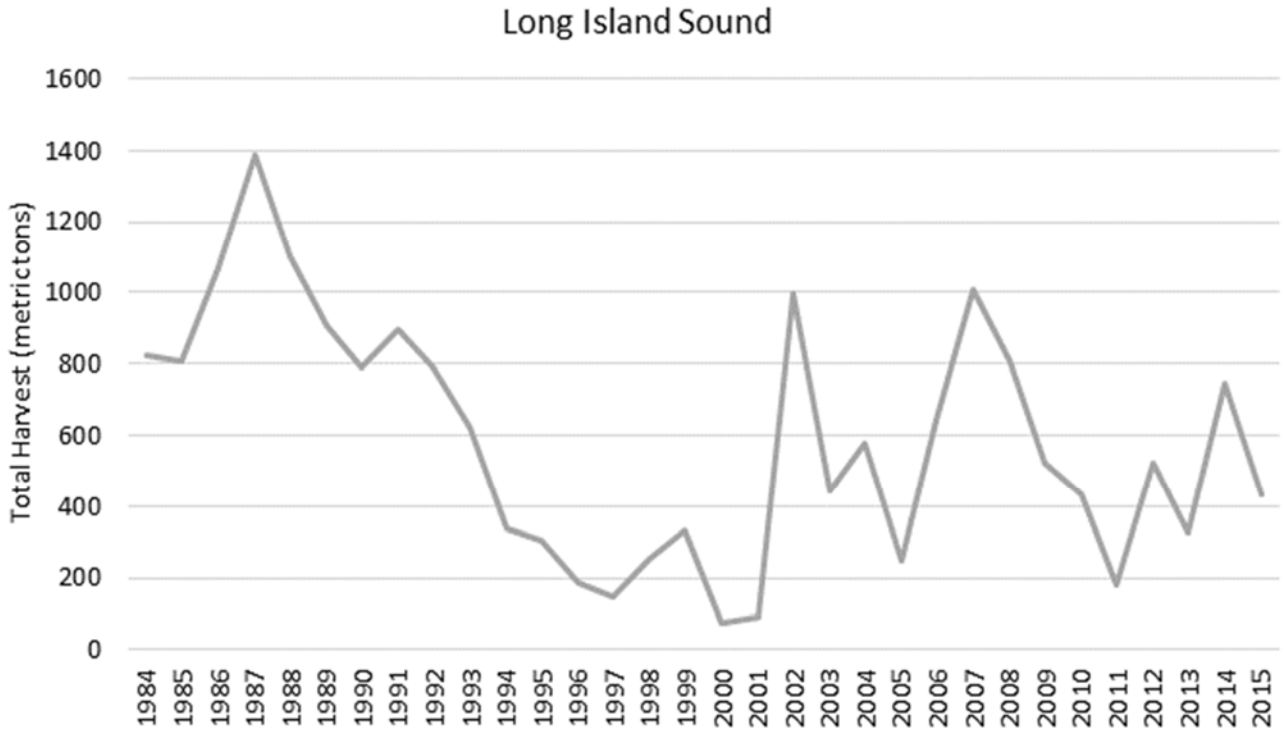


Figure 20. LIS Harvest; including recreation harvest, recreational release mortality, and commercial landings

1.3.2 New Jersey - New York Bight

Recreatinal harvest accounts for approximately 90% of landings within the NJ-NYB region. Recreational harvest exceeded one million fish per year in most years between 1988 and 1993, with a peak of 1.56 million fish in 1991. Harvest dropped quickly following the peak, however, reaching a time series low of just 24,000 fish in 1998 with an average annual harvest of 415,000 fish between 1994 and 2002. Recreational landings dropped again in 2003, falling below 200,000 fish before recovering slightly by 2006. Between 2006 and 2015, annual landings had high inter-annual variability without a trend, ranging from approximately 70,000 to 400,000 fish, with an average of 268,000 fish.

In the NJ-NYB region, commercial harvest during the late 1980s to mid-1990s fluctuated around 154,324 lbs (70 mt) annually, but declined rapidly to 44,092 lbs (20 mt) by 1999. Landings rebounded to 132,277 lbs (60 mt) by 2007 and 2008, and since then fell to 88,185 lbs (40 mt) and below. Commercial harvest during 2013 to 2015 has shown a declining trend falling from

99,207 lbs (44 mt) in 2013 to nearly 86,000 lbs (39 mt) in 2015 with an average harvest of 90,389 lbs (41 mt) for this time period.

Total removals in the NJ-NYB region, including recreation harvest, recreational release mortality, and commercial landings averaged 947,988 lbs (430 mt) from 2005-2015; 736,344 (334 mt) were taken in 2015 (Figure 21).

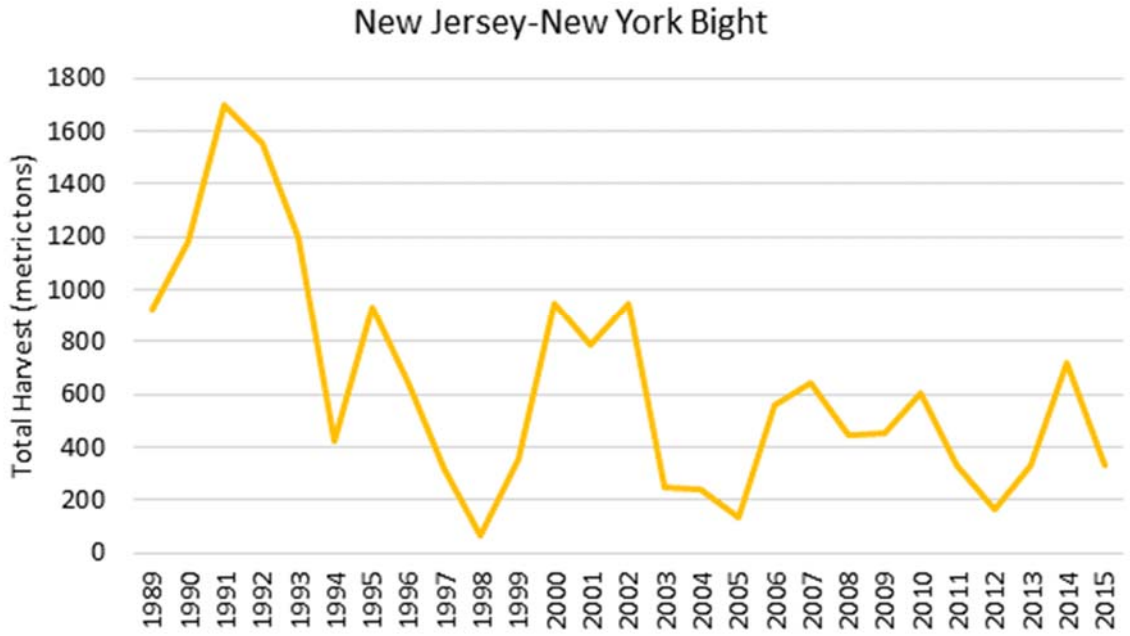


Figure 21. NJ-NYB Harvest; including recreation harvest, recreational release mortality, and commercial landings

1.3.3 Delaware, Maryland, Virginia

Recreational harvest peaked in 1988, 1989 and 1995 at more than half a million fish. After the FMP was implemented, harvest levels decreased by half. Average recreational harvest from 2000-2009 was 188,000 fish and average harvest from 2010-2015 was 92,000 fish. Recreational harvest in DelMarVa has declined from 241,064 fish in 2010 to 22,215 fish in 2015. The decline coincided with the protective regulatory measures (minimum size increase and seasonal closures) instituted in 2012 to reduce fishing mortality. Recreational landings in 2015 were the lowest in time series. Recreational discards have also declined from 686,392 released fish in 2010 to 125,258 released fish in 2015.

Commercial landings have declined in recent years, primarily due to a decline in Virginia, which accounts for the majority of commercial effort. Average commercial landings for 2000-2009 were approximately 17,000 lbs. Average commercial landings for 2013-2015 were 10,740 pounds (4.9 mt), with 2015 being much lower at 6,233 lbs (2.8 mt). Data on commercial discards were not available, but discards are believed to be minimal.

Total removals in the DelMarVa region, including recreation harvest, recreational release mortality, and commercial landings averaged 529,109 lbs (240 mt) from 2005-2015; 90,390 lbs (41 mt) were taken in 2015 (Figure 22).

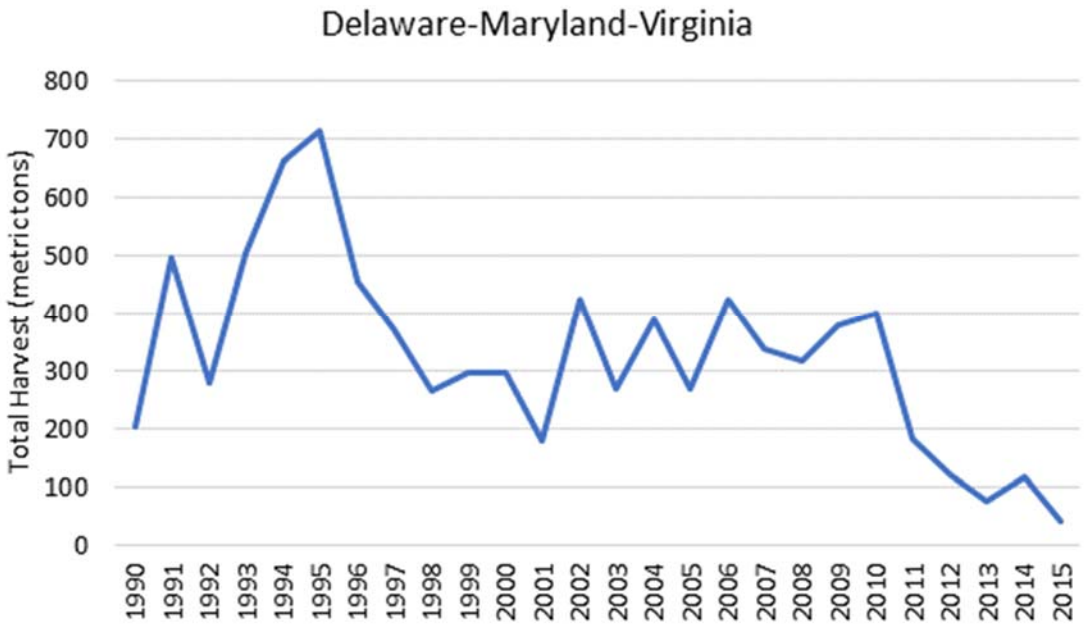


Figure 22. DelMarVa Harvest; including recreation harvest, recreational release mortality, and commercial landings

1.4 HABITAT CONSIDERATIONS

1.4.1 Description of the Habitat

Tautog are attracted to many types of structured habitat in all stages of their life cycle after their three-week planktonic larval stage. Suitable structures include both natural and man-made, such as submerged vegetation, shellfish beds, rocks, pilings, shipwrecks and artificial reefs (Olla et al, 1974; Briggs 1975; Briggs and O'Connor 1971; Orth and Heck 1980; Dorf and Powell 1997; Steimle and Shaheen 1999). North of Long Island, New York, rocks and boulders left by glacial deposition are abundant and provide rock-reef habitat, especially for larger tautog. South of Long Island, natural rocky habitats are rare (Flint 1971) and tautog in southern areas commonly inhabit shellfish beds, coastal jetties, pilings, shipwrecks, and artificial reefs. Tautog are principally coastal fish, occurring most commonly inshore from the intertidal zone to within about 50km from shore (Collette and Klein-MacPhee 2002).

Eggs and Larvae: Studies have collected them on the inner continental shelf and within estuaries from May through August (Berrien et al. 1978, Colton et al. 1979, Ferraro 1980, Bourne and Govoni 1988, Monteleone 1992, Able and Fahay 1998, Witting et al. 1999). Viable eggs are 1 millimeter (mm) in diameter, buoyant and are found in the greatest numbers at the water surface. Hatching occurs in 81 hours at 15°C and 42 hours at 20°C (Auster 1989, Perry 1994). The larvae (2 mm at hatching) stay near the surface during the day and may go deeper

at night (Malchoff 1993). After approximately 3 weeks, larvae undergo metamorphosis and settle out of the water column as juveniles (Sogard et al. 1992, Dorf 1994).

Juveniles: Juvenile tautog require sheltered areas for feeding and protection from predators. They are most often found in shallow nearshore vegetated areas such as eelgrass (*Zostera marina*) or algal beds, (commonly sea lettuce *Ulva lactuca*), growing equally well in all of these habitat types (Kuropat et al. 2002). However, environmental factors associated with temperature and dissolved oxygen appear to influence growth rates in these shallow habitats (Phelan et al. 2000). Other studies have found that newly settled individuals prefer areas less than one meter deep (Sogard et al 1992, Dorf and Powell 1997), but move out to deeper water as they grow. Juvenile tautog have been shown to have size specific preference when choosing a shelter (Dixon 1994) and appear to have a strong affinity to their home site, rarely venturing more than a few meters away (Olla et al. 1974, Able et al. 2005).

Adults: Tautog of all sizes exhibit diurnal activity and enter a torpid state at night during which they seek refuge in some type of structure. Soon after morning twilight, tautog have been observed leaving their night time shelter to feed throughout the day (Olla et al. 1974; 1975). When tautog are not feeding during the day, they can be found resting on sand or within shelter, lying on their sides, often grouped together (Bigelow 1974). Elevated temperatures also evoke shelter seeking behavior and depress feeding (Olla and Studholme 1975, Olla et al. 1975a, 1978).

Adult tautog undertake seasonal inshore-offshore migrations in the northern part of their range (New York and north), moving into deeper water when temperatures drop to 8-12°C (Collette and Klein-MacPhee 2002). However a study of the seasonal occurrence of tautog in the lower Chesapeake Bay indicated that most fish tagged and released in these southern waters remained inshore for the winter rather than moving offshore (Arendt et al. 2001). When water temperatures fall between 5-8°C, tautog enter a torpid state and hide in some type of structured habitat (Cooper 1966, Olla et al. 1974, 1979). Juvenile tautog have been observed overwintering in shallow water, lethargic or torpid and partially buried in silt when water temperatures fell below 6°C (Olla et al. 1974). During winter, juveniles appear to remain inshore at perennial sites and disperse during the spring (Stolgitis 1970; Olla et al. 1979).

Tautog are sight feeders, feeding during the day on mollusks, especially mussels (*Mytilus edulis* in the north and *Brachiodontes exustus* in the south), barnacles, decapods including lobster, and echinoderms (Collette and Klein-MacPhee 2002). Juveniles feed primarily on copepods, amphipods, and small decapods (Dorf 1994).

1.4.2 Physical Habitat Characteristics

1.4.2.1 Dissolved Oxygen (DO) levels

No information is available on the effects of low DO levels on eggs or larval tautog. Juvenile tautog are considered to be “hypoxia-tolerant” (LC50 less than or equal to 1.6 mg/L) based on laboratory studies (D. Miller, EPA, Narragansett, Rhode Island, 1995, personal communication).

No laboratory information is available on effects of hypoxia on adult tautog. A field study showed that catch rates declined by half when DO levels drop below 3.0 mg/l and were absent in areas with DO below 2 mg/l (Howell and Simpson 1994). Tautog are capable of leaving low oxygen areas (Ogren and Chess 1969), although some adult mortality has been reported in association with major anoxic events (Perlmutter 1952, Azarovitz et al. 1979).

1.4.2.2 Temperature

High water temperatures (such as those that can result from passing through a power plant cooling water system) can result in egg mortality (Smith et al. 1979) as well as larval mortality or deformity (Olla and Samet 1978). At higher water temperatures larval metabolic rate and yolk usage increases. The resulting larvae may be smaller and at a competitive disadvantage with larger larvae, or other planktivores, when first required to feed on plankton (Laurence 1973). This may slow growth and reduce success in reaching the protected habitats required for settlement.

Adults seek shelter during the day at high water temperatures, and reduce their feeding and aggressive activities (Olla and Studholme 1975, Olla et al. 1978, Olla et al. 1980). Extended periods of high water temperatures may cause large adults to move to cooler water (Adams 1993).

Water temperature serves as the primary trigger for adult tautog seasonal migrations (Olla et al. 1980). At very low water temperatures, adult tautog become torpid (Cooper 1966, Olla et al. 1974). Some adults remain active throughout the year, particularly in the more southerly portion of the species range (Eklund and Targett 1991, Adams 1993, Hostetter and Munroe 1993).

1.4.2.3 Salinity

Although reported from brackish water, tautog have not been collected in freshwater (Bigelow and Schroeder 1953).

1.4.3 Present Condition of Habitats

Besides over exploitation, which primarily affects adult tautog, other sources of mortality can reduce abundance. Very little information is available on disease effects, although finrot has been reported in some locations (see Steimle and Shaheen, 1999). Tautog occur near areas immediately associated with human activity (shallow estuarine areas, rocky and artificial reefs, and submerged stormwater and sewage outfall pipes, etc.) which has resulted in past and current changes in habitat availability and quality. Development of nearshore areas through such activities as dredging of material for channel maintenance, marine construction and other shoreline development resulting in pollutant discharges will impact tautog populations at all life history stages. Shipwreck salvage or reduction in reef height and complexity (shelter sites) may reduce their value as adult tautog habitat. Use of “rock-hopper” roller trawling gear over wrecks, low profile reefs and mussel beds also threatens the quality of these habitats. Declining oyster beds is yet another threat to the estuarine habitat needs of juvenile tautog and other species with similar needs (Chesapeake Bay Program 1994).

Loss or destruction of vegetated bottom areas eliminates juvenile nursery areas. Increased turbidity and siltation due to dredging activities may inhibit feeding in larvae, degrade submerged aquatic vegetation beds used as nursery habitat, as well as damage adult spawning areas. Contaminants, disturbed in the dredging process, and brought into the water column could affect egg, larval and juvenile survival directly, or indirectly, through their food sources.

Entrainment of eggs and larvae in power plant intakes may result in physical damage to early life history stages and heated effluent from these and other industrial outfalls may also result in thermal stress. Discharge of treated sewage effluent and industrial wastes may have direct effects on fish as well as indirect effects on habitat and potential food sources through eutrophication. Results could include alterations of community composition (animal and vegetation) due to nutrient enrichment, and resulting anoxic and hypoxic environments.

Contaminants in the environment can affect tautog directly through contact and indirectly through ingestion of contaminated food. Reductions in growth and reproductive success, as well as direct mortality, are possible effects due to metals, oil, or other chemicals, which often remain in natural environments for long periods of time without degradation to less harmful forms. Biological sources of contamination could include direct contact with or ingestion of food associated with noxious or toxic phytoplankton blooms.

No information is available on direct pollution effects in tautog, however chromium, copper, and nickel levels in New Jersey coastal adult tautog liver tissue decreased significantly with increasing body length (Mears and Eisler 1977). Hall et al. (1978) found low to average levels of 15 metals in tautog muscle tissue (unknown collection site). Recently, the National Marine Fisheries Service (1995) found metal concentrations (silver, cadmium, chromium, copper, nickel, lead, zinc, arsenic and mercury), as well as PCB, PAH and pesticide concentrations below FDA action concentrations in adult tautog collected from Manasquan Inlet, New Jersey. In a laboratory study, Deacutis (1982) found that adult tautog showed little tendency to avoid oil contaminated feeding locations and would readily consume fuel oil contaminated bivalve meat.

Greater direct contaminant effects could occur with eggs and larvae, but because tautog feed on bottom-dwelling organisms, juveniles and adults could experience trophic transfer, resulting in indirect effects and long-term accumulation of contaminants in edible flesh.

Prevention of habitat loss through the species range should be a high priority for restoration of the tautog resource.

1.5 IMPACTS OF THE FISHERY MANAGEMENT PROGRAM

1.5.1 Biological and Environmental Impacts

The implementation of Amendment 1 should improve management of tautog. As proposed, the Amendment will create regional boundaries which allow the species to be managed according to localized population structures and harvesting patterns. The intent is to manage based on biology and behavior of the species including movement patterns. As indicated in tagging studies, tautog display strong site fidelity and limited north-to-south migration. If regional

management is approved then the strategies to minimize overexploitation can be tailored to the unique circumstances of each region, thereby largely eliminating the problem of management generalization that can be associated with managing tautog as a coastwide stock. Any biological impacts resulting from this document are expected to be positive.

1.5.2 Social Impacts

1.5.2.1 Recreational Fishery

Tautog is a highly prize game fish targeted by anglers fishing at natural and manmade structures. The recreational fishery accounts for approximately 90 percent of the coastwide harvest. In a 2013 National Saltwater Angler Survey, conducted by NMFS, 591 east coast anglers identified tautog as a frequently targeted species (Lovell, 2015). When asked in the survey about attitudes toward broad-level management objectives, 93% of angler respondents prefer a minimum size to some degree, and 90% prefer a bag limit. Eight-one percent of respondents identified recovering fish stocks that have been depleted as an 'extremely important' fisheries management objective. The actions proposed in this Amendment overlap with desired management approaches identified in the survey, additional proposed actions are an outcome of stakeholder discussions.

1.5.2.2 Commercial Fishery

In recent years, commercial landings accounted for up to 40% of the catch in some states, largely due to the market for live fish. Steady demand has increased the price for live tautog and has further incentivized the black market for undersized, out-of-season, or illegal quantities of tautog. There is a preference for plate sized fish up to 12 inches, which is below the 15-16 inch size limits set by states.

The proposed management changes, such as the commercial harvest tagging program, were designed with input from the law enforcement community and feedback from commercial fishermen. The intent of the program is to minimize illegal, unreported and unregulated fishing that has perforated the fishery since the 1990s. It is an attempt to eliminate the backdoor practice of selling underpriced tautog by unlicensed fishermen in the black market. Desired outcomes from this management action are higher prices for those commercial fishermen that follow established regulations and greater accountability in the commercial fishing sector.

1.5.2.3 Subsistence Fishery

A subset of illegal activity occurs among individuals and small groups harvesting fish for personal consumption or subsistence. These individuals may not even be aware they are violating specific regulations. Additional information on the subsistence fishery is not available at this time.

1.5.3 Economic Impacts

As described elsewhere in Amendment 1, the recreational component of the fishery accounts for the majority of harvest compared to the commercial harvest. In order to evaluate how dividing the current single coast-wide stock into regional stocks would affect anglers and commercial fisherman, information on how this would affect their behavior or the amount of

fish they catch is needed. For recreational anglers, the information needed would include how the number of fishing trips for tautog change, if they keep taking the same number of trips but make substitutions for target species and/or change fishing mode (private boat, shore, for-hire), and if they travel to different locations as a result. Changes in the number of fish, size of fish, and species composition would also be important aspects of how they might be impacted.

1.5.3.1 Recreational Fishery

There are no published or unpublished studies (as of 2016) that document the economic impacts or economic value of the recreational tautog fishery. Without specific information on how the proposed changes to the FMP would affect the number of recreational trips taken for tautog and/or the catch per angler, it is not possible to estimate any economic impacts or effects at this time.

However, there are a few recent socio-economic surveys and publications by the National Marine Fisheries Service, Office of Science and Technology, with limited data on anglers who fish for tautog. These may be useful to understand in general the socio-economic aspects of anglers who fish for tautog and may be useful in a future analysis of specific management options once those are better defined.

National Saltwater Angler Survey

The first of these is the 2013 National Saltwater Angler Survey that asked recreational anglers about their attitudes and preferences for recreational fishing trips, management strategies and management objectives. An analysis of the data shows that 226 anglers who responded to the survey from the North Atlantic region (Maine to Connecticut) and 365 from the Mid-Atlantic (New York to Virginia) replied they frequently targeted tautog (Lovell 2013). For this document, the data on these 591 anglers was analyzed to understand their preferences for trip characteristics and management options and objectives. In the survey, respondents were asked to rate the importance of each characteristic listed below using a five-point scale, ranging from “Extremely important” to “Not important at all” (Figure 23).

A. Catch fish
B. Catch as many fish as I can for consumption
C. Catch-and-release as many fish as possible
D. Catch a trophy-sized fish
E. Target a particular species
F. Catch the bag limit of a species I am targeting
G. Know that I will encounter abundant fish
H. Fish in an area that is not heavily congested
I. Be close to amenities such as parking, restrooms, cleaning stations, boat launches, etc.
J. See information concerning fishing regulations clearly posted
K. Have access to staff (park staff, marine operators, etc.) to answer questions or provide information
L. Have easy access to weather and tide information
M. Fish in a scenic area

N. Fish with family or friends
O. Teach others about fishing

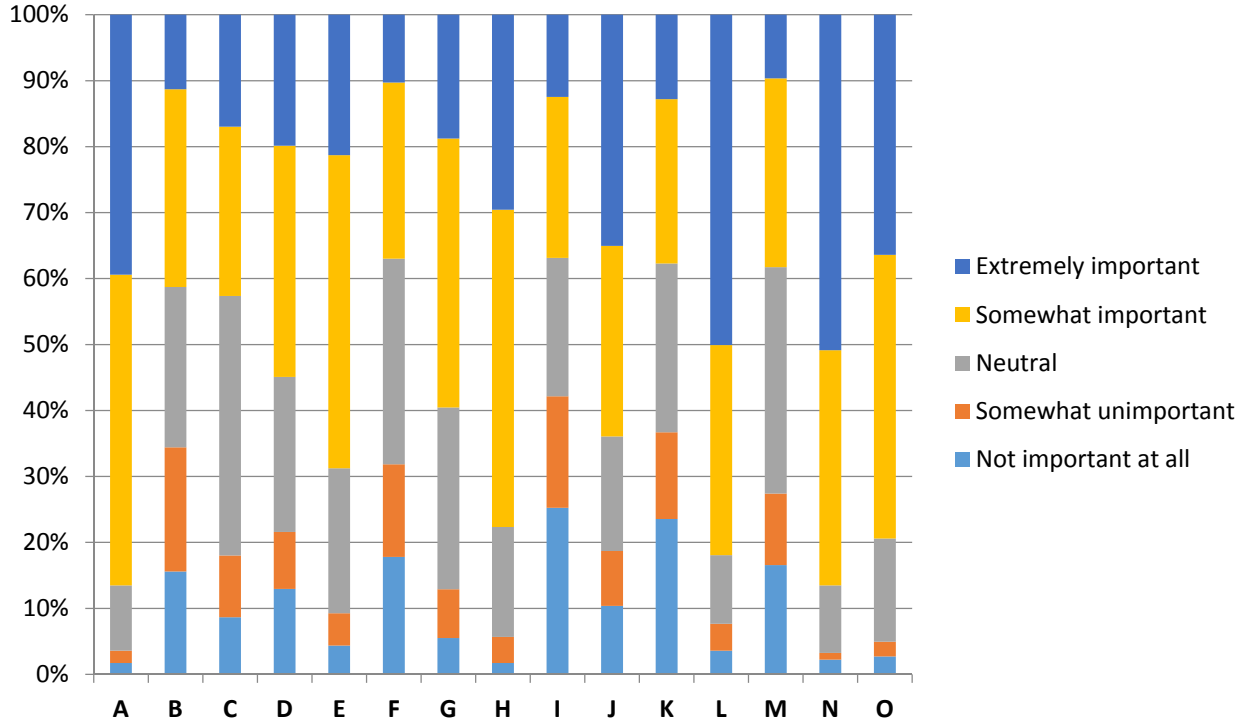


Figure 23. Fishing Trip Characteristics Important to Tautog Anglers (Maine to Virginia)

87% of the surveyed anglers fishing for tautog rated both "fishing with family or friends" and "catching fish" as important (defined as either somewhat or extremely important on the scale). Having easy access to weather and tide information was important to 82% of tautog anglers, and 78-79% rated "teach others about fishing" and "fish in an area that is not heavily congested" as important. Of concern to managers, the characteristics "catch the bag limit of a species I am targeting" was ranked as important by only 37% of anglers. In comparison to all anglers across the country as well as in the North Atlantic and Mid-Atlantic, these results are fairly consistent in terms of percentages ranking the various characteristics as important (Brinson and Wallmo 2013; Rubio et al 2014).

To help understand attitudes toward different types of management strategies, anglers were also asked to rate their preferences for a list of management strategies. Respondents rated each of a series of strategies using a five-point scale of "Strongly prefer," "Somewhat prefer," "Slightly prefer," "Do not prefer at all," and "I am unsure." Results for a select group of management strategies relevant to the proposed changes in the tautog FMP are presented in Figure 24.

- Establish minimum size limits of the fish you can keep
- Limit the total number of fish you can keep
- Increase the recreational harvest limit by decreasing the commercial harvest limit

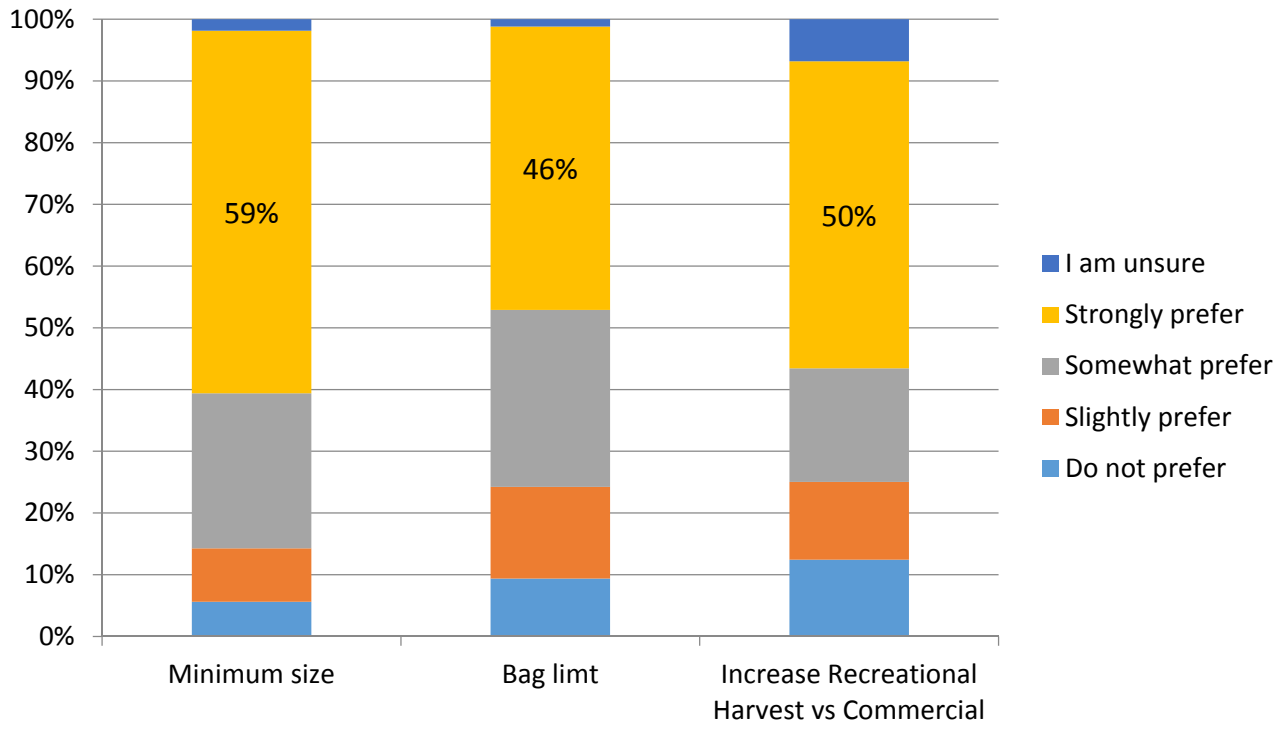


Figure 24. Management Preferences of Tautog Anglers (Maine to Virginia)

Another question the survey asked anglers included attitudes toward broad-level management objectives. Respondents were asked to rate each of several objectives using a six-point scale of "Extremely important," "Somewhat important," "Neutral," "Somewhat unimportant," "Not important at all," and "I am unsure." Results for some of the relevant objectives to the tautog FMP are presented in Figure 25.

a. Ensure that large quantities of fish are available to catch
b. Allocate some quota from commercial fisheries to recreational fisheries
c. Recover fish stocks that have been depleted

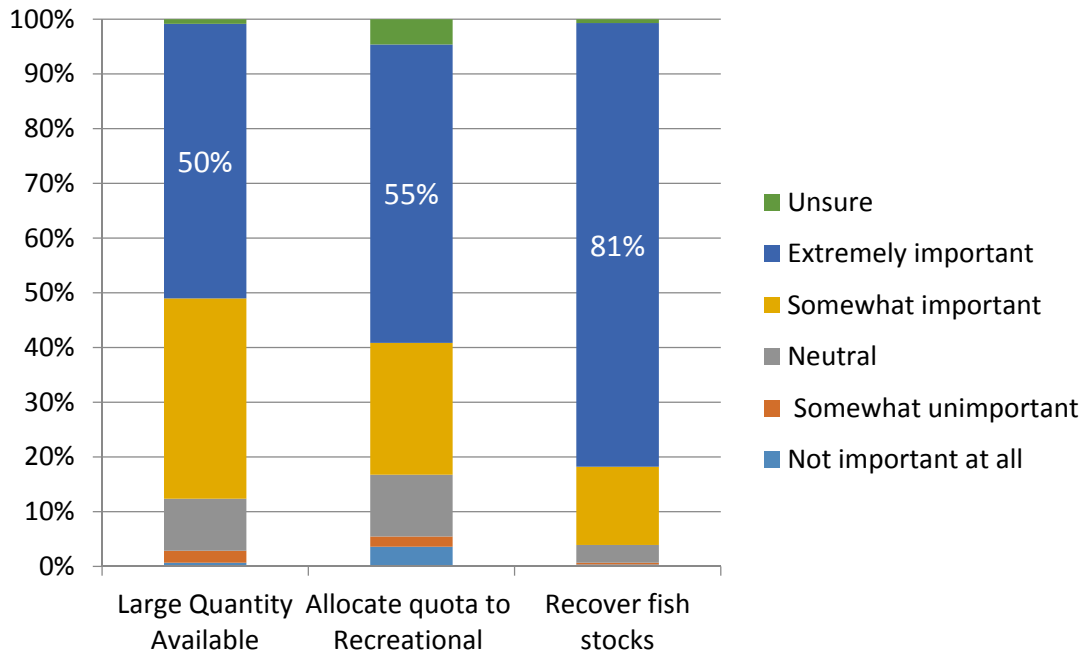


Figure 25. Preferences of Tautog Anglers (Maine to Virginia) For Different Management Objectives

Recovering fish stocks that have been depleted was extremely important to 81% of tautog anglers. Ensuring large numbers of fish to catch was ranked extremely important by 50% of tautog anglers. 55% said reallocating some of the quota from commercial to recreational anglers was extremely important, however, it is important to note the question did not ask about specific species in this context. The above responses to the survey can be useful in understanding what motivates recreational tautog anglers in general and how they may respond to changes in the tautog FMP.

Recreational Bait and Tackle Economic Survey

The most recent NMFS survey was conducted in 2014. The survey obtained information from independently owned bait and tackle stores and other independent stores selling marine recreational bait and tackle in coastal areas. Store owners were asked a series of questions on what type of bait and tackle they sold, their cost and earnings, and questions on the top species targeted by customers. The information collected was used to estimate the economic impacts of these stores to the regions.

For the North Atlantic Region, independent bait and tackle stores supported 958 jobs and contributed toward $140 million in regional economic output from sales of marine recreational bait and tackle (Hutt et al 2015). For the Mid-Atlantic region, bait and tackle stores supported 1,922 jobs and $293 million in output. In the Mid-Atlantic and New England, Bait and Tackle and Other Store owners indicated tautog (8.6%; 11.9%) was the sixth and fourth highest generators of sales for their business, respectively (Table 3). The information in this survey may be used to

analyze economic impacts to bait and tackle shops in the management areas if a clear link between changes in the tautog FMP and changes in sales of bait and tackle can be made.

Table 3. Saltwater recreational fisheries that generated the greatest sales of bait and tackle for retail stores in the Mid-Atlantic and New England as identified by store owners and/or managers. Percentages exceed 100% as respondents were asked to select the top three fisheries (Hutt et al, 2015). N is the number of store owners that participated in the survey.

Fisheries Management Region: Mid-Atlantic

	Total		Bait & Tackle Stores		Other Stores	
Fishery	**N**	**%**	**N**	**%**	**N**	**%**
Striped bass/Bluefish	118	72.4	58	76.3	60	69
Summer or Winter flounder	83	50.9	46	60.5	37	42.5
Atlantic croaker/Spot/Scup	49	30.1	19	25	30	34.5
Black seabass	16	9.8	9	11.8	7	8
Marlin/Tuna	9	5.5	9	11.8	0	0
Tautog/Triggerfish	**14**	**8.6**	**8**	**10.5**	**6**	**6.9**
Red or Black drum	10	6.1	5	6.6	5	5.7
Weakfish	10	6.1	4	5.3	6	6.9
Other	30	18.4	13	17.1	17	19.5

Fisheries Management Region: New England

	Total		Bait & Tackle Stores		Other	
Fishery	**N**	**%**	**N**	**%**	**N**	**%**
Striped bass/Bluefish	80	67.8	52	78.8	28	53.8
Summer or Winter flounder	29	24.6	22	33.3	7	13.5
Scup	21	17.8	16	24.2	5	9.6
Tautog	**14**	**11.9**	**11**	**16.7**	**3**	**5.8**
Atlantic cod	14	11.9	8	12.1	6	11.5
Atlantic mackerel	20	16.9	7	10.6	13	25
Bluefin tuna	12	10.2	6	9.1	6	11.5
Bonito	1	0.8	1	1.5	0	0
Other	23	19.5	11	16.7	12	23.1

National Marine Recreational Fishing Expenditure Survey

The 2011 National Marine Recreational Fishing Expenditure Survey provides information on mean trip expenditures by state, fishing mode, and resident status (Lovell et al 2013). The number of directed trips for tautog by state and mode can be used together with mean trip expenditure to estimate the total expenditures on tautog trips and the resulting economic impacts to the coastal states from changes in the tautog FMP. This assumes such changes would affect the number and distribution of trips across the management area. Caution is noted however, because if anglers switch to fishing for other species with no or little change in

the number, location, or type of trips taken, there will be no resulting impacts. Table 4 shows the 2014 mean expenditures by state, mode, and resident status using the 2011 estimates and inflating them to 2014 dollars using the Consumer Price Index. NMFS has developed state level economic impact models that can be used to estimate the economic impacts resulting from changes in fishing trips (Lovell et al 2013).

Aside from changes in economic impacts resulting from potential changes in the number of trips taken by anglers, data from the MRIP program on numbers of directed trip and catch of tautog could be used to develop a revealed preference model on the economic value of catching different numbers of tautog. The results can be used to show how changes in management measures would change the economic value, or benefits, anglers receive from fishing for and/or catching tautog. It would require some time to develop these models by an experienced economist.

Table 4. Mean Trip Expenditures by State, Mode, and Resident Status, 2014

State	Mode	Resident Status	Mean
Connecticut	For-Hire	Non-Resident	$151.80
Connecticut	For-Hire	Resident	$173.21
Connecticut	Private Boat	Non-Resident	$29.71
Connecticut	Private Boat	Resident	$32.03
Connecticut	Shore	Non-Resident	$13.33
Connecticut	Shore	Resident	$19.18
Delaware	For-Hire	Non-Resident	$199.34
Delaware	For-Hire	Resident	$124.56
Delaware	Private Boat	Non-Resident	$42.74
Delaware	Private Boat	Resident	$39.48
Delaware	Shore	Non-Resident	$72.52
Delaware	Shore	Resident	$30.82
Maryland	For-Hire	Non-Resident	$394.78
Maryland	For-Hire	Resident	$147.88
Maryland	Private Boat	Non-Resident	$37.12
Maryland	Private Boat	Resident	$46.55
Maryland	Shore	Non-Resident	$70.75
Maryland	Shore	Resident	$45.86
Massachusetts	For-Hire	Non-Resident	$473.54
Massachusetts	For-Hire	Resident	$178.38
Massachusetts	Private Boat	Non-Resident	$79.08
Massachusetts	Private Boat	Resident	$63.18
Massachusetts	Shore	Non-Resident	$152.17
Massachusetts	Shore	Resident	$42.20
New Jersey	For-Hire	Non-Resident	$138.41
New Jersey	For-Hire	Resident	$116.31
New Jersey	Private Boat	Non-Resident	$94.07
New Jersey	Private Boat	Resident	$58.44

State	Mode	Resident Status	Mean
New Jersey	Shore	Non-Resident	$53.49
New Jersey	Shore	Resident	$30.81
New York	For-Hire	Non-Resident	$122.19
New York	For-Hire	Resident	$165.72
New York	Private Boat	Non-Resident	$40.77
New York	Private Boat	Resident	$61.95
New York	Shore	Non-Resident	$46.92
New York	Shore	Resident	$20.90
Rhode Island	For-Hire	Non-Resident	$216.18
Rhode Island	For-Hire	Resident	$98.34
Rhode Island	Private Boat	Non-Resident	$38.50
Rhode Island	Private Boat	Resident	$42.97
Rhode Island	Shore	Non-Resident	$17.47
Rhode Island	Shore	Resident	$16.06
Virginia	For-Hire	Non-Resident	$189.54
Virginia	For-Hire	Resident	$113.05
Virginia	Private Boat	Non-Resident	$79.75
Virginia	Private Boat	Resident	$59.42
Virginia	Shore	Non-Resident	$104.20
Virginia	Shore	Resident	$27.77

1.5.3.2 Commercial Fishery

From 2009 to 2015, the states with the highest number of vessels and fisherman fishing for tautog on average are Rhode Island, Massachusetts, and New York. Table 5 shows the number of vessels, number of fishermen, total pounds, total revenue and average price per pound from 2009 to 2015 where data is available. For these vessels and fisherman, tautog is not the only species they catch. The top five species as measured in pounds for the vessels also reporting tautog were scup (#1), black sea bass (#3), longfin inshore squid (#4), and skates (#5). Tautog was second in terms of pounds. In terms of average pounds caught, the states with the highest catch are New York, Massachusetts, and Rhode Island.

Table 5. Commercial Tautog Effort by State. Confidential data has been excluded.

Year	State	Vessels	Fishermen	Landings (lbs)	Revenue	Price Per Pound
2009	MA	73	164	54,703	$137,062	$2.51
2010	MA	95	192	75,317	$210,114	$2.79
2011	MA	122	181	57,787	$179,683	$3.11
2012	MA	156	219	67,870	$212,688	$3.13
2013	MA	187	250	70,165	$236,224	$3.37
2014	MA	179	222	63,191	$230,697	$3.65
2015	MA	196	213	61,752	$268,529	$4.35

Year	State	Vessels	Fishermen	Landings (lbs)	Revenue	Price Per Pound
2009	RI	157	253	50,920	$98,854	$1.94
2010	RI	219	233	44,054	$101,427	$2.30
2011	RI	228	228	47,426	$124,862	$2.63
2012	RI	239	247	50,126	$151,008	$3.01
2013	RI	236	235	53,428	$168,471	$3.15
2014	RI	240	232	53,384	$182,347	$3.42
2015	RI	234	226	47,140	$172,694	$3.66
2009	CT	69	45	21,194	$44,178	$2.08
2010	CT	82	47	16,948	$41,842	$2.47
2011	CT	76	66	14,787	$38,693	$2.62
2012	CT	64	35	6,233	$18,501	$2.97
2013	CT	60	36	5,887	$15,950	$2.71
2014	CT	55	34	5,164	$14,647	$2.84
2015	CT	56	48	7,249	$22,774	$3.14
2009	NY	118	183	87,289	$276,169	$3.16
2010	NY	126	187	93,153	$299,080	$3.21
2011	NY	120	174	82,761	$261,467	$3.16
2012	NY	132	171	76,373	$254,907	$3.34
2013	NY	140	181	110,849	$359,138	$3.24
2014	NY	153	206	121,538	$375,909	$3.09
2015	NY	137	179	111,925	$401,668	$3.59
2009	NJ	17	16	14,591	$45,316	$3.11
2010	NJ	23	20	49,213	$122,781	$2.49
2011	NJ	24	20	45,865	$129,285	$2.82
2012	NJ	20	17	20,831	$66,577	$3.20
2013	NJ	19	17	21,999	$73,941	$3.36
2014	NJ	12	11	31,655	$101,049	$3.19
2015	NJ	15	16	17,538	$57,373	$3.27
2009	DE	8	5	2,116	$4,649	$2.20
2012	DE	5	4	1,444	$4,968	$3.44
2015	DE	4	5	2,107	$8,446	$4.01
2009	MD	13	9	1,638	$3,659	$2.23
2010	MD	11	11	1,285	$2,780	$2.16
2015	MD	7	8	1,181	$4,619	$3.91

Year	State	Vessels	Fishermen	Landings (lbs)	Revenue	Price Per Pound
2009	VA	35	15	11,132	$19,169	$1.72
2010	VA	35	10	6,081	$13,819	$2.27
2011	VA	34	9	14,590	$42,050	$2.88
2012	VA	36	10	13,870	$33,611	$2.42
2013	VA	24	8	11,776	$88,407	$7.51
2014	VA	26	9	7,545	$26,378	$3.50
2015	VA	27	23	6,937	$25,569	$3.69

1.5.3.3 Subsistence Fishery

No information exists on the subsistence fishery for tautog.

1.5.4 Other Resource Management Efforts

1.5.4.1 Artificial Reef Development/Management

Artificial reefs can enhance fish habitat, provide more access to quality fishing grounds, benefit fishermen, divers, and the economies of shore communities, and increase total biomass in a given area. Tautog rely on reef structures for protection, and reef-dependent species such as *Mytilus edulis* form a large portion of the diet of both juveniles and adults (Olla et al 1975).

Individual Atlantic states started deploying artificial habitat after the 1950s. Efforts became more formalized after the release of the 1985 National Artificial Reef Plan, which enhanced coordination and development of artificial reefs with state, interstate and federal agencies including ASMFC and the National Marine Fisheries Service. As shown in Table 6, the majority of states within tautog's distribution have state-administered artificial reef programs, and Rhode Island's artificial reef program is in development (McNamee, personal communication).

Table 6. Number of artificial reefs by state in 2016

State	# of artificial reefs inshore	# of artificial reefs offshore	Total # of artificial reefs built	Acres
Massachusetts	5	-	5	<160
Rhode Island	-	-	Artificial Reef Program in development	
Connecticut	1	-	1 no formal program	<6.4
New York	4	7	11	2,539
New Jersey	2	13	15	16,000
Delaware	8	4	12	7,080
Maryland	22	11	33	13,613
Virginia	18	5	23	487

Artificial reefs are built out of hard, durable structures such as rock, concrete, and steel, usually in the form of surplus or scrap materials (vessels, dredge rock, military vehicles, etc.). All harmful substances are removed from the material prior to deployment. Various design approaches are used for Atlantic artificial reefs. New Jersey has sunken old ships and barges to create 16,000 acres of artificial reefs. Delaware has used donated concrete for eight bay sites, and ballasted tire units and sunken ships for ocean sites. Most Maryland reefs are constructed from concrete materials of opportunity, including rubble from bridge and pier demolition projects, and reef balls built with the help of volunteers (Michael Malpezzi, MDNR, personal communication, 2016).

Some states are monitoring the impact of artificial reefs on fishery performance and biological diversity. In New Jersey, party boat fishing effort on artificial reefs increased from 3 percent in 1970 to 47 percent in 2000 in conjunction with an extensive increase in reef building efforts during that period (Figley 2001). In Maryland, volunteer angler surveys carried out on artificial and nearby natural reefs confirm that artificial reefs provide fishing experiences equivalent to the natural reefs (Michael Malpezzi, MDNR, personal communication, 2016). New and continued monitoring and research on the effects of existing artificial reef sites will be most informative for habitat-orientated species like tautog.

1.5.4.2 Bycatch

Tautog is often listed as a bycatch species in trap and pot fisheries targeting lobster and black sea bass (ASMFC 1997, Skrobe and Lee 2004, Hasbrouck et al. 2007, NEFMC et al. 2007, NEFMC et al. 2015). In the federally permitted Mid-Atlantic fish pot fishery, on average tautog accounted for 5% of harvest from 2000-2004 and 8% of harvest from 2007-2011 (Table 7). Tautog catch, as bycatch, is of value, and is often harvested and sold (Skrobe and Lee 2004). Many lobstermen target tautog when the inshore lobster fishery slows simply by using longer sets of traps without bait (ASMFC 1996, personal communication Peter Clarke, NJDEP). In a 1994 study, tautog was the second most abundant species (23% of finfish bycatch) after scup in New York's lobster pot fishery (ASMFC 1996).

Table 7. Average Landings in the Mid-Atlantic Fish Pot Fishery (Pounds)
Source: Northeast Region Standardized Bycatch Reporting Methodology (NEFMC 2007 & 2015)

Species	2000-2004	2007-2011
Tautog	49,000	56,000
Black Sea Bass	723,000	472,000
Lobster	17,000	37,000
Channeled Whelks	35,000	31,000
Eels	21,000	20,000
Other	60,000	116,000
Total	905,000	732,000

1.6 LOCATION OF TECHNICAL DOCUMENTATION FOR FMP

1.6.1 Review of Resource Life History and Biological Relationships
See Section 1.2.1
1.6.2 Stock Assessment Document
See Section 1.2.2
1.6.3 Habitat Background Document
See Section 1.4

2.0 GOALS AND OBJECTIVES

2.1 HISTORY OF PRIOR MANAGEMENT MEASURES

Prior to adoption of the Interstate FMP, tautog had been managed on a state-by-state basis. For the majority of states, tautog were largely unmanaged although some states had commercial and/or recreational regulations, such as minimum size limits, possession limits, and effort controls. An increase in fishing pressure in the mid-1980s through early 1990s, and a growing perception of the species' vulnerability to overfishing, stimulated the need for a coastwide FMP. Accordingly, in 1993 the ASMFC recommended a plan be developed as part of its Interstate Fisheries Management Program. The states of Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland Virginia, and North Carolina declared an interest in jointly managing this species through the ASMFC. The FMP was implemented in 1996, with the goals of conserving the resource along the Atlantic coast and maximizing long-term ecological benefits, while maintaining the social and economic benefits of recreational and commercial utilization.

Follwing is a brief history of tautog management activities to date:

Fishery Management Plan (FMP) (March 1996)
The FMP established a 14" minimum size limit and a target fishing mortality of F = M = 0.15. The target F was a significant decrease from the 1995 stock assessment terminal year fishing mortality rate in excess of F = 0.70, so a phased in approach to implementing these regulations was established. Northern states (Massachusetts through New Jersey) were to implement the minimum size and achieve an interim target of F = 0.24 by April 1997, while southern states (Delaware through North Carolina) had until April 1998 to do the same. All states were required to achieve the target F = 0.15 by April 1999.

Addendum I (May 1997)
In response to northern states' difficulty in achieving the interim F by their deadline, Addendum I delayed implementation of the interim F and target F for all states until April 1998 or April 2000 depending on the state. It also established *de minimis* specifications.

Addendum II (November 1999)
The 1999 stock assessment incorporated data through 1998, which included only nine months

of data under the Addendum I regulations. Given the life history of the species, the Board was concerned the assessment provided limited advice on the effects of Addendum I regulations. Addendum II further extended the deadline to achieve the F=0.15 target until April 2002. It also clarified the fishing mortality targets in the FMP with respect to individual state management program flexibility.

Addendum III (February 2002)
This addendum established a new target fishing mortality rate of $F_{target} = F_{40\%SSB} = 0.29$ and mandated states collect a minimum of 200 age samples per year.

Addendum IV (January 2007)
Addendum IV revised the target fishing mortality rate to F = 0.20, a 28.6% reduction in overall fishing mortality, and established biomass reference points for the first time. The biomass reference points were ad hoc, based on the average of the 1982-1991 SSB (target; 26,800 MT) and 75% of this value (threshold; 20,100 MT). It also required states to achieve the new target F by reductions in recreational harvest only.

Addendum V (April 2007)
Addendum V allowed state flexibility in achieving $F_{target} = 0.20$ through reductions in commercial harvest, recreational harvest, or some combination of both. A Massachusetts-Rhode Island model indicated regional F was lower than the coastwide target, therefore these two states were not required to implement management measures to reduce F.

Addendum VI (April 2011)
Addendum VI established a new F_{target} of F = M = 0.15 on the basis that stock biomass had not responded to previous F levels. The new F_{target} required states to take a 39% reduction in harvest. As in Addendum IV, a regional assessment of Massachusetts and Rhode Island demonstrated a lower regional F using ADAPT VPA model, and these states were not required to implement tighter regulations. To achieve the required harvest reduction, all other states adopted higher minimum size limits exceeding the FMP's minimum requirement of 14" in addition to other measures, such as possession limits, seasonal closures, and gear restrictions.

2.2 GOALS

If approved, Amendment 1 replaces the 1996 Tautog FMP and its addenda.

The Board is considering modifications to the goals that were enacted in 1996 to meet the current needs of the species and fishery.

Option A. Status Quo. Maintain the 1996 Goals

A. To perpetuate and enhance stocks of tautog through interstate fishery management so as to allow a recreational and commercial harvest consistent with the long-term maintenance of self-sustaining spawning stocks
B. To maintain recent (i.e. 1982-1991) utilization patterns and proportions of catch taken by commercial and recreational harvesters
C. To provide for the conservation, restoration, and enhancement of tautog critical habitat for all life history stages
D. To maintain a healthy age structure
E. To conserve the tautog resource along the Atlantic coast to preserve ecological benefits such as biodiversity and reef community stability, while maintaining the social and economic benefits of commercial and recreational utilization

Option B. Revised Goal Statement

The goal of Amendment 1 is to sustainably manage tautog over the long-term using regional differences in biology and fishery characteristics as the basis for management. Additionally, the Amendment seeks to promote the conservation and enhancement of structured habitat to meet the needs of all stages of tautog's life cycle.

2.3 OBJECTIVES

The following objectives are being considered by the Board to support the goals of this amendment:

Option A. Status Quo: Maintain the 1996 Objectives

A. To establish criteria, standards, and procedures for plan implementation as well as determination of state compliance with FMP provisions
B. To allow harvest that maintains spawning stock biomass (SSB) in a condition that provides for perpetuation of self-sustaining spawning stocks in each spawning area, SSB, size and age structure, or other measures of spawning success at or above historical levels as established in the plan
C. To achieve compatible and equitable management measures among jurisdictions throughout the fishery management unit
D. To enact management recommendations which apply to fish landed in each state, so that regulations apply to fish caught both inside and outside of state waters
E. To promote cooperative interstate biological, social, and economic research, monitoring and law enforcement
F. To encourage sufficient monitoring of the resource and collection of additional data, particularly in the southern portion of the species range, that are necessary for development of effective long-term management strategies and evaluation of the management program. Effective stock assessment and population dynamics modeling require more information on the status of the resource and the

biology/community/ecology of tautog than is currently available, in particular to facilitate calculation of F and stock trends

G. To identify critical habitats and environmental factors that support or limit long-term maintenance and productivity of sustainable tautog populations
H. To adopt and promote standards of environmental quality necessary to the long-term maintenance and productivity of tautog throughout their range
I. To develop strategies that reduce fishing mortality, restore stock size composition and the historical recreational/commercial split, consider ecological and socio-economic impacts.
J. To identify problems associated with the offshore fishery. Compatible regulations between the states and the EEZ are essential

Option B. Remove Objective A and B from Section 2.3 of the 1996 FMP

These objectives are inherent within the FMP or included in other objectives, and therefore redundant.

Option C. Modify Objective C in Section 2.3 of the 1996 FMP to the following:

- Adopt compatible management measures among states within a regional management unit

Option D. Combine Objectives D and J in Section 2.3 of the 1996 FMP to the following:

- Encourage compatible regulations between the states and the EEZ, which includes enacting management recommendations that apply to fish landed in each state (i.e., regulations apply to fish caught both inside and outside of state waters).

Option E. Combine Objectives G and H in Section 2.3 of the 1996 FMP to the following:

- Identify important habitat and environmental quality factors that support the long-term maintenance and productivity of sustainable tautog populations throughout their range.

Option F. Modify Objectives I in Section 2.3 of the 1996 FMP to the following:

- Develop and implement management strategies to rebuild tautog stocks to sustainable levels (reduce fishing mortality to the target and restore spawning stock biomass to the target), while considering ecological and socio-economic impacts.

Option G. Add the following objective to Section 2.3 of the 1996 FMP:

- Work with law enforcement to minimize factors contributing to illegal harvest.

Option H. Accept Options B through G into Section 2.3 of the 1996 FMP:

This option will insert all modifications identified under Options B through G into Section 2.3. If adopted, the objectives will be:

- Develop and implement management strategies to rebuild tautog stocks to sustainable levels (reduce fishing mortality to the target and restore spawning stock biomass to the target), while considering ecological and socio-economic impacts.
- Adopt compatible management measures among states within a regional management unit
- Encourage compatible regulations between the states and the EEZ, which includes enacting management recommendations that apply to fish landed in each state (i.e., regulations apply to fish caught both inside and outside of state waters).
- Identify important habitat and environmental quality factors that support the long-term maintenance and productivity of sustainable tautog populations throughout their range.
- Promote cooperative interstate biological, social, and economic research, monitoring and law enforcement
- Encourage sufficient monitoring of the resource and collection of additional data, particularly in the southern portion of the species range, that are necessary for development of effective long-term management strategies and evaluation of the management program.
- Work with law enforcement to minimize factors contributing to illegal harvest.

2.4 SPECIFICATION OF A MANAGEMENT UNIT

The management unit consists of all coastal states from Massachusetts through Virginia. The management unit is defined as all U.S. territorial waters of the northwest Atlantic Ocean, from the shoreline to the seaward boundary of the exclusive economic zone, and from US/Canadian border to the southern end of the species range. Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, the National Marine Fisheries Service and the U.S. Fish and Wildlife Service have declared an interest in tautog.

2.5 BIOLOGICAL REFERENCE POINTS

Threshold reference points are the basis for determining stock status (i.e., whether overfishing is occurring or a stock is overfished). When the F exceeds the F-threshold, then overfishing is occurring; the rate of removal of fish by the fishery exceeds the ability of the stock to replenish itself. When the reproductive output (measured as spawning stock biomass or population fecundity) falls below the biomass-threshold, then the stock is overfished, meaning there is insufficient mature female biomass (SSB) or egg production (population fecundity) to replenish the stock.

Reference points are recalculated during an update and benchmark stock assessment, see the latest stock assessment for reference points and stock status determination (ASMFC 2016b). In 2016, the Technical Committee recommended maximum sustainable yield based reference points and spawning potential ratio based reference points, depending on the region, based on data availability. The proposed biological reference tables are highlighted in Tables 8 and 9, and the two types of reference points are summarized below.

Maximum sustainable yield (MSY) based reference points
MSY-based reference points are estimated from ASAP, which uses a combination of spawning potential ratio, yield-per-recruit (YPR), and the stock-recruitment relationship to calculate the SSB_{MSY} and F_{MSY}. 75% F_{MSY} is calculated by projecting the population forward assuming the same stock-recruitment (S-R) relationship and finding the fishing mortality (F) that maintains the population at 75% SSB_{MSY}. SSB X% is calculated by projecting the population forward while fishing at F X%SPR with recruitment randomly drawn from the observed historical recruitment. MSY-based reference points are used in the LIS region because it has a longer time-series.

Spawning potential ratio (SPR) based reference points
SPR-based reference points estimate the reproductive potential of a fished stock relative to its unfished condition. SPR based reference points are used in the MARI, NJ-NYB and DelMarVa regions.

Table 8. Tautog Spawning Stock Biomass Status by Region When Compared to Proposed Reference Points. Source: ASMFC Stock Assessment Update, 2016

	Proposed SSB Reference Points			Status as of the 2016 Assessment	
Stock Region	**MSY or SPR**	**SSB Target (mt)**	**SSB Threshold (mt)**	**SSB 2015 (mt)**	**Stock Status**
Massachusetts – Rhode Island	**SPR**	**2,684**	**2,004**	**2,196**	**Stock Not Overfished**
Long Island Sound	**MSY**	**2,865**	**2,148**	**1,603**	**Overfished**
New Jersey – New York Bight	**SPR**	**3,154**	**2,351**	**1,809**	**Overfished**
Delaware – Maryland – Virginia	**SPR**	**1,919**	**1,447**	**621**	**Overfished**
Coastwide	**MSY**	**14,944**	**11,208**	**6,014**	**Overfished**
	SPR	**9,448**	**7,091**	**6,014**	**Overfished**

Table 9. Tautog Fishing Mortality Status by Region When Compared to Proposed Reference Points. Source: ASMFC Stock Assessment Update, 2016

	Proposed F Reference Points			Status as of the 2016 Assessment	
Stock Region	MSY or SPR	Fishing Mortality Target	Fishing Mortality Threshold	3-year Average (2013-15)	Stock Status
Massachusetts – Rhode Island	SPR	0.28	0.49	0.23	Overfishing Not Occurring
Long Island Sound	MSY	0.28	0.49	0.51	Overfishing
New Jersey – New York Bight	SPR	0.20	0.34	0.54	Overfishing
Delaware – Maryland – Virginia	SPR	0.16	0.24	0.16	Overfishing Not Occurring
Coastwide	MSY	0.17	0.24	0.38	Overfishing
	SPR	0.25	0.43	0.38	Overfishing Not Occurring

Option A. Status Quo - Reference Points can be Modified via a Management Document

The Tautog Technical Committee or Stock Assessment Subcommittee can recommend alternative reference points (i.e. other than MSY or SPR), as long as modifications to the status determination criteria, and their associated values, are the result of the most recent peer-reviewed stock assessments for tautog. In response, the Board may initiate a management document to incorporate the new, peer-reviewed stock status determination criteria.

Option B. Reference Points can be Modified via Board Action (i.e., Management Document Not Required)

The Tautog Technical Committee or Stock Assessment Subcommittee can recommend alternative reference points (i.e. other than MSY or SPR), as long as modifications to the status determination criteria, and their associated values, are the result of the most recent peer-reviewed stock assessments for tautog. In response, the Tautog Management Board may allow for the incorporation of new, peer-reviewed stock status determination criteria, when available, through Board action (at a Board Meeting).

Scientific advice, with respect to status determination criteria modifications, could follow three scenarios. First, the peer-review panel may reach consensus with respect to maintaining the current definitions of status determination criteria. There may be updates to the values associated with those same definitions based on the input of more recent (i.e., additional year's data) or updated information as well; however, the Board is not required to undertake any specific action when this occurs, as using the updated values is implied in this provision of the FMP. In this case the scientific advice can then move forward such that management advice can be developed.

Under the second potential scenario for scientific advice, the peer-review panel can recommend changes or different definitions of the status determination criteria. If the panelists reach consensus as to how these status determination criteria should be modified or changed then the scientific advice can move forward such that management advice can be developed. Under these first two potential scenarios, consensus has been reached and therefore the scientific advice moving forward to the Section's management advisory groups should be clear.

The third potential scenario is the peer review scientific advice with respect to the incorporation to status determination criteria are split (consensus is not reached) or uncertain recommendations are provided (weak consensus). The scientific advice provided by the reviewers may be particularly controversial. In addition, the scientific advice may not be specific enough to provide adequate guidance as to how the maximum fishing mortality threshold and/or minimum stock size threshold should be defined or what resulting management advice should be developed from these changes. Under these circumstances, the Board may engage their TC to review the information and recommendations provided by the peer-review group. Based on the terms of reference provided to the TC, they may prepare a consensus report clarifying the scientific advice for the Board as to what the status determination criteria should be (e.g., modify, change, or maintain the same definitions). At that point the scientific advice on how the status determination criteria should be defined will be clear, and can move forward such that management advice can be developed.

2.6 DEFINITION OF OVERFISHING AND OVERFISHED

Overfishing is defined relative to the rate of removals from the population as determined by the fishing mortality on the stock. The level of spawning stock biomass in a stock as the result of fishing mortality is the basis for determining if a stock has become overfished. A biomass target or threshold determines the condition of the stock whereas the mortality rate determines how fast the population is moving toward achieving the appropriate level of biomass.

2.7 MAINTENANCE OF STOCK STRUCTURE

2.7.1 Fishing Mortality (F) Target

Option A. Status quo

Coastwide fishing mortality cannot exceed F_{target}=0.15

Option B. Managing to the Regional Target F

The Management Board will evaluate the current estimates of F, as determined by the most recent stock assessment, with respect to its regional reference points (Section 2.5) before proposing any additional management measures. If the current F exceeds the regional threshold level (overfishing), the Board will take steps to reduce F to the regional target level; if current F exceeds the regional target, but is below the regional threshold, the Board should consider steps to reduce F to the regional target level. If current F is below the regional target F, then no action would be necessary to reduce F. At this time, the only way to assess the progress towards achieving the regional target F is through future stock assessments.

Sub-option B1. No time requirement
If the current F exceeds the regional threshold level (overfishing), the Board must take corrective action within a reasonable amount of time.

Sub-option B2. Board action within One Year
If the current F exceeds the regional threshold level (overfishing), the Board must initiate corrective action, via a management document, within one year of receiving the overfishing stock status. Alternative management measures must be implemented in the second year. Each region and/or state must identify specific measures (e.g., possession limit, minimum size and seasonal closures, quota, etc.) to achieve necessary harvest reductions (if applicable) in the management document.

Sub-option B3. Board Action within Two Years
If the current F exceeds the regional threshold level (overfishing), the Board must initiate corrective action, via a management document, within two years of receiving the overfishing stock status. Alternative management measures must be implemented by the third year. Each region and/or state must identify specific measures (e.g., possession limit, minimum size and seasonal closures, quota, etc.) to achieve necessary harvest reductions (if applicable) in the management document.

The Board can codify the level of risk for the TC to use when developing alternative management measures to achieve the reference points. The chosen probability impacts the percent reduction necessary.

Option A. Status Quo.
The Board will select the probability of achieving F Target when modified management measures are necessary.

Option B. 50% Probability of Achieving F Target
Management measures will be developed based on at least a 50% probability of achieving F Target. For example, the harvest reductions presented in this document have a 50% probability of achieving F Target by 2021.

2.7.2 F Reduction Schedule

If F exceeds the regional threshold level (overfishing), the Board will take corrective action, as described under *Section 2.7.1.* The Board will provide the Technical Committee with a timeframe in which F must be brought down to the regional target level using harvest reductions. The Technical Committee will then develop short-term projection scenarios to determine the constant harvest levels necessary to achieve the regional F target within X years.

The following management options refer to the harvest reduction timeframe:

Option A. Status Quo
Draft Amendment 1 does not specify a time frame to reduce fishing mortality to the regional target F level. The time frame will be established when the Board initiates a harvest reduction management response.

Option B. Three Years
Fishing mortality will be reduced to the regional target F level in a time frame that is no longer than 3 years.

Option C. Five Years
Fishing mortality will be reduced to the regional target F level in a time frame that is no longer than 5 years.

2.7.3 Stock Rebuilding Target

The Management Board will evaluate the current estimates of SSB with respect to its regional reference points (Section 2.5) before proposing any additional management measures. If the current SSB is below the regional threshold level, the Board may take steps to increase SSB to the regional target level (Section 2.7.4); if current SSB is below the regional target, but above the regional threshold, the Board may consider steps to increase SSB to the regional target level. If current SSB is above the regional target SSB, then no action would be necessary to increase SSB.

2.7.4 Stock Rebuilding Schedule

Option A. Status Quo (from Addendum IV)
No required management responses if SSB is below the threshold level.

Option B. A Stock Rebuilding Schedule can be Developed via an Addendum
The Management Board will evaluate the current estimates of SSB with respect to the regional reference points (Section 2.5). The Board can initiate a regional SSB rebuilding plan via an addendum (Section 4.12).

Option C. A Stock Rebuilding Schedule can be Developed via an Addendum, Not to Exceed 10 Years
The Management Board will evaluate the current estimates of SSB with respect to the regional reference points (Section 2.5). The Board can initiate a regional SSB rebuilding plan via an addendum (Section 4.12). The only limitation imposed under Amendment 1 is that the rebuilding schedule is not to exceed 10 years.

2.8 RESOURCE COMMUNITY ASPECTS

Tautog are an important recreational species for fishermen and a valuable resource in the live commercial market.

2.9 IMPLEMENTATION SCHEDULE

As part of the final approval of Amendment 1, the Management Board will establish an implementation schedule.

3.0 MONITORING PROGRAM SPECIFICATIONS/ELEMENTS

3.1 STOCK ASSESSMENT

A tautog stock assessment will be performed every five to seven years, or sooner if necessary. The technical committee will meet to review the stock assessment and all other relevant data sources. The stock assessment report shall follow the general outline as approved by the ISFMP Policy Board for all Commission-managed species. In addition to the general content of the report as specified in the outline, the stock assessment report will also address the specific topics detailed in the following sections.

3.1.1 Assessment of Annual Recruitment

Annual recruitment of tautog will be estimated by examination of a variety of data sources. The first is the estimate of recruitment from the model. Second will be the examination of various fishery-independent data sources, including the juvenile abundance indices that are integrated in to the statistical modeling process. Although many of these surveys are not designed to specifically target tautog, continued examination of these surveys in the future is worthwhile. In addition, surveys designed to specifically monitor tautog abundance along the coast are needed, including the use of gears that are more appropriate for structure oriented species.

3.1.2 Assessment of Spawning Stock Biomass

Spawning stock biomass (SSB) will be estimated from the model every five to seven years or sooner if necessary. Model estimates will be used for evaluating stock status versus the approved reference points.

3.1.3 Assessment of Fishing Mortality Target and Measurement

Fishing mortality (F) rates will be estimated by the model every five years or sooner, if necessary. Fishing mortality will be estimated for each age-class estimated by the model, but the metric used for comparison to the reference point values will be full F, or the comprehensive fishing mortality rate for all ages of the entire regional stock. Because of the inherent variability in some of the important data sources for the model (namely recreational catch estimates), a three-year running average of F should be developed and used as the reference estimate for the current state of the stock. Terminal year estimates for tautog generated by the model are subject to variability as additional data are added. Therefore, terminal year estimates may not accurately depict current conditions. The three-year running average is deemed to be more reflective of overall trends in fishing mortality and will reduce the risk of implementing management measures based on a false terminal year signal.

3.1.4 Assessment of Age Structure

Age structure will be estimated by the model every five to seven years or sooner, if necessary. Age structure will be estimated by the model, and is based off of the biological sampling done in each state, so is a good representation of the population structure in each region. Because of the inherent variability of age data it is important to use the model estimated age structure as the model synthesizes multiple sources of information to produce its estimates of numbers and weight at age, and therefore is accounting for some of this variability in its calculations. Additionally samples available for age analysis are affected by things such as the selectivity of the fisheries operating on the stock, which is another dynamic the model can account for in its estimates. As opposed to other population metrics, the population age structure can be used as an indicator of a healthy population if the age structure is robust and spans multiple ages including some of the oldest ages, and can also indicate when a population is becoming stressed as older ages are truncated or as there are multiple runs of low recruitment. Age structure may not immediately necessitate a management action, but can be viewed to preempt future problems in the population.

3.2 SUMMARY OF MONITORING PROGRAMS

In order to achieve the goals and objectives of Amendment 1, the collection and maintenance of quality data is necessary.

3.2.1 Catch and Landings Information

3.2.1.1 Recreational Catch and Effort Data Collection

Tautog is predominantly a recreationally caught species, with anglers accounting for about 90% of landings coastwide. The Marine Recreational Fisheries Statistics Survey (MRFSS) contains estimated tautog catches from 1981-2003 and the Marine Recreational Information Program (MRIP) contains estimated tautog catches from 2004 - present.

Recreational effort data is collected through phone surveys, but this will fully transition to mail surveys by 2018. Recreational catch data is collected through an access-site intercept survey. Interviewers routinely sample for biological data during angler intercepts by collecting length and weight measurements when possible. Sampling during night time and accounting for zero-

catch trips are conducted to more accurately capture fishing behaviors. MRIP also leverages logbook reporting and tournament sampling to improve quality of data on the distinct for-hire fleet.

Tautog are not well-sampled by the MRFSS/MRIP program, resulting in higher percent standard errors (PSEs, approximately 20-25% in recent years at the regional level) and large year-to-year swings in catch estimates, often driven by small numbers of intercepts. When disaggregated by state, PSEs for the MRFSS/MRIP estimates of harvest and releases were generally high (>0.30), indicative of the low number of intercepts obtained by survey interviewers. Recreational catch information can be downloaded at: http://www.st.nmfs.noaa.gov/st1/recreational/queries/.

The recreational tautog fishery occurs throughout the year. The majority of the landings are captured through MRIP, which is administered by the National Marine Fisheries Service. However, MRIP does not sample landings during January and February (Wave 1). This amendment recommends the states initiate a sampling program to estimate the recreational harvest of tautog during January and February.

3.2.1.2 Commercial Catch and Effort Data Collection

The ASMFC, NMFS, U.S. Fish & Wildlife Service, the New England, Mid-Atlantic, and South Atlantic Fishery Management Councils, and all the Atlantic coastal states have developed a coastwide fisheries statistics program, known as the Atlantic Coastal Cooperative Statistics Program (ACCSP). All harvesters and dealers are required to report a minimum set of standard data elements by the 10th of the following month (refer to the ACCSP Program Design document for details, http://www.accsp.org/data-collectionstandards). Landings are reported to NMFS and available online at http://www.st.nmfs.noaa.gov/commercial-fisheries/index.

Harvesters are required to report all commercial trips regardless of catch. Trips that yield no catch are still considered trips. Therefore, all data elements for effort must be reported. Dealers are required to submit monthly negative, or no activity, reports in the states where they are licensed. A single negative report may be submitted in advance to cover multiple negative reporting periods. Harvesters with no reported commercial landings during the previous license period are required to certify that fact at the time of license renewal.

New Jersey has a limited access tautog commercial fishery. As of 2016, there are 40 directed fishery and 22 non-directed fishery permittees in New Jersey. All permittees are required to submit monthly reports identifying tautog landings by day, gear, and location, as well as any bycatch.

3.2.2 Biological Information

3.2.2.1 Fishery Dependent Information—Biological Sampling from the Recreational Fishery
Length and weight samples are collected from the recreational fishery through MRIP. As a less commonly encountered species, sample sizes are often low, and average approximately 350-500 intercepts per year depending on the region.

In addition, states have dedicated short term sampling programs for specific fisheries in New York (head boat mode), New Jersey (head boat and shore mode), and Virginia (a directed fishing mortality study) and in some states that have a significant head boat or shore mode component to their recreational tautog catch. Most state's age samples come from a combination of state-run recreational, commercial and fisheries independent surveys.

In 2004, MRIP implemented observers on headboats to collect lengths of released alive fish (Type 9 measurements). Prior to 2004, the only information on the size of released fish came from the American Littoral Society's (ALS') volunteer angler tagging program, which provides lengths of fish that anglers report they have released alive. These two data sources provide the length frequency information used to develop the catch-at-age for released fish.

Wave 1 Sampling
Historically, only about five percent of the annual recreational catch on the Atlantic and Gulf coasts is taken during Wave 1 (Jan/Feb). Costs to sample these months are very high due to low fishing activity. With a few exceptions the recreational statistics program (MRFSS/MRIP) has not collected data in Jan/Feb on the Atlantic coast north of Florida since 1980.

3.2.2.2 Fishery Independent Information—Biological Sampling Program
All states in the stock unit are required to collect a minimum of 200 age and length samples annually (five fish per centimeter), within the range of lengths commonly caught by the fisheries. Specific sources are not mandated, therefore most states fulfill their obligations through a combination of fishery-dependent and fishery-independent sampling. This intent of this requirement, imposed in 2002, was to collect data necessary to support regional assessments and/or regional approaches to management. A summary of data collection efforts should be included in the annual compliance report.

The state marine fisheries agencies from Massachusetts through New Jersey conduct fisheries independent surveys that encounter tautog to record biological information such as age, length, sex, weight, and some measures of maturity. As shown in Table 10, data availability varies by region; northern states have more data from the earlier parts of the time series, when older, larger fish were present in the samples. The more southern states lack data from fishery-independent sources and thus have limited numbers of samples of the youngest, smallest fish.

Table 10. Ongoing fishery independent surveys, as of 2016

State	Areas Surveyed	Survey Type	# of Survey Stations	Dates of Survey
MA	MA territorial waters	Trawl	1 station per 19 square nautical miles	May and September
RI	Narragansett Bay	Trawl	13 stations per month	June through October
	Narraganset Bay, Rhode Island Sound and Block Island Sound	Trawl	44 stations	Spring (April-May) Fall (Sept/October)
	Narragansett Bay Beach	Seine	18 stations per month	June through October
	Coastal Ponds	Seine	24 stations in 8 coastal ponds per month	May through October
	Narragansett Bay	Trap	10, 5 pot trawls set per month	April through October
CT	Long Island Sound (CT and NY waters)	Trawl	40 stations per month	Spring (April-June) Fall (Sept-Oct)
NY	Peconic Bay	Trawl	16 stations per week	May through October
	Western Long Island Sound (Little Neck, Manhasset Bay, Jamaica Bay)	Seine	5-10 sites, semimonthly	May through October
	Long Island Sound	Trap	35 stations per week	May through October
NJ	Nearshore ocean waters between Cape May and Sandy Hook	Trawl	30 tows in Jan; 39 tows per month in Apr, Jun, Aug & Oct	Jan, Apr, June, Aug & Oct
DE	Fisheries independent surveys do not collect tautog in quantities needed for monitoring purposes			
MD	Fisheries independent surveys do not collect tautog in quantities needed for monitoring purposes			
VA	Fisheries independent surveys do not collect tautog in quantities needed for monitoring purposes			

3.2.3 Social Information

No ongoing sociological data collection or monitoring is planned. Anecdotal information and insight on the fishery and regulatory changes are provided by the Tautog Advisory Panel, which

maintains active participation. ACCSP is currently developing standards for collecting sociological data in all fishing sectors.

3.2.4 Economic Information

Currently there are no programs designed specifically to collect economic data pertaining to the tautog fishery. The ACCSP is currently developing standards for collecting economic data in all fishing sectors. See Section 1. 5.3 for a review of economic information that references tautog, but is not designed specifically for the tautog fishery.

3.2.5. Observer Program

As a condition of state and/or federal permitting, vessels are required to carry at-sea observers when requested. ACCSP currently has at-sea observer programs modeled after the NOAA Fisheries National Observer Program, adopting their standards and training protocols. A minimum set of standard data elements is defined through the ACCSP for biological or bycatch sampling data (refer to the ACCSP Program Design document for details: http://www/accsp.org/programdocument.htm#prog).

Observer data obtained from the Northeast Fisheries Observer Program for the years 1989-2012 indicates the overall sample size of observed trips that either retained or discarded tautog was low (Table 11 and Table 12). The data represents estimates of primarily incidental catch, not targeted tautog trips. Length sampling was also inconsistent and had a low sample size by year, but where available showed that discarded fish were smaller on average than retained fish (ASMFC 2015).

Table 11. Sample size of gear of observed commercial trips that caught tautog (1989-2012)

Gear	# of Trips
Gillnet	710
Otter Trawl	604
Scallop Dredge	23
Fish pot/trap	19
Longline	6
Lobster pot/trap	4
Scottish Seine	1
Troll Line	1

Table 12. Sample size by state of observed commercial trips that caught tautog (1989-2012)

State	# of Trips
ME	2
NH	9
MA	456
RI	620
CT	7
NY	59
NJ	113
DE	1
MD	43
VA	47
NC	11

Discarded-to-observed ratios from the observer data were supplemented with Vessel Trip Report (VTR) data for some gears and regulatory periods when sample size was less than ten observed trips. VTR data are self-reported by fishermen and are not considered as reliable as observer data. Overall there is high uncertainty in the estimates of commercial discards, and they are a small component of total removals of tautog. In addition, observer data is provided by vessels that hold federal permits, therefore the information presented is incomplete because it does not include data from fishermen with state permits only.

As an example of a program that could benefit our understanding of tautog and improve fishery dependent data collection for this species, in 2008, New Jersey began a collaboration with ACCSP personnel for an at-sea monitoring and sampling program targeting both the recreational party/charter boat and commercial fisheries for various species including tautog. Through 2014, data has been collected from this program on over 4,000 tautog (harvest and discard) sampled on nearly 200 trips targeting tautog. Programs such as these are an important source of valuable fisheries dependent data, and their continuation and expansion should be encouraged beyond New Jersey. In particular, a focus on observer information in recreational and commercial fisheries could provide robust estimates of discards (abundance, weights, and lengths) where there are currently gaps.

3.3 STATE TAGGING PROGRAMS

The Commission's Interstate Tagging Committee (ITC) was created in 1999 to improve the quality and utility of fish tagging data. A subcommittee of ITC members with expertise in tagging program design was established to review and certify interested tagging programs. In addition, it serves as a technical resource for jurisdictions other than the ASMFC, including private, non-profit tagging groups who plan to tag tautog. Protocols have been developed by the Committee as a source of information, advice and coordination for all Atlantic coast tagging programs; more information can be found at www.fishtag.info.

There are tautog tagging programs in the waters of Massachusetts, Maryland, and Virginia. The methods used to capture, tag, and track recaptures are described below.

Massachusetts
Massachusetts Division of Marine Fisheries tagged adult tautog using Floy internal anchor tags (model # FM-84). Tag anchors were implanted into the abdominal cavity, on the left side of fish just ventral and posterior to the pectoral fin apex. Tag number, total fish length in mm and sex was recorded for each fish, along with the latitude and longitude of the release point. Sex was determined by external examination of prominent morphological features. Subsequent recapture information on total length, recapture site, capture method, catch disposition (released, retained) was solicited from tag returnees.

Release and recapture sites were plotted on MapTech chart facsimiles for calculation of predicted straight line travel distance and travel vectors. Daily growth intervals were calculated using the difference between initial capture length and recapture length divided by the days at large, and compared to growth intervals of similar aged fish from the annual DMF Age and Growth Study.

Maryland
Tautog tagging in Maryland and adjacent federal waters is conducted by volunteer anglers for the American Littoral Society (ALS). A yellow dorsal loop tag with the serial number is applied to the fish behind the dorsal fin (Figure attached). Information on the area of capture and release, date and fish size is sent to the ALS. ALS tagging began in 1982 and continues today throughout a number of the Atlantic states, including Maryland. There are about 8,000 records available for tautog tagged in Maryland. There is no specific tagging design, tags are applied to fish on ad hoc basis. No tagging is conducted by the MD Department of Natural Resources.

Virginia
The Virginia Game Fish Tagging Program is a cooperative program of the Virginia Saltwater Fishing Tournament (Marine Resources Commission) and VIMS Marine Advisory Program. Initiated in 1995, it has been funded primarily by Saltwater Recreational Fishing License Funds and matching VIMS funds. This program provides annual training and enables a corps of ~200 experienced anglers to direct tagging effort on select target species important to VA's marine recreational fisheries. Through 2014, this program's database (used by researchers, fishery managers, anglers, etc.) includes over 240,000 records for fish tagged and over 25,900 fish recapture records (an overall >11% recapture rate). There are ten target species: black and red Tautog Stock Assessment Report 34 drum, black sea bass, cobia, flounder, gray triggerfish, sheepshead, spadefish, speckled trout, and tautog. There have been 17,705 tautog tagged since 1995 with 2,692 recaptures through 2013.

3.4 BYCATCH REDUCTION
The extent of bycatch in the tautog fishery is minimized through gear restrictions including pot and trap degradable fasteners to reduce the mortality of fish in lost or abandoned pots or traps, see Section 4.5. In addition, New York has prohibited the possession of tautog caught using fish pots or traps, unless there is one circular vent measuring 3 1/8 inch opening diameter.
States have implemented other gear restrictions and modifications to reduce overall bycatch in

pots and traps that indirectly benefit tautog. Escape vent provisions mandated to reduce the catch of undersized lobster, black sea bass and scup have likely allowed juvenile tautog to escape. However, as the minimum sizes for tautog are larger than those for the other species, some adult tautog may be too large to fit through these escape panels. Increasing the size of the escape panels to accommodate the larger size of the tautog may increase the rate of escapement for other species, rendering the utilization of such pots unfeasible for commercial fishing. Research into retention of tautog along with the other associated species harvested in lobster/fish pots using varying sizes of escape panels may be informative to determine a commercially feasible maximum.

Several bycatch reduction devices have been researched for trawl nets, a gear involved in the harvest of tautog in the more northern states along the Atlantic coast. These devices utilize escape panels of larger mesh, grills allowing escape of smaller fish, or the use of different color net material to increase the selectivity of the nets (Glass 2000). Investigations on the behavior of tautog to trawl gear may be informative toward the possible utilization of these devices in the trawl fishery.

3.5 HABITAT MONITORING PROGRAM

To enhance habitat for reef-associated fish and invertebrates, especially in the relatively featureless sand bottoms typical of ocean waters south of New England, artificial reefs have been created along the Atlantic coast, see Table 6. The construction of wide arrays of artificial reef sites reduce habitat fragmentation and act as networks supporting migratory movements of structure dependent species (Steimle and Zetlin 2000).

4.0 MANAGEMENT PROGRAM IMPLEMENTATION

4.1 REGIONAL BOUNDARIES

Option A. Status Quo – Coastwide Management

Currently, tautog are managed on a coastwide basis. If *Option A. Status Quo* is chosen then this section will be removed. The coastwide management unit is summarized under Section 2.4.

Option B. Regional Management

The Board reviewed multiple regional approaches and stock assessment analyses prior to proposing a four-region approach (Table 13). This option includes a sub-option to delineate the Long Island Sound boundary.

In the 1996 FMP, the document notes “there are apparent regional differences in the tautog fishery”, but did not specify regional boundaries due to limited biological data. In the 2015 Benchmark Stock Assessment, the TC identified a regional structure based on life history information, fishery characteristics, and data availability. Tagging data suggest strong site fidelity across years with limited north-south movement, although they undergo seasonal inshore-offshore migrations in the northern end of their range. Based on the analyses of

biological and fisheries information, the TC determined the "coastwide" stock unit is inappropriate.

Draft Amendment 1 proposes delineating the stock into four regions due to differences in biology and fishery characteristics, as well as limited coastwide movement (Table 13 and Figures 26-30). Regional management is likely to reduce the risk of overfishing and acts upon prior research recommendations. The TC can recommend alternative regional boundaries as more data become available. In response, the Board may adjust the regional boundaries via *Adaptive Management, Section 4.12.*

Table 13. Four-Region Management Approach

1) Massachusetts – Rhode Island
2) Long Island Sound (CT and NY LIS)
3) New Jersey – New York Bight (NJ and NY South Shore)
4) Delaware – Maryland – Virginia

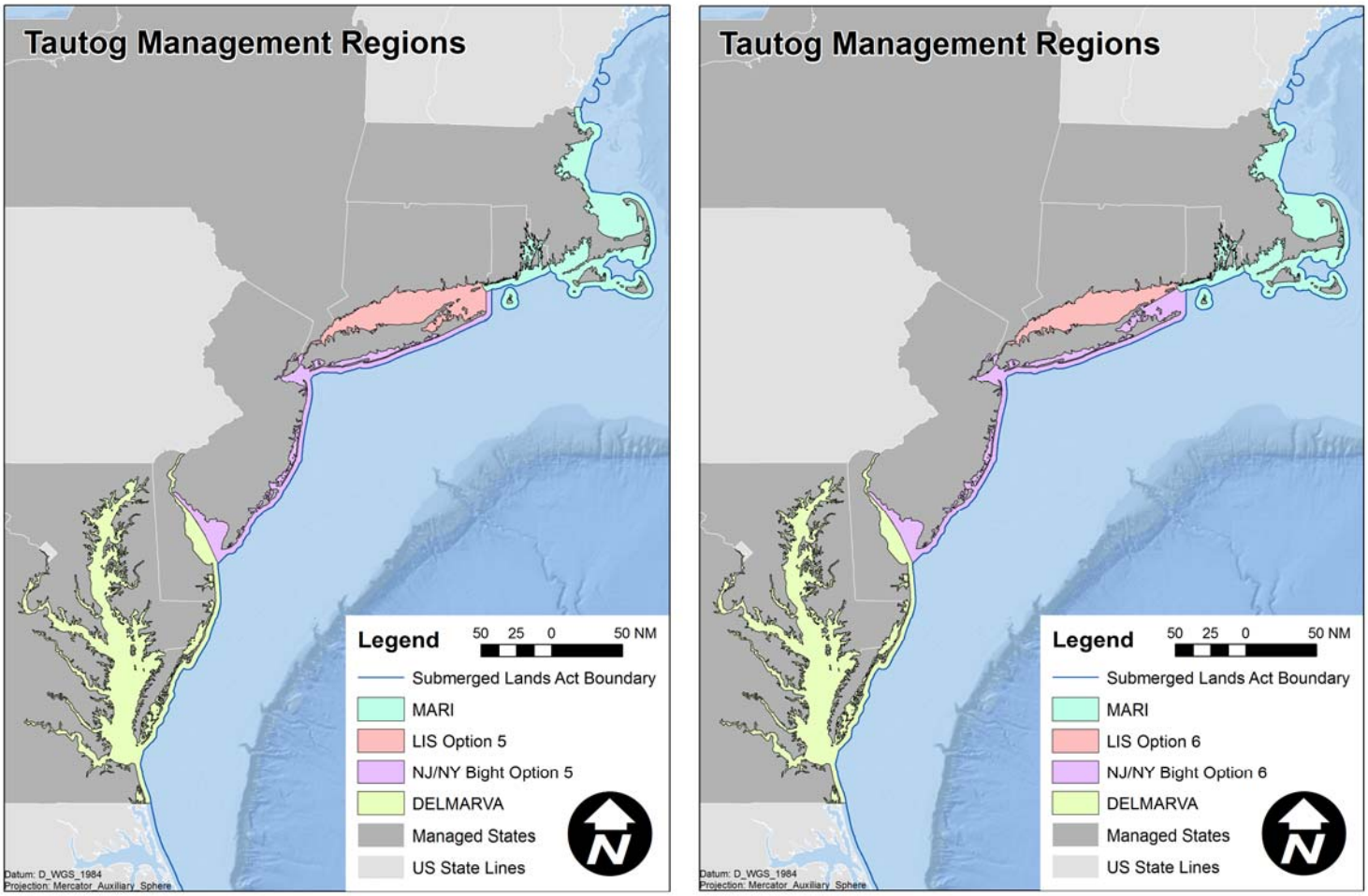


Figure 26. Proposed Tautog Management Regions; Showing Different LIS Boundaries

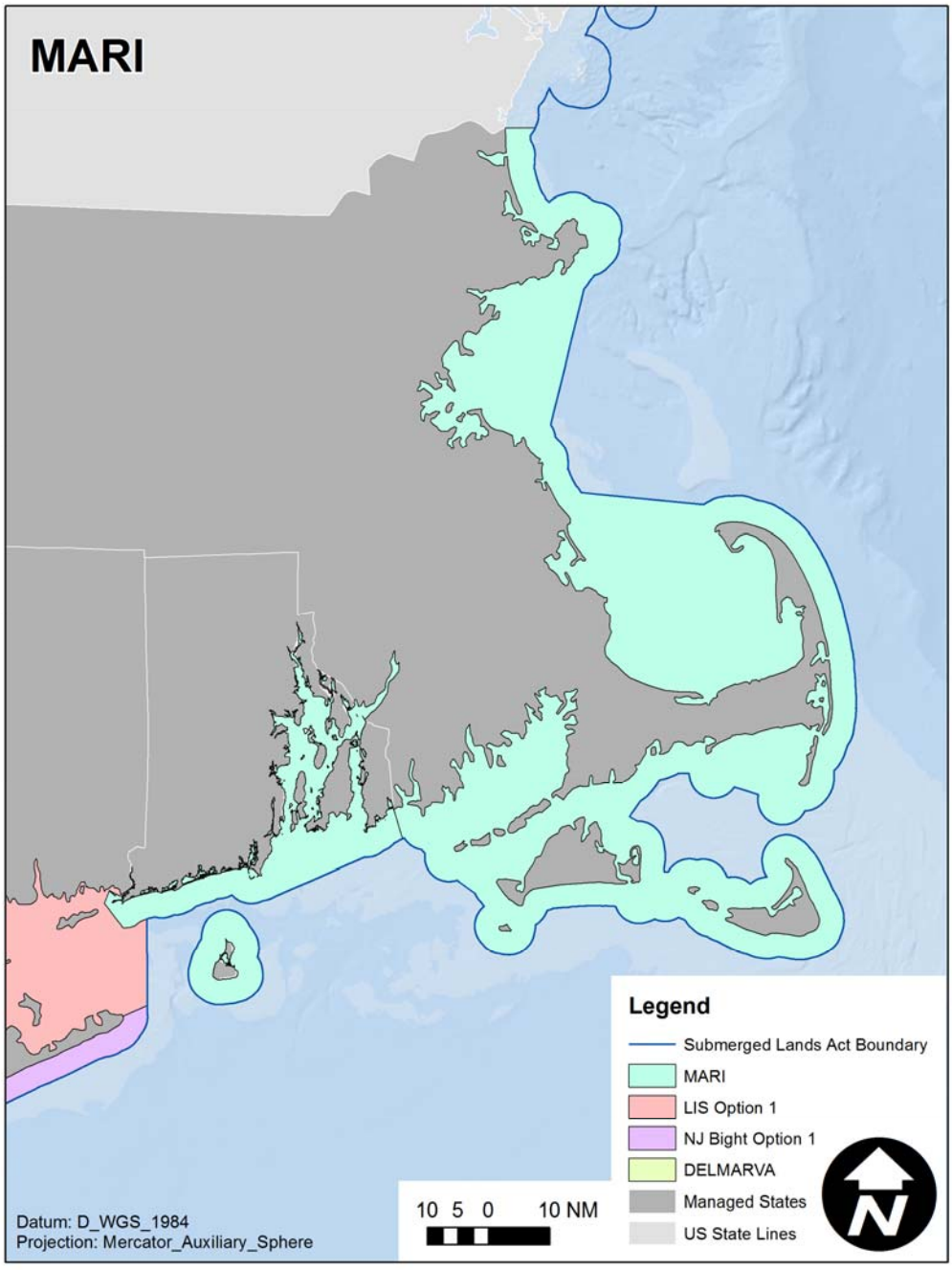


Figure 27. Proposed Massachusetts and Rhode Island Management Area

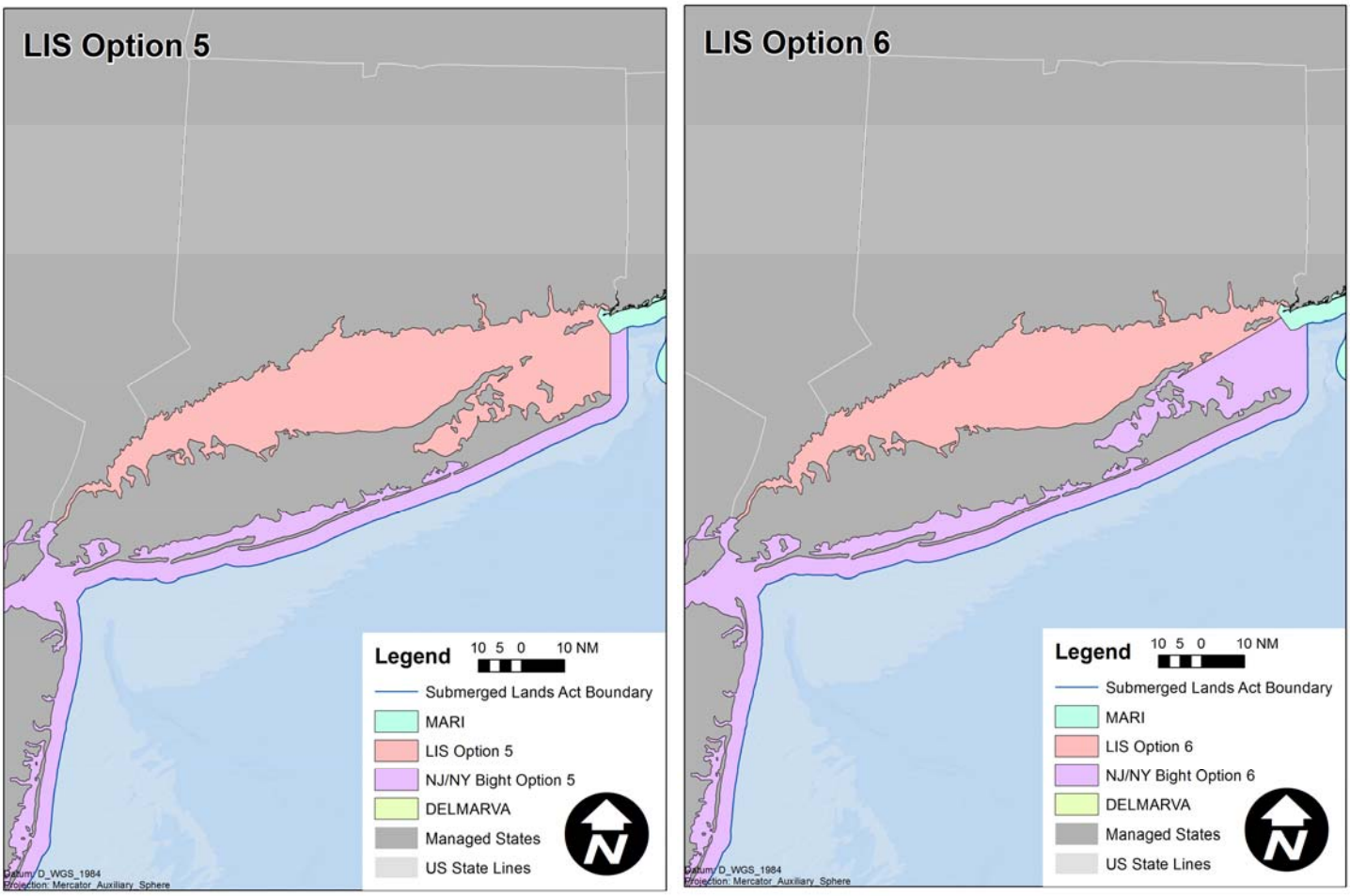


Figure 28. Proposed Long Island Sound Management Area

When Amendment 1 is finalized, the appropriate boundaries/maps will be included in the document.

Sub-Option B1 (map on the left): Long Island Sound is delineated by a line that runs from Montauk Point, New York to Watch Hill, Rhode Island. All waters west of the line will follow the Long Island Sound management measures. The MRIP data that was used to evaluate the LIS stock status is aligned with this option.

Sub-Option B2 (map on the right). Long Island Sound is delineated by a line that runs from Orient Point, New York to Watch Hill, Rhode Island. All waters west of the line will follow the Long Island Sound management measures.

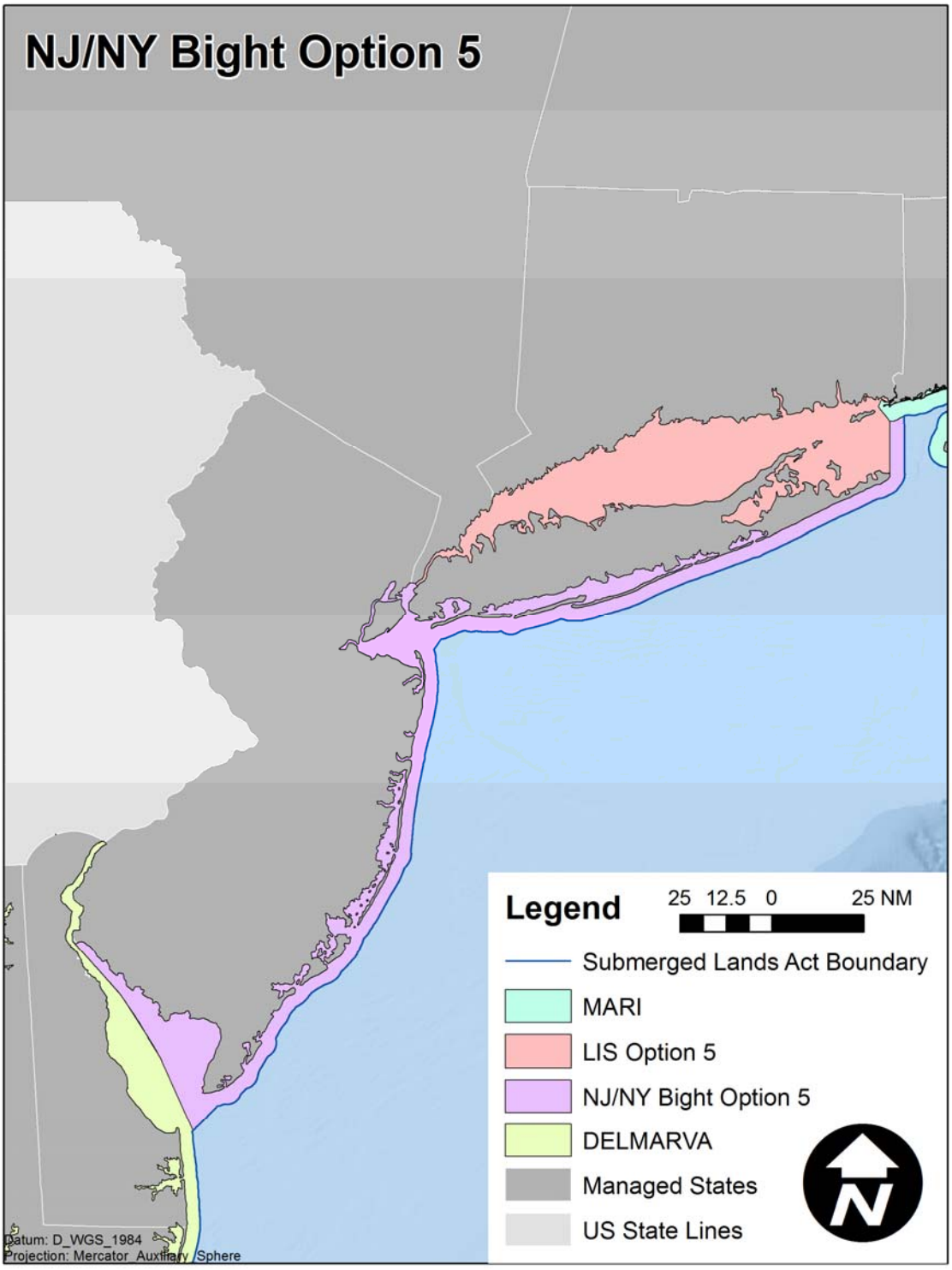


Figure 29. Proposed New Jersey-New York Bight Management Area

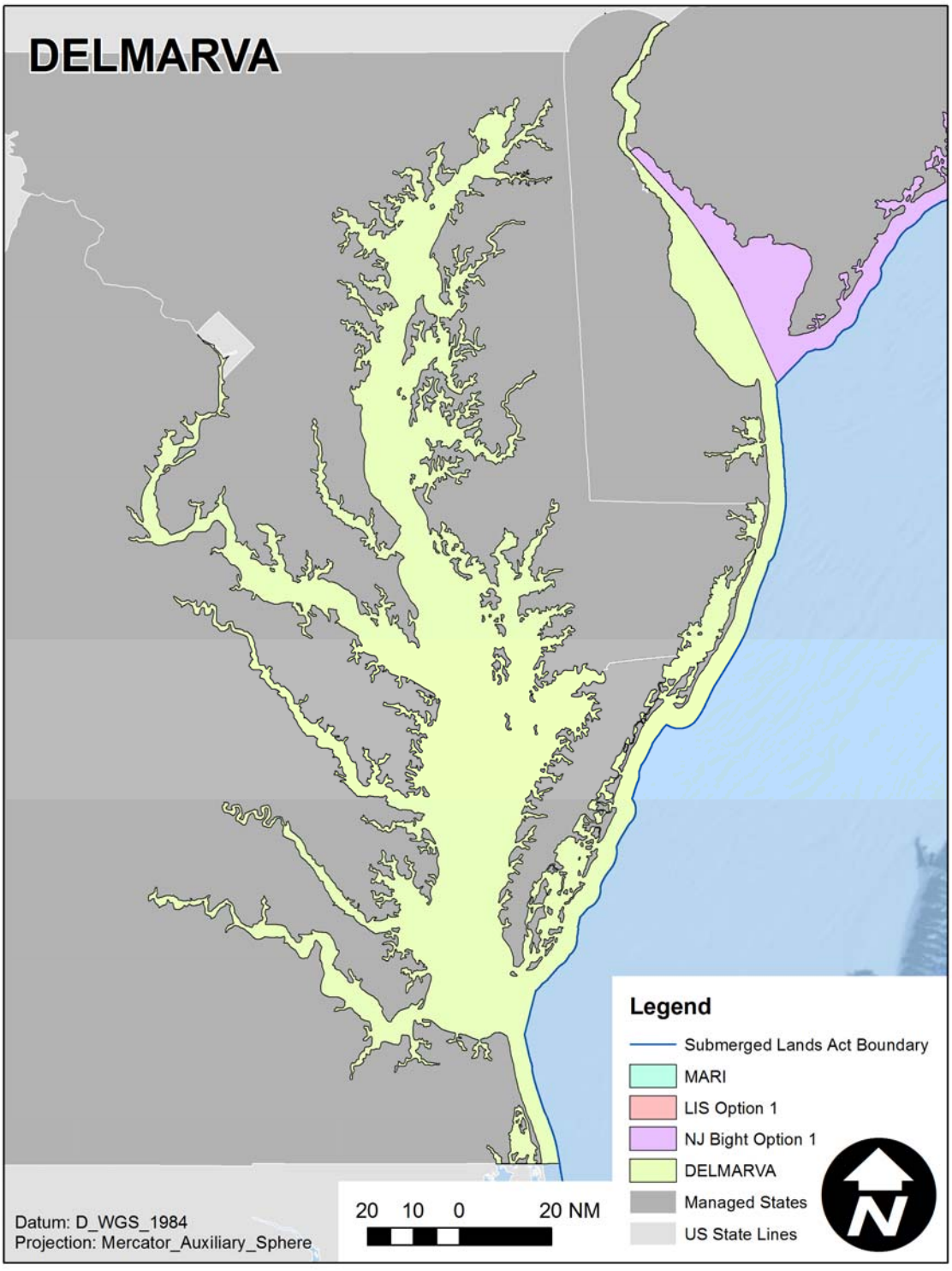


Figure 30. Proposed Delaware, Maryland, Virginia Management Area

4.2 REGIONAL MANAGEMENT MEASURES

Management options by region were developed by the TC in response to the 2016 stock assessment update. Two regions would be required to take harvest reductions to due to the regional stock status: LIS and NJ-NYB. Two regions would not have to take harvest reductions, but are proposing regional measures: MARI and DelMarVa.

4.2.1 Procedure to Develop Regional Management Measures

Compatible regulations between adjacent states are desirable to prevent the shift of fishing effort to areas with more liberal regulations, or to an area with an open season. If a region is considering consistent measures across for all states within a region then a regional working group will be developed to discuss appropriate alternatives. A regional working group consists of representatives from each member state within the region. It is recommended that the regional working group decisions are made by consensus.

If a state within a region wants to implement different management measures than those within the region, the general procedure within *Section 4.11, Conservation Equivalency* will be followed. It is recommended that the state convene the regional working group to discuss and review the proposed management measures.

All modifications to management measures (e.g., bag limit, minimum size, seasonal closures, quota, etc.) will be reviewed by the TC and approved by the Management Board. Once approved by the Board, the management measures can be implemented.

4.2.2 Massachusetts-Rhode Island (MARI)

Historically, tautog management measures in MARI have been state-specific (Tables 14 and 15). In response to the 2016 stock assessment update, managers are proposing regional management options for the public to consider (Table 16). If the regional management measures are modified at a future date, all states will agree to the new regulations prior to regional implementation (See Section 4.2.1).

Table 14. 2017 MARI Recreational Regulations

STATE	SIZE LIMIT (inches)	POSSESSION LIMITS (number of fish/person/day)	OPEN SEASONS
Massachusetts	16”	3	Jan 1 – Dec 31
Rhode Island	16”	3 (up to 10/private vessel)	Apr 15 – May 31
		3 (up to 10/private vessel)	Aug 1 – Oct 14
		6 (up to 10/private vessel)	Oct 15- Dec 15

Table 15. 2017 MARI Commercial Regulations

STATE	SIZE LIMIT (inches)	POSSESSION LIMITS (number of fish/vessel/day)	OPEN SEASONS	2017 QUOTA (lbs.)
Massachusetts	16"	40	Sept 1 - Oct 31	64,643
Rhode Island	16"	10	Apr 15 - May 31	17,116
			Aug 1 - Sept 15	13,390
			Oct 15 - Dec 31	17,116

4.2.2.1 Massachusetts-Rhode Island Proposed Recreational Management Measures

The following tools were used by MARI to calculate harvest reductions to achieve similar regulations between the two states. The methods described below all use MRIP recreational data for the years of 2013 – 2015, only waves 2 – 6 are available for analysis in these states during these years.

Four methods of estimating future recreational tautog harvest were employed. These included; 1) seasonal reductions calculated from daily harvest rates based on MA and RI harvest from 2013 - 2015 waves 2 – 6 according to MRIP data; 2) bag limit reduction calculations based on MA and RI harvest from 2013 - 2015 waves 2 – 6 according to MRIP data; 3) reductions achieved from increasing the minimum size based on MRIP size distribution data from 2013 - 2015 waves 2 – 6, and 4) a methodology for combining size, bag, and season harvest reduction calculations based on MA and RI harvest from 2013 - 2015 waves 2 – 6 according to MRIP data.

Table 16. Proposed MARI Recreational Regional Management Measures

Option	Minimum Size	Possession Limit	Open Season	% Harvest Reduction
A. Status Quo	16"	See Table 14		NA
B. All Measures Consistent	16"	3	March 1 - May 31; Aug 1 - Oct 14	9%
		4	Oct 15 - Dec 31	
C. All measures consistent	16"	3	March 1 - May 31; Aug 1 – Dec 31	19%

4.2.2.2 Massachusetts-Rhode Island Proposed Commercial Management Measures

There are no proposals to adjust the commercial regulations for MA-RI. The regulations in Table 15 would continue to be enforced unless a state or region adjusts the measures following the procedures set forth in *Section 4.2.1 or 4.3.*

4.2.3 Long Island Sound

Based on the 2016 stock assessment update, the LIS region is overfished and overfishing is occurring. The region will need to reduce commercial and recreational harvest by a minimum of 47.2% to achieve the F Target by 2021. The current management measures (Table 17 & 18) will be adjusted to meet the required reductions.

Table 17. 2017 LIS Recreational Regulations

STATE	SIZE LIMIT (inches)	POSSESSION LIMITS (number of fish/person/day)	OPEN SEASONS
Connecticut	16”	2 2 ~~4~~	Apr 1-Apr 30 July 1 – Aug 31 Oct 10 – Dec 6
New York	16”	~~4~~	Oct 5 – Dec 14

Table 18. 2017 LIS Commercial Regulations

STATE	SIZE LIMIT (inches)	POSSESSION LIMITS (number of fish/vessel/day)	OPEN SEASONS	2017 QUOTA (lbs.)
Connecticut	16”	10	Apr 1- Apr 30 Jul 1 - Aug 31 Oct 8 - Dec 24	-
New York	15”	25 (except, 10 per vessel when fishing lobster pot gear and more than six lobsters are in possession)	Jan 1 – Feb 28 Apr 8 – Dec 31	-

4.2.3.1 Long Island Sound Proposed Recreational Management Measures

Recreational options were developed by adjusting season, size and possession limit regulations using MRIP data from 2013 to 2015. Length analysis included data from MRIP, the CT Volunteer Angler Survey (> 16”) and the NY Headboat Survey (> 16”). Alterations in season length were evaluated by converting percent of annual harvest by wave to percent of annual harvest by day in each wave. Due to limited data (driven by minimal harvest) from the CT spring fishery (Waves 2 and 4), analysis focused on projected harvest reductions in response to changes in bag limit and minimum size at current season length for Wave 4.

The following LIS options were developed using a 50% probability of achieving F target, which is associated with a minimum harvest reduction of 47.2%.

Table 19. LIS recreational harvest reduction (of 47.2% or more) options to the status quo state-by-state measures

	State	Minimum Size	Possession Limit	Open Season	% Harvest Reduction
A1. State-specific Reduction	CT	17"	1	Apr. 1-30, Aug. 1-31	48.1%
			2	Oct 10-Nov 30	
	NY	16"	1	Oct. 5-Dec. 14	49.5%

Table 20. LIS recreational regional harvest reduction (of 47.2% or more) options

Regional Options	State	Minimum Size	Possession Limit	Open Season	% Harvest Reduction
B1. Consistent Minimum Size & Possession Limit	CT	16"	1	Apr. 1-30, Oct. 6-Dec. 6	47%
	NY			Oct. 1-Dec. 14	
B2. Consistent Minimum Size & Possession Limit	CT	17"	2	Apr 1-30, Aug 1-31, Oct. 10-Nov. 30	48.9%
	NY			Oct. 10-Nov. 30	
B3. All measures consistent	Regional	16"	1	Oct. 1-Nov. 9	47.1%

4.2.3.2 Long Island Sound Proposed Commercial Management Measures

Commercial options were developed based on seasonal closures. Connecticut's current commercial fishery has three open seasons and New York's commercial fishery has two open seasons. Total reported harvest from trip level reporting in 2013-2015 was calculated for each open season and converted to percent of total annual harvest. This was divided by the number of days in the season to provide an average daily percent of total annual harvest. It was then possible to look at seasonal closures that would reduce cumulative harvest by the required amount.

The following LIS option was developed using a 50% probability of achieving F target, which is associated with a minimum harvest reduction of 47.2%.

Table 21. LIS commercial harvest reduction (of 47.2% or more) options to the status quo state-by-state measures

Option	State	Minimum Size	Possession Limit	Open Season	% Harvest Reduction
A1. State-specific Reduction	CT	16"	10	Apr. 1-30, Aug. 1-31, Oct. 21-Dec. 4	47.3%
	NY	15"	25 (except, 10 per vessel when fishing lobster pot gear and more than six lobsters are in possession)	Jan. 1-Feb. 28, Apr. 1-30, Aug. 1-Dec. 31	51.3%

Table 22. LIS commercial regional harvest reduction (of 47.2% or more) option

Regional Option	State	Minimum Size	Possession Limit	Open Season	Quota (lbs)	% Harvest Reduction
B1. Quotas	CT	16"	-	Jan.1 – Apr 30, Aug. 1-Dec.31	2,785	47.2%
	NY				39,021	

4.2.3.3 Long Island Sound Proposed Slot Limit for the Commercial and Recreational Fisheries

Harvest slot scenarios were calculated for Long Island Sound for recreational and commercial fisheries, combined. These calculations were based on the same catch and harvest length distributions used in the Long Island Sound stock assessment update for the years 2013-2015. Catch and harvest lengths were scaled by the mean number of fish caught and harvested in LIS in the given years. The proportion of catch in a size class (P_L) was calculated (catch in length/total catch). As the proportion harvested in legal size classes was nearly 1, the proportion harvested was set to 1 for all subsequent calculations. Given that, the yield (Y_L) in a size class was calculated:

$$Y_L = C \times P_L$$

The sum of Y_L for all the lengths of interest in a slot results in the yield (Y, number of fish harvested).

$$Y = \sum_{i=slot\ min}^{n=slot\ max} Y_i + Y_{i+1} + \cdots + Y_n$$

The number of dead discards was estimated by the product of the discard mortality (2.5%) and the sum of all Y_L outside of the harvest slot and was included in the percent reduction. Y_L was also calculated based on the biomass by converting length to mean weight.

$$Y_L = C \times P_L \times W_L$$

Yield in biomass (Yb) was calculated as above.

All harvest reductions for slot limits include season closures from May to July.

Harvest slots provide the opportunity to protect the large female spawners which produce exponentially more eggs (which are potentially of higher quality) than smaller females (LaPlante and Schultz, 2007). As tautog have a relatively low discard mortality rate (2.5%) harvest slots provide an opportunity for implementing harvest reductions without increasing the minimum size.

There are no viable harvest reduction options for slot limit for recreation and commercial fishery, with a size range of 14"- X" using status quo bag and seasonal closures. This is largely because of a high proportion of fish under 16" in the current size structure of the population. Reducing bag size and additional seasonal closures would be required to achieve these harvest reductions with such a slot limit.

A harvest slot between 16" and 18" is possible with no reductions in bag size (Table 23). This option includes a season closure for May, June and July. It would have no significant impact on these harvest reductions if bonus fish (recreational sector) within one inch of the state record (34" for CT and 32" for NY) were allowed. Reductions are shown in number of individuals and biomass (Table 23).

Table 23. LIS regional management harvest reduction scenarios with harvest slot limits for commercial and recreational fisheries.

Slot Limit Option	State	Minimum Size	Possession Limit	Open Season	% Harvest Reduction
C. 16"-18" harvest slot	CT	16-18"	Status quo (See Tables 17 & 18)	Apr. 1-30, Aug. 1-31, Oct. 10-Dec 6	51.3%
	NY			Oct. 5-Dec. 14	

4.2.4 New Jersey-New York Bight

Based on the 2016 stock assessment update, the NJ-NYB region is overfished and overfishing is occurring. The region will need to reduce commercial and recreational harvest by a minimum of 2% to achieve the F Target by 2021. The current management measures (Table 24 & 25) will be adjusted to meet the required reductions.

Table 24. 2017 NJ-NYB recreational regulations

STATE	SIZE LIMIT (inches)	POSSESSION LIMITS (number of fish/person/day)	OPEN SEASONS
New York	16”	~~4~~	Oct 5 – Dec 14
New Jersey	15”	~~4~~	Jan 1 – Feb 28
		~~4~~	Apr 1 – Apr 30
		1	Jul 17 – Nov 15
		6	Nov 16 – Dec 31

Table 25. 2017 NJ-NYB commercial regulations

STATE	SIZE LIMIT (inches)	POSSESSION LIMITS (number of fish/vessel/day)	OPEN SEASONS	2017 QUOTA (lbs.)
New York	15”	25 (except, 10 per vessel when fishing lobster pot gear and more than six lobsters are in possession)	Jan 1 – Feb 28 Apr 8 – Dec 31	-
New Jersey	15”	> 100 lbs requires directed fishery permit	Jan 1 - 15 June 11 - 30 Nov 9 - Dec 31	103,000

4.2.4.1 New Jersey-New York Bight Proposed Recreational Management Measures

Data for this analysis were obtained from MRIP raw length and catch frequency data by wave from 2013 through 2015 using only records showing legal size, bag and season harvests (data excludes Long Island Sound harvests). Percent savings estimates by wave for size and bag limit options were calculated through an R code program. Wave (season) savings were estimated by calculating the percent harvest by wave of the total annual harvest for the sum of the years 2013 through 2015.

NJ-NYB region chose a 15-18 inch slot limit proposal as a way for fishermen to keep a good percentage of current harvests (between 73 – 80%) while allowing the largest fish (those equal

to or greater than 18.5 inches) to remain in the population since research has shown larger tautog are the greatest contributors to the reproductive potential of the stock. The percent reductions for this slot limit were calculated by taking the proportion of total harvest of the fish legally landed in the recreational fishery in New Jersey and New York's south shore which exceeded 18 inches. The resulting reduction percentages were 19.6% and 26.9% for New Jersey and New York Bight respectively. These percentage savings were applied to both the recreational and commercial sectors due to the lack of length frequency data for commercial catches. The data were obtained from the MRIP length frequency and Type 9 information, New Jersey Volunteer Angler Survey, and the south shore component of New York's DEC Headboat Survey.

The following NJ-NYB options were developed using a 50% probability of achieving F target, which is associated with a minimum harvest reduction of 2%.

Table 26. NJ-NYB recreational harvest reduction (of 2% or more) options to the status quo state-by-state measures

Option	State	Minimum Size	Possession Limit	Open Season	% Harvest Reduction
A1. State-specific Reduction	NYB	16"	4	Oct 6 - Dec 13	2%
	NJ	15"	4	Jan 1 – Feb 28	
			4	Apr 1 - 18	
			1	Aug 21 – Nov 15	
			6	Nov 16 – Dec 31	

Table 27. NJ-NYB recreational regional harvest reduction (of 2% or more) options

Regional Options	State	Minimum Size	Possession Limit	Open Season	% Harvest Reduction
B1. Consistent Minimum Size & Possession Limit	NYB	15"	4	Oct 10 - Dec 12	2%
	NJ			Sep 17 - Dec 31	
B2. Consistent Minimum Size	NYB	16"	4	Oct 6 - Dec 14	4%
	NJ		4	Jan 1 – May 31	
			6	Aug 31-Dec 31	
C1. Slot Limit with Consistent Possession Limits	NYB	15-18"	4	Oct 2 - Dec 26	2%
	NJ			Jan 1 - Mar 31; Aug 20 - Dec 31	

4.2.4.2 New Jersey-New York Bight Proposed Commercial Management Measures

Length frequencies from the recreational sector were used for both the commercial and recreational sectors due to the lack of commercial length frequencies and to reflect the predominance of the recreational harvest (~90%) in the tautog fisheries for both New Jersey (NJ) and the south shore of New York (NYB). For NJ, the data were pulled from the MRIP NJ harvest expanded length frequencies, the state's Volunteer Angler Survey's kept length frequencies, and the Type 9 MRIP records. For NYB, the raw MRIP length frequency data were used due to the necessity of pulling out the records obtained from Long Island Sound. These data were supplemented by the New York State DEC Headboat Survey length frequencies and MRIP Type 9 data from the non-Long Island Sound records.

The following NJ-NYB options were developed using a 50% probability of achieving F target, which is associated with a minimum harvest reduction of 2%.

Table 28. NJ-NYB commercial harvest reduction (of 2% or more) options to the status quo state-by-state measures

Option	State	Minimum Size	Possession Limit	Open Season	% Harvest Reduction
A1. State-specific Reduction	NYB	15"	25	Jan 1 - Feb 28; Apr 14 - Dec 31	2%
	NJ		-	Jan 1 - 15; Jun 11 - 30; Nov 12 - Dec 31	

Table 29. NJ-NYB commercial regional harvest reduction (of 2% or more) options

Regional Options	State	Minimum Size	Possession Limit	Open Season	Quota (lbs)	% Harvest Reduction
B1. Consistent Minimum Size	NYB	15"	28	Jan 1 - May 31; Aug 1 - Dec 31	-	2%
	NJ		-	Jan 1 - May 1; Sep 19 - Dec 31	-	
B2. Consistent Minimum Size	NYB	16"	31	Jan 1 - May 31; Aug 1 - Dec 31	-	2%
	NJ		-	Jan 1 - May 11; Aug 1 - Dec 31	-	
B3. Quotas	NYB	15"	-	-	65,486	2%
	NJ				23,259	
C4. 15"- 18" harvest slot	NYB	15-18"	34	Jan 1 - May 31; Aug 1 - Dec 31	-	2%
	NJ		-	Jan 1 - Apr 21; Aug 11 - Dec 31	-	

4.2.5 Delaware – Maryland - Virginia

Historically, tautog management measures in DelMarVa have been state-specific (Tables 30 and 31). In response to the 2016 stock assessment update, managers are proposing regional management options for the public to consider (Table 32). If the regional management measures are modified at a future date, all states will agree to the new regulations prior to regional implementation (See Section 4.2.1).

Table 30. 2017 DelMarVa recreational regulations

STATE	SIZE LIMIT (inches)	POSSESSION LIMITS (number of fish/person/day)	OPEN SEASONS
Delaware	15”	5	Jan 1 – Mar 31
		3	Apr 1 – May 11
		5	July 17 – Aug 31
		5	Sept 29 – Dec 31
Maryland	16”	~~4~~	Jan 1- May 15
		2	May 16 – Oct 31
		~~4~~	Nov 1 – 26
Virginia	16"	3	Jan 1 – April 30
			Sept 20 – Dec 31

Table 31. 2017 DelMarVa commercial regulations

STATE	SIZE LIMIT (inches)	POSSESSION LIMITS (number of fish/vessel/day)	OPEN SEASONS	2017 QUOTA (lbs.)
Delaware	15”	5	Jan 1 - Mar 31	-
		3	Apr 1 - May 11	
		5	July 17 - Aug 31	
		5	Sept 29 - Dec 31	
Maryland	16”	4	Jan 1- May 15	-
		2	May 16 - Oct 31	
		4	Nov 1 - 26	
Virginia	15”	-	Jan 1 – Jan 21	-
			Mar 1 – Apr 30	
			Nov 1 – Dec 31	

4.2.5.1 Delaware-Maryland-Virginia Proposed Recreational Management Measures

Table 32. Proposed DelMarVa Recreational Regional Management Measures

Option	State	Minimum Size	Possession Limit	Open Season	% Harvest Reduction/ Liberalization
A. Status Quo		See Table 30			NA
B. Consistent Possession Limit & Seasons	DE	15”	4	Jan 1 – Apr 30; July 1 – Dec 31	8.5% Liberalization
	MD	16”			
	VA				
C. Consistent Minimum Size	DE	16”	5	Jan – Mar 31	11.9% Reduction
			3	Apr 1 – 30	
			5	July 1 – Dec 31	
	MD		4	Jan 1 – Apr 30 Aug 1 – Dec 31	
	VA		3	Jan 1 – Apr 30 Sept 20 – Dec 31	
D. All measures consistent	Regional	16”	4	Jan 1 – April 30; July 1 – Dec 31	11.6% Reduction

4.2.5.2 Delaware-Maryland-Virginia Proposed Commercial Management Measures

There are no proposals to adjust the commercial regulations for DelMarVa. However, Delaware and Maryland have traditionally adopted the recreational measures as the commercial measures; and could continue to do this if the recreational measures are changed (Option B). If the region would like to make this decision at a later date then it can do so following the procedures set forth in *Section 4.2.1 or 4.3.*

Option A. Status Quo measures, as shown in Table 31

Option B. The modified recreational measures for Delaware and Maryland will be implemented as commercial measures (Section 4.2.5.1); Virginia commercial measures will remain status quo.

4.3. COMMERCIAL QUOTA
Option A. Status Quo. No specific commercial quota procedures.

Option B. Commercial Quota Procedures (Option B includes Sections 4.3.1 – 4.3.5)
A state or region may implement an annual commercial quota if the following procedures are met and Board approval is granted.

For the purposes of this section, a regional working group consists of representatives from each member state within the region. Regional working group decisions related to commercial quotas should be made by consensus.

Quota proposals will be reviewed by the TC according to *Sections 4.3.1* or *4.3.2*.; and develop a recommendation for the Board. The Board will meet to review and consider approval of the quota. Once approved by the Board, the regional quota can be implemented.

4.3.1 Commercial Quota within a Region
A regional working group will be developed to discuss the parameters of a regional quota across one or more states and develop rationale to justify the proposed quota. The proposal must include an agreed upon allocation method (by all member states within the region) and data to justify the quota must include the most recent 10 years of data. For example, a 2017 quota can include any combination of data from 2006-2016.

4.3.2 State-Specific Quota within a Region
If a state within a region wants to implement a quota and some or none of the other states have a quota then the proposed quota will need to be brought to the regional working group. Data to justify the quota must include the most recent 10 years of data. For example, a 2017 quota can include any combination of data from 2006-2016.

4.3.3 Quota Rollover
Due to the current stock condition, the PDT does not recommend the use of quota rollovers. If stock condition changes this management tool can be re-evaluated. Unused quota may not be rolled over from one fishing year to the next.

4.3.4 Quota Transfer
States can transfer quota to another state within the same region. The quota transfer must be finalized within the current fishing year. Quota cannot be transferred outside of a region.

States have the responsibility to close the tautog commercial fishery in their state once the quota has been reached. The Executive Director or designated ASMFC staff will review and approve all transfer requests before the quota transfer is finalized.

Once quota has been transferred to a state, the state receiving quota is responsible for any overages of transferred quota. That is, the amount over the final quota (that state's quota plus

any quota transferred to that state) for a state will be deducted from the corresponding state's quota the following fishing season.

4.3.5 Quota Overage

If a region or state exceeds the quota in a fishing season, the overage will be deducted from the corresponding region or state in the subsequent fishing year.

4.4 COMMERCIAL HARVEST TAGGING PROGRAM

Option A. Status Quo.

No commercial harvest tagging program.

Option B. Implement a Commercial Harvest Tagging Program

(Includes a sub-option under Section 4.4.3)

If a commercial harvest tagging program is implemented then a state would not need to adopt the proposed commercial effort controls (e.g., changes to the size limit, season length, etc.) to achieve the necessary reductions, but would simply use a cap on the number of tags distributed. The cap could be derived from the proposed regional quota.

Law enforcement officials have evidence that indicates there is a significant illegal harvest of tautog, primarily in the live market. Reports of illegally harvested fish have been documented in cases against fishermen, fish houses and at retail markets and restaurants. In Massachusetts there have been a number of large cases made against licensed commercial fishermen, whereas in Delaware, New Jersey and New York illegal harvest seems mostly concentrated in the recreational fishery. Regardless of the source, most undersized, out-of-season or illegal quantities of live tautog are associated with the demand for tautog at ethnic food markets or restaurants. These markets are often found in large cities such as New York City and Philadelphia. To a lesser degree, illegal activity does occur among individuals and small groups harvesting fish for personal consumption or subsistence. This latter group may not even be aware they are violating specific regulations.

A commercial harvest tagging program was recommended to increase accountability in the fishery and curb illegal harvest. The tagging program would accommodate both the live and dead commercial markets. To evaluate the merits of such a program a Law Enforcement Subcommittee (Subcommittee), comprised of Tautog Board members and law enforcement representatives, was developed in 2015. As agreed upon by the Subcommittee, the tag should be easy to attach, secure and have minimal to no impact on the appearance or condition of live fish for the amount of time that live, tagged fish are maintained until consumption. The Subcommittee evaluated multiple tag types and fishermen were interviewed to describe the handling process from catch to market. A tautog tag trial was conducted to investigate the efficacy of a commercial tag that serves as a tool for law enforcement, while minimizing impact to the resource. The 30-day trial concluded with no mortality or degradation to fish health (Dumais et al 2016).

4.4.1 Objectives

The intent of the Commercial Harvest Tagging Program is to provide accountability in the commercial fishery and minimize illegal, unreported and unregulated (IUU) fishing, while utilizing methods that are easy for fishermen to use and do not detract from fish quality or marketability, and serve as a tool for law enforcement to evaluate compliance. To achieve these goals, the Subcommittee developed the following objectives:

Objective 1: Implement a verifiable tagging system that can aid enforcement and help identify IUU fish from reaching markets.

Objective 2: Use tags of a consistent type and style among all states that include standardized identifiers of year, state, and tag number.

Objective 3: Employ tags that are single-use only. Tags must be difficult to replicate. All unused tags will be returned or otherwise accounted for annually.

Objective 4: Implement a tagging program that will accommodate both the live and dead commercial fish markets. The tags used must be easy to attach, secure and have minimal to no impact on the appearance or condition of live fish for the amount of time that live, tagged fish are maintained until consumption.

4.4.2 Commercial Tagging

All states within a regional management unit are required to participate in the commercial harvest tagging program. *De minimis* status does not preclude a state from the requirements of the commercial harvest tagging program.

All states will use the same single-use tag. The tag will be inscribed with the year of issue, state of issue and a unique number. The **unique number will be linked back to the permit holder**. States will distribute tags to participants. It is unlawful to sell or purchase commercially caught tautog (alive or dead) without a commercial tag. The cost of the tag will be financed by states or fishermen at the discretion of each state or jurisdiction.

4.4.3 Tag Application

Option A. Harvester Application at Harvest or Prior to Offloading

All commercially caught tautog will be tagged by the commercially-permitted harvester at the time of harvest or prior to offloading. Tautog must be landed in the state that is identified on the tag.

Option B. Application by Dealer

All commercially caught tautog will be tagged by a licensed dealer. The location (state) of the sale must correspond to the state identified on the tag. The tag will be applied to the fish immediately after the dealer buys the fish from the harvester.

4.4.4 Tag Allowance (Biological Metric)

States are required to allocate commercial tags to the recipients described in Section 4.4.3 based on a biological metric, which will be described in the Annual Commercial Tag Report (Section 4.4.7). This metric is an estimate to determine the number of fish tags that will be required per year; the goal is to avoid surplus tags. For example, the majority of states in the striped bass commercial tagging program use the average commercial weight per fish from the previous year, or some variation thereof as the biological metric.

4.4.5 Tag Accounting

All states will require the recipients described in Section 4.4.3 to return unused tags from the previous fishing year no later than **February 15**.The return method will be further described by each state. The number of unused tags will be included in the Annual Commercial Tag Report (Section 4.4.7), along with the disposition of other returned tags (e.g., used, broken, lost, etc). Tag recipients who do not comply with this section may be subject to penalties set forth in Section 4.4.6.

4.4.6 Penalties

It is recommended that states strengthen their penalties for tautog violations and include counterfeit tag operations, in order to deter illegal harvest of tautog. License revocation or suspension is supported as a primary penalty for state or federal violations. Civil and/or criminal penalties can be also effective deterrents. It is recommended that cases of undocumented "lost" tags should result in a 1-year suspension from the commercial tautog fishery (for the subsequent fishing year).

4.4.7 Annual Commercial Tag Report

The existing compliance report will be modified to include a Commercial Tag section that must be completed by each state. The report must include the following information. The Board may modify the sections of the report via Board action.

- Describe the biological metric
- Number of tag violations.
- Complete the following table:

State	MA	RI	CT	NY (LIS)	NY (south shore)	NJ	DE	MD	VA
Quota (if applicable)									
Maximum Commercial Harvest per Region									
Avg. Commercial Weight									
Number of Participants									
Number of Tags Issued									
Number of Tags Returned									

4.5 Gear Restrictions

Tautog pots and traps are required to have hinges and fasteners on one panel or door made of one of the following degradable materials:

1) Untreated hemp or jute string of 3/16 inch (4.8mm) in diameter or smaller;
2) Magnesium alloy fasteners, timed float releases (pop-up devices) or similar magnesium alloy fasteners;
3) Ungalvanized or uncoated iron wire of 0.094-inch (2.39mm) diameter or smaller.

4.6 SPAWNING TIME PERIODS

After consideration of mandated spawning closures, the Board determined to leave the authority with the individual states. Each region reviewed the Estuarine Living Marine Resources Database https://products.coastalscience.noaa.gov/elmr/ to determine peak spawning as well as scientific articles that are summarized in *Section 1.2.1 Species Life History*. The management measures presented in this document include measures intended to reduce disruption on tautog pairing and to protect spawning females. A state can modify future management measures to allow harvest during spawning time periods via conservation equivalency. The TC recommends implementing spawning closures during the following time periods:

- *Massachusetts-Rhode Island:* June through July
- *Long Island Sound:* May through July (See Appendix 1 for more biological information)
- *New Jersey-New York Bight:* June through July
- *Delaware-Maryland-Virginia:* May through June

4.7 POSSESSION LIMIT REGULATORY LANAGUAGE

Concern has been raised that the absence of tautog regulations in federal waters allows for loopholes that potentially contribute to overfishing. Possession restrictions have been used successfully to control federal waters fisheries for other species. While landing restrictions are enforceable, prohibiting possession allows for a larger area where marine enforcement can intercept vessels carrying tautog in amounts or sizes that violate state regulations. This Amendment requires that all state tautog regulations to prohibit *possession*. Therefore, harvesters should be aware of the strict possession limits that will apply once the vessel enters state waters.

4.8 FISHERY REGULATION ENFORCEMENT

The tautog fishery has many unique harvest, transportation, and marketing characteristics, which increase demand for small live fish. This Amendment emphasizes the need for state and federal enforcement agencies to place a high priority on the enforcement of tautog regulations. In addition, the public may also play an important role by reporting information on illegal harvest and sale of tautog to their state's marine fishery enforcement agency.

4.9 DATA COLLECTION

The recreational fishery occurs throughout the year. The majority of the landings are captured through the Marine Recreational Information Program (MRIP) administered by the National Marine Fisheries Service. However, the MRIP does not sample landings during January and February (wave 1). This Amendment recommends states initiate a sampling program to estimate the recreational harvest of tautog during January and February.

4.10 HABITAT CONSERVATION AND RESTORATION RECOMMENDATIONS

4.10.1 Preservation of Existing Habitat

Management of existing habitat on a sustainable basis requires a thorough knowledge of essential habitat types, their distribution, and their use by all life history stages of tautog. Currently, additional research is needed to determine the extent and condition of essential tautog habitats on a coastwide basis. Once the locations and abundance of essential tautog habitats are determined, refuges and special fishery management zones (SMZ) that limit fishing access and gear types are one potential method of habitat management.

4.10.2 Habitat Restoration, Improvement, and Enhancement

Restoration should be considered where well-known, historically "productive" tautog habitat has been degraded or lost.

Restoration could be directed specifically toward tautog habitat or it could occur as a component of other efforts. South of Cape Cod, restoration of lobster habitat should also consider the needs of tautog because habitat usage by the two species overlaps. Response plans for accidental toxic spills in coastal waters should focus on tautog as well as shellfish resources, because tautog are localized and depend on specific habitats and associated food

sources that are susceptible to chemical contamination. Point source contamination and hypoxia near nursery grounds can be improved by minimizing sewage discharges and increasing wastewater treatment levels. Non-point source toxic contamination of groundwater and nearshore coastal habitats can be reduced by redirecting storm water runoff into catch basins.

Habitat enhancement requires the creation or expansion of essential habitat where little or none presently exists. Creation of artificial reef habitats (see *Section 1.5.4.1*) and breakwaters could mitigate habitat losses. Both intentional reef construction and accidental creation through shipwrecks may be expanding tautog habitat in open, sandy coastal areas where tautog would not normally be found.

4.10.3 Avoidance of Incompatible Activities

Each state should establish windows of compatibility for activities known, to adversely affect tautog habitat, including projects involving water withdrawal, entrainment of eggs and larvae in cooling water systems and mortality from thermal effects, dredging, bulk-heading and channel construction. As a preventative measure, buffer zones could be established around important nursery areas.

4.10.4 Fishery Practices

Certain gear types may disrupt tautog habitat, however, insufficient information is available to quantify effects at this time. Derelict lobster traps are known to entrap tautog, resulting in unquantified mortality. Any fishing gear having an unacceptable impact on tautog habitat should be prohibited within essential habitats.

4.11 ALTERNATIVE STATE/REGION MANAGEMENT REGIMES/MANAGEMENT PROGRAM EQUIVALENCY

Once approved by the Tautog Management Board, states are required to obtain prior approval from the Board of any changes to their management program for which a compliance requirement is in effect. Other measures must be reported to the Board but may be implemented without prior Board approval. A state can request permission to implement an alternative to any mandatory compliance measure only if that state can show to the Board's satisfaction that its alternative proposal will have the same conservation value as the measure contained in this amendment or any addenda prepared under *Adaptive Management (Section 4.12*). States submitting alternative proposals must demonstrate that the proposed action will not contribute to overfishing of the resource. States may submit alternative region/state proposals under this section following the procedures outlined in the Commission's Conservation Equivalency Policy and Technical Guidance Document.

4.11.3 *De Minimis* Fishery Guidelines

4.11.3.1 Criteria for De Minimis Consideration

To be eligible for *de minimis* consideration, a state must prove that its commercial landings in the most recent year for which data are available did not exceed *the greater of* 10,000 pounds or 1% of the regional landings.

4.11.3.2 Plan Requirements if De Minimis is Granted

If *de minimis* status is granted, the *de minimis* state is required to implement the minimum size provisions, the pot and trap degradable fastener provisions, and regulations consistent with those in the recreational fishery (including possession limits and seasonal closures). The state must monitor its landings on at least an annual basis and provide a compliance report as outlined in *Section 5.1.2* of the Tautog FMP. If the FMP is altered through adaptive management as specified in *Section 4.12* of the Tautog FMP the Management Board will specify by motion which measures *de minimis* states must adopt.

4.11.3.3 Procedure to Apply for De Minimis Status

States must specifically request *de minimis* status each year. Requests for *de minimis* status will be reviewed by the Tautog Plan Review Team (PRT) as part of the annual FMP review process. Requests for *de minimis* must be submitted to the ASMFC Tautog FMP Coordinator as a part of the state's yearly compliance report. The request must contain the following information: commercial landings for the most recent year, commercial regulations for the current year, and the proposed management measures the state plans to implement for the year *de minimis* status is requested. The FMP Coordinator will then forward the information to the PRT and, if necessary, the Tautog Technical Committee and Stock Assessment Subcommittee.

In determining whether or not a state meets the *de minimis* criteria, the PRT will consider the information provided with the request, the most recent available coastwide landings data, any information provided by the Technical Committee and Stock Assessment Subcommittee, and projections of future landings. The PRT will make a recommendation to the Board to either accept or deny the *de minimis* request. The Board will then review the PRT recommendation and either grant or deny the *de minimis* classification.

The Board must make a specific motion to grant a state *de minimis* status. By deeming a given state *de minimis*, the Board is recognizing that: the state has a minimal tautog fishery; there is little risk to the health of the tautog stock if the state does not implement the full suite of management measures; and the overall burden of implementing the complete management and monitoring requirements of the FMP outweigh the conservation benefits of implementing those measures in the particular state.

If commercial landings in a *de minimis* state exceed the *de minimis* threshold, the state will lose its *de minimis* classification, will be ineligible for *de minimis* in the following year, and will be required to implement all requirements of the FMP. If the Board denies a state's *de minimis* request, the state will be required to implement all the requirements of the FMP. When a state

rescinds or loses its *de minimis* status the Board will set a compliance date by which the state must implement the required regulations.

4.12 ADAPTIVE MANAEGMENT

The Tautog Management Board may vary the requirements specified in this amendment as a part of adaptive management in order to conserve the tautog resource. The elements that can be modified by adaptive management are listed in *Section 4.12.2*. The process under which adaptive management can occur is provided below.

4.12.1 General Procedures

The Plan Review Team (PRT) will monitor the status of the fishery and the resource and report on that status to the Tautog Management Board annually, or when directed to do so by the Section. The Plan Review Team may consult with the Technical Committee, the Stock Assessment Committee or the Advisory Panel, if any. The report may contain recommendations concerning proposed adaptive management revisions to the management program. If the PRT makes a recommendation, the Tautog Management Board will review the report and may consult further with Technical Committee, the Stock Assessment Committee or the Advisory Panel.

If an addendum is initiated, then the Board will provide guidance on the specific issues that the Plan Development Team (PDT) should address. The PDT will be convened after members are nominated and approved by the Board.

A public hearing will be held in any state that requests one. The PDT will also request comment from federal agencies and the public at large. The PDT will summarize the comments and prepare a final version of the addendum for the Board. The Board will consider the public comments received and the recommendations of the Technical Committee, the Stock Assessment Committee or the Advisory Panel. The Section shall then decide whether to adopt, or revise and then adopt, the addendum. The addendum shall contain a schedule for the states to implement its provisions.

Upon adoption of an addendum implementing adaptive management by the Board, states shall prepare plans to carry out the addendum, and submit them to the Board for approval according to the schedule contained in the addendum.

4.12.2 Measures Subject to Change

The following measures are subject to change under adaptive management upon approval by the Tautog Management Board:

1. Rebuilding targets and schedules
2. Fishing season including seasonal closures
3. Trip limits/bag limits
4. Minimum size

5. Commercial harvest tagging program
6. Reporting requirements
7. Gear restrictions
8. Management areas/regions
9. Recommendations to the Secretary for complimentary actions in federal jurisdictions
10. Research or monitoring requirements
11. Or any other management action

4.13 EMERGENCY PROCEDURES

Emergency procedures may be used by the Tautog Management Board to require any emergency action that is not covered by or is an exception or change to any provision in Amendment 1. Procedures for implementation are addressed in the ASMFC Interstate Fisheries Management Program Charter, Section Six (c)(11) (ASMFC 2016).

4.14 MANAGEMENT INSTITUTIONS

The management institutions for tautog shall be subject to the provisions of the ISFMP Charter (ASMFC, 2016). The following is not intended to replace any or all of the provisions of the ISFMP Charter. All committee roles and responsibilities are included in detail in the ISFMP Charter and are only summarized here.

4.14.1 Atlantic States Marine Fisheries Commission and ISFMP Policy Board

The ASMFC (Commission) and the ISFMP Policy Board are generally responsible for the oversight and management of the Commission's fisheries management activities. The Commission must approve all fishery management plans, and amendments, including this Amendment 1, and must also make all final determinations concerning state compliance or noncompliance.

4.14.2 Tautog Management Board

The Tautog Management Board Section is generally responsible for carrying out all activities under this Amendment. It establishes and oversees the activities of the Plan Development or Plan Review Team, the Technical Committee and the Stock Assessment Subcommittee and requests the establishment of the Commission's Tautog Advisory Panel. Among other things, the Board makes changes to the management program under adaptive management and approves state programs implementing the amendment and alternative state programs under Sections 4.12.

4.14.3 Tautog Plan Development Team / Plan Review Team

The Tautog Plan Development Team (PDT) and the Tautog Plan Review Team (PRT) will be composed of a small group of scientists and/or managers whose responsibility is to provide all of the technical support necessary to carry out and document the decisions of the Tautog Management Board. The ASMFC FMP Coordinator chairs both. The PDT/PRT is directly responsible to the Section for providing information and documentation concerning the

implementation, review, monitoring and enforcement of Amendment 1. The PDT/PRT shall be comprised of personnel from state and federal agencies who have scientific and management ability and knowledge of tautog. The PDT will be responsible for preparing all documentation necessary for the development of Amendment 1, using the best scientific information available and the most current stock assessment information. The PDT will either disband or assume inactive status upon completion of Amendment 1. Alternatively, the Board may elect to retain PDT members as members of the PRT or appoint new members. The PRT will provide annual advice concerning the implementation, review, monitoring, and enforcement of Amendment 1 once the Commission has adopted it.

4.14.4 Tautog Technical Committee

The Tautog Technical Committee will consist of representatives from state or federal agencies, Regional Fishery Management Councils, Commission, university or other specialized personnel with scientific and technical expertise and knowledge of the tautog fishery. The Board will appoint the members of the Technical Committee and may authorize additional seats as it sees fit. Its role is to act as a liaison to the individual state and federal agencies, provide information to the management process, and review and develop options concerning the management program. The Technical Committee will provide scientific and technical advice to the Management Board, PDT, and PRT in the development and monitoring of a fishery management plan or amendment.

4.14.5 Tautog Stock Assessment Subcommittee

The Tautog Stock Assessment Subcommittee shall be appointed by the Technical Committee at the request of the Management Board, and will consist of scientists with expertise in the assessment of the tautog population. Its role is to assess the tautog population and provide scientific advice concerning the implications of proposed or potential management alternatives, or to respond to other scientific questions from the Board, Technical Committee, PDT or PRT. The Stock Assessment Subcommittee will report to the Technical Committee.

4.14.6 Tautog Advisory Panel

The Advisory Panel is established according to the Commission's Advisory Committee Charter. Members of the Advisory Panel are citizens who represent a cross-section of commercial and recreational fishing interests and others who are concerned about tautog conservation and management. The Advisory Panel provides the Board with advice directly concerning the Commission's tautog management program.

4.14.7 Federal Agencies

4.14.7.1 Management in the Exclusive Economic Zone (EEZ)

Management of tautog in the EEZ is within the jurisdiction of the Regional Fishery Management Councils under the Magnuson-Stevens Act (16 U.S.C. 1801 et seq.). In the absence of a Council Fishery Management Plan, management is the responsibility of the NMFS as mandated by the Atlantic Coastal Fishery Conservation and Management Act (16 U.S.C. 5105 et seq.)

4.14.7.2 Federal Agency Participation in the Management Process

The Commission has accorded the United States Fish and Wildlife Service (USFWS) and the NMFS voting status on the ISFMP Policy Board and the Tautog Management Board in accordance with the Commission's ISFMP Charter. The NMFS also participates on the Tautog Plan Development Team, Plan Review Team, Technical Committee and Stock Assessment Subcommittee.

4.14.7.3 Consultation with Fishery Management Councils

At the time of adoption of Amendment 1, none of the Regional Fishery Management Councils had implemented a management plan for tautog nor have they indicated an intention to develop a plan.

4.15 RECOMMENDATIONS TO THE SECRETARY FOR COMPLIMENTARY ACTIONS IN FEDERAL JURISDICTIONS

The ASMFC recommends the federal government promulgate all necessary regulations to implement compatible measures in the exclusive economic zone (EEZ). Specifically, the ASMFC recommends that the Secretary of Commerce fully implement regulations for tautog in the EEZ that are in accordance with state minimum sizes, possession limits, closed seasons, as well as other possession requirements for both the commercial and recreational fishery (Section 4.2).

4.16 COOPERATION WITH OTHER MANAGEMENT INSTITUTIONS

The Board will cooperate, if necessary, with other management institutions during the implementation of this amendment, including the National Marine Fisheries Service and the New England, Mid-Atlantic, and South Atlantic Fishery Management Council.

5.0 COMPLIANCE

Full implementation of the provisions of this amendment is necessary for the management program to be equitable, efficient and effective. States are expected to implement these measures faithfully under state laws. Although ASMFC does not have authority to directly compel states to implement these measures, it will continually monitor the effectiveness of state implementation and determine whether states are in compliance with the provisions of this fishery management plan. The Board sets forth specific elements that the Commission will consider in determining state compliance with this fishery management plan, and the procedures that will govern the evaluation of compliance. Additional details of the procedures are found in the ASMFC Interstate Fishery Management Program Charter (ASMFC 2016).

5.1 MANDATORY COMPLIANCE ELEMENTS FOR STATES

A state will be determined to be out of compliance with the provision of this fishery management plan according to the terms of Section Seven of the ISFMP Charter if:

- It fails to meet any schedule required by Section 5.1.2, or any addendum prepared under adaptive management (Section 4.12); or
- It has failed to implement a change to its program when determined necessary by the Tautog Management Board; or
- It makes a change to its regulations required under Section 4 or any addendum prepared under adaptive management (Section 4.12), without prior approval of the Tautog Management Board.

5.1.1 MANDATORY ELEMENTS OF STATE PROGRAMS

To be considered in compliance with this amendment, all state programs must include management measures for tautog fisheries consistent with the requirements listed throughout *Section 4.0 and Section 3.2.2.2 Fishery Independent Information—Biological Sampling Program*, except that a state may propose an alternative management program under Section 4.12, which, if approved by the Management Board, may be implemented as an alternative regulatory requirement for compliance.

5.1.1.1 Regulatory Requirements

States shall begin to implement Amendment 1 after final approval of the state's implementation proposal by the Commission. Each state must submit its required tautog regulatory program to the Commission through the ASMFC staff for approval by the Atlantic Tautog Management Board. During the period from submission and until the Management Board makes a decision on a state's program, a state may not adopt a less protective management program than contained in this amendment or contained in current state law.

Once approved by the Tautog Management Board, states are required to obtain approval from the Board prior to making any changes to their management program for which a compliance requirement is in effect. Other measures must be reported to the Board, but may be implemented without prior Board approval. A state can request permission to implement an alternative to any mandatory compliance measure only if that state can show to the Board's satisfaction that its alternative proposal will have the same conservation value as the measure contained in this management plan or any addenda prepared under Adaptive Management (Section 4.12). States submitting alternative proposals must demonstrate that the proposed action will not contribute to overfishing of the resource. All changes in state plans must be submitted in writing to the Board and to the Commission either as part of the annual FMP Review process or the Annual Compliance Reports.

5.1.1.2 Monitoring Requirements

All state programs must include the mandatory monitoring requirements contained in Sections 3.1, 3.2, and 3.3 and 4.4.7. States must submit proposals for all intended changes to required

monitoring programs, which may affect the quality of the data or the ability of the program to fulfill the needs of the fishery management plan. State proposals for making changes to required monitoring programs will be submitted to the Technical Committee at least two weeks prior to its spring or fall meeting. Proposals must be on a calendar year basis. The Technical Committee will make recommendations to the Management Board concerning whether the proposals are consistent with Amendment 1.

In the event that a state realizes it will not be able to fulfill its fishery independent monitoring requirements, it should immediately notify the Commission in writing. The Commission will work with the state to develop a plan to secure funding or plan an alternative program to satisfy the needs outlined in Amendment 6. If the plan is not implemented 90 days after it has been adopted, the state will be found out of compliance with Amendment 1.

5.1.1.3 Research Requirements

A prioritized list of research needs for tautog was created during the development of this FMP and can be found in Section 6.0. The PDT and Technical Committee will re-prioritize the research needs for tautog as part of the FMP Review or Stock Assessment process. Appropriate programs for meeting these needs may be implemented under *Section 4.12 (Adaptive Management)* through the Commission's addendum process including the opportunity for public comment.

5.1.1.4 Law Enforcement Requirements

All state programs must include law enforcement capabilities adequate for successfully implementing a state's tautog regulations. The adequacy of a state's enforcement activity will be monitored annually by reports of the ASMFC Law Enforcement Committee to the Tautog Plan Review Team.

5.1.2 Compliance Schedule

To be determined by the Tautog Management Board.

5.1.3 Compliance Report Content

Each state must submit an annual report concerning its tautog fisheries and management program for the previous fishing year. Reports should follow the tautog report outline as sent by the PRT chair each year. The report shall cover:

- the previous fishing year's fishery and management program including activity and results of monitoring (including the results of 200 age and length samples), a copy of regulations that were in effect and harvest broken down between recreational and commercial, including estimates of non-harvest losses; and
- commercial harvest tagging program requirements as described in Section 4.4.7
- the planned management program for the current fishing year summarizing regulations that will be in effect and monitoring programs that will be performed, highlighting any changes from the previous year.

5.2 PROCEDURES FOR DETERMINING NON-COMPLIANCE

Detailed procedures regarding compliance determinations are contained in the ISFMP Charter, Section 7 (ASMFC 2016). The following summary is not intended to replace the language found in the ISFMP Charter.

The Plan Review Team will continually review the status of state implementation, and advise the Management Board at any time that a question arises concerning state compliance. The PRT will review state reports submitted under Section 5.1.3 and prepare a report by May 1 for the Management Board summarizing the status of the resource and the fishery and the status of state compliance on a state-bystate basis.

Upon review of a report from the Plan Review Team, or at any time by request from a member of the Management Board, the Management Board will review the status of an individual state's compliance. If the Management Board finds that a state's approved regulatory management program fails to meet the requirements of this section, it may be recommended that the state be found out of compliance. The recommendation must include a specific list of the state's deficiencies in implementing and enforcing this Amendment and the actions that the state must take in order to come back into compliance.

If the Management Board recommends that a state be found out of compliance, as referred to in the preceding paragraph, it shall report that recommendation to the ISFMP Policy Board for further review according to the Commission's Charter for the Interstate Fisheries Management Program. The state that is out of compliance or subject to a recommendation by the Management Board under the preceding paragraph may request at any time that the Management Board reevaluate its program. The state shall provide a written statement concerning actions which justify a reevaluation. The Management Board shall promptly conduct such reevaluation, and if it agrees with the state, shall recommend to the ISFMP Policy Board that the noncompliance finding be withdrawn. The ISFMP Policy Board and Commission shall deal with the Management Board's recommendation according to the Commission's Charter for the Interstate Fisheries Management Program.

5.3 ANALYSIS OF ENFORCEABILITY OF MANAGEMENT MEASURES

The Law Enforcement Committee will, during the implementation of this amendment, analyze the enforceability of conservation and management measures as they are proposed.

6.0 MANAGEMENT AND RESEARCH NEEDS

The Technical Committee identified the following research recommendations in the 2015 benchmark stock assessment to improve future stock assessments and our understanding of tautog population and fishery dynamics. Research recommendations are organized by topic and level of priority. Research recommendations that should be completed before the next benchmark assessment are underlined.

6.1 FISHERY-DEPENDENT PRIORITIES

High

- Expand biological sampling of the commercial catch for each gear type over the entire range of the stock (including weight, lengths, age, sex, and discards).
- Continue collecting operculum from the tautog catch as the standard for biological sampling in addition to collecting paired sub-samples of otoliths and operculum.
- Increase catch and discard length sampling from the commercial and recreational fishery for all states from Massachusetts through Virginia.
- Increase collection of effort data for determining commercial and recreational CPUE.
- Increase MRIP sampling levels to improve recreational catch estimates by state and mode. Current sampling levels are high during times of the year when more abundant and popular species are abundant in catches, but much lower in early spring and late fall when tautog catches are more likely.

6.2 FISHERY-INDEPENDENT PRIORITIES

High

- Conduct workshop and pilot studies to design a standardized, multi-state fishery independent survey for tautog along the lines of MARMAP and the lobster ventless trap survey.
- Establish standardized multi-state long-term fisheries-independent surveys to monitor tautog abundance and length-frequency distributions, and to develop YOY indices.
- Enhance collection of age information for smaller fish (<20 cm) to better fill in age-length keys.

Low

- Investigate a nonlethal method for age determination based on pelvic-fin spines based on the Elzey and Trull, 2016 article.

6.3 LIFE HISTORY, BIOLOGICAL AND HABITAT PRIORITIES

Moderate

- Define local and regional movement patterns and site fidelity in the southern part of the species range. This information may provide insight into questions of aggregation versus

recruitment to artificial reef locations, and to clarify the need for local and regional assessment.

- Assemble regional reference collections of paired operculum and otolith samples and schedule regular exchanges to maintain and improve the precision of age readings between states that will be pooled in the regional age-length keys.
- Calibrate age readings every year by re-reading a subset of samples from previous years before ageing new samples. States that do not currently assess the precision of their age readings over time should do so by re-ageing a subset of their historical samples.

Low

- Evaluate the potential impacts of climate change on tautog range, life history, and productivity.
- Conduct a tag retention study to improve return rates, particularly in the northern region.
- Define the status (condition and extent) of optimum or suitable juvenile habitats and trends in specific areas important to the species. It is critical to protect these habitats or to stimulate restoration or enhancement, if required.
- Define the specific spawning and pre-spawning aggregating areas and wintering areas of juveniles and adults used by all major local populations, as well as the migration routes used by tautog to get to and from spawning and wintering areas and the criteria or times of use. This information is required to protect these areas from damage and overuse or excessive exploitation.
- Define larval diets and prey availability requirements. This information can be used as determinants of recruitment success and habitat function status. Information can also be used to support aquaculture ventures with this species.
- Define the role of prey type and availability in local juvenile/adult population dynamics over the species range. This information can explain differences in local abundance, movements, growth, fecundity, etc. Conduct studies in areas where the availability of primary prey, such as blue mussels or crabs, is dependent on annual recruitment, the effect of prey recruitment variability as a factor in tautog movements (to find better prey fields), mortality (greater predation exposure when leaving shelter to forage open bottom), and relationship between reef prey availability/quality on tautog condition/fecundity.
- Define the susceptibility of juveniles to coastal/anthropogenic contamination and resulting effects. This information can explain differences in local abundance, movements, growth, fecundity, and serve to support continued or increased regulation of the inputs of these contaminants and to assess potential damage. Since oil spills seem to be a too frequent coastal impact problem where juvenile tautog live, it may be helpful to conduct specific studies on effects of various fuel oils and typical exposure concentrations, at various seasonal temperatures and salinities. Studies should also be conducted to evaluate the effect of common piling treatment leachates and common antifouling paints on YOY tautog. The synergistic effects of leaked fuel, bilge water, treated pilings, and antifouling paints on tautog health should also be studied.

- Define the source of offshore eggs and larvae (in situ or washed out coastal spawning).
- Confirm that tautog, like cunner, hibernate in the winter, and in what areas and temperature thresholds, for how long, and if there are special habitat requirements during these times that should be protected or conserved from damage or disturbance. This information will aid in understanding behavior variability and harvest availability.

6.4 MANAGEMENT, LAW ENFORCEMENT AND SOCIOECONOMIC PRIORITIES

Moderate

- Collect data to assess the magnitude of illegal harvest of tautog.

Low

- Collect basic sociocultural data on tautog user groups including demographics, location, and aspects of fishing practices such as seasonality.

6.5 RESEARCH RECOMMENDATIONS THAT HAVE BEEN MET

- ✓ Sample hard parts for annual ageing from the catches of recreational and commercial fisheries and fishery-independent surveys throughout the range of the stock. *Being conducted by all participating states.*

- ✓ Conduct hard part exchange and ageing workshop to standardize techniques and assess consistency across states. Conducted May 2012, report available at http://www.asmfc.org//uploads/file/2012_Tautog_Ageing_Workshop_Report.pdf

7.0 PROTECTED RESOURCES

In the fall of 1995, Commission member states, the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) began discussing ways to improve implementation and enforcement of the Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA) in state waters. In November 1995, the Commission, through its Interstate Fisheries Management Program (ISFMP) Policy Board, approved an amendment of its ISFMP Charter (section 6(b)(2)) so that protected species and their interactions with ASMFC managed fisheries are addressed in the Commission's fisheries management planning process. Specifically, the Commission's fishery management plans (FMP) will describe impacts of state fisheries on certain marine mammals and endangered species (collectively termed “protected species”), and recommend ways to minimize these impacts. The following section outlines: (1) the federal legislation that guides protection of marine mammals and sea turtles, (2) the protected species with potential fishery interactions; and (3) the specific type(s) of fishery interaction.

7.1 MARINE MAMMAL PROTECTION ACT (MMPA) REQUIREMENTS

The 1994 amendments to the MMPA established both short- and long-term goals for reducing mortality and serious injury, or bycatch, of marine mammal's incidental to commercial fisheries. The amendments also established take reduction plans (TRPs) and stakeholder-based take reduction teams (TRTs) as the mechanisms for achieving these goals. The MMPA requires NMFS to convene TRTs to develop TRPs for each strategic stock that interacts with a Category I or II fishery, fisheries with "frequent" or "occasional" marine mammal bycatch, respectively. (Fisheries that have a remote likelihood of or no known bycatch of marine mammals are classified in Category III.) A strategic stock is defined as a stock: (1) for which the level of direct human-caused mortality exceeds the potential biological removal (PBR)[1] level; (2) which is declining and is likely to be listed under the ESA in the foreseeable future; or (3) which is listed as a threatened or endangered species under the ESA or as a depleted species under the MMPA. In the short-term (within six months of implementation), TRPs must reduce marine mammal bycatch to levels below a marine mammals stock's potential biological removal level. In the long-term (within five years of implementation), TRPs must reduce marine mammal bycatch to insignificant levels approaching a zero mortality and serious injury rate taking into account the economics of the fishery, the availability of existing technology, and existing state or regional fishery management plans.

The 1994 amendments also required fishermen in Category I and II fisheries to register under the Marine Mammal Authorization Program (MMAP), the purpose of which is to provide an exception for commercial fishermen from the general taking prohibitions of the MMPA; to take on board an observer if requested to do so by the Secretary of Commerce; and to comply with any applicable TRP or emergency regulations. All commercial fishermen, regardless of the category of the fishery in which they participate, must report all marine mammal bycatch.

7.2 ENDANGERED SPECIES ACT REQUIREMENTS

The taking of endangered sea turtles and marine mammals is prohibited under section 9 of the ESA. NMFS may issue section 4(d) protective regulations necessary and advisable to provide for the conservation of threatened species. There are several mechanisms established in the ESA that exempt take prohibitions set forth in section 9. First, a 4(d) regulation may include less stringent requirements intended to reduce incidental take and thus allow for the exemption from the taking prohibition. Section 10(a)(1)(B) of the ESA authorizes NMFS to permit, under prescribed terms and conditions, any taking otherwise prohibited by section 9 of the ESA, if the taking is incidental to, and not the purpose of, carrying out an otherwise lawful activity. Finally, section 7(a)(2) requires NMFS to consult with each federal agency to ensure that any action that is authorized, funded, or carried out by such agency is not likely to jeopardize the continued existence of any listed species. Pursuant to Section 7(b), formal consultation will be

[1] PBR is the number of human-caused deaths per year each stock can withstand and still reach an optimum population level. This is calculated by multiplying "the minimum population estimate" by "½ stock's net productivity rate" by "a recovery factor ranging from 0.1 for endangered species to 1.0 for healthy stocks."

completed on any action that may adversely affect and/or result in the destruction or adverse modification of critical habitat. Formal consultation will conclude with NMFS issuing a Biological Opinion which will include an incidental take statement containing reasonable and prudent measures and terms and conditions that minimize take and must be complied for otherwise prohibited take to be authorized.

7.3 PROTECTED RESOURCES IN THE MANAGEMENT UNIT

Numerous protected species inhabit the environment within the tautog management unit (Table 33). These species are under NMFS jurisdiction and are afforded protection under the Endangered Species Act (ESA) of 1973 and/or the Marine Mammal Protection Act (MMPA) of 1972.

Table 33. Species protected under the ESA and/or MMPA that may occur in the affected environment of the tautog fishery. Marine mammal species (cetaceans and pinnipeds) italicized and in bold are considered MMPA strategic stocks.[1]

Species	Status[2]	Potentially affected by this action?
Cetaceans		
North Atlantic right whale (Eubalaena glacialis)	***Endangered***	***Yes***
Humpback whale, West Indies DPS (Megaptera novaeangliae)	***Protected (MMPA)***	***Yes***
Fin whale (Balaenoptera physalus)	***Endangered***	***Yes***
Sei whale (Balaenoptera borealis)	***Endangered***	***Yes***
Minke whale (*Balaenoptera acutorostrata*)	Protected (MMPA)	Yes
Pilot whale (*Globicephala spp*.)[3]	Protected (MMPA)	Yes
Risso's dolphin (*Grampus griseus*)	Protected (MMPA)	Yes
Atlantic white-sided dolphin (*Lagenorhynchus acutus*)	Protected (MMPA)	Yes
Short Beaked Common dolphin (*Delphinus delphis*)[4]	Protected (MMPA)	Yes
Spotted dolphin (*Stenella frontalis*)	Protected (MMPA)	No
Bottlenose dolphin (Tursiops truncatus)[5]	***Protected (MMPA)***	***Yes***
Harbor porpoise (Phocoena phocoena)	*Protected (MMPA)*	*No*
Sea Turtles		
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered	Yes
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered	Yes
Green sea turtle, North Atlantic DPS (*Chelonia mydas*)	Threatened	Yes
Loggerhead sea turtle (*Caretta caretta*), Northwest Atlantic Ocean DPS	Threatened	Yes
Hawksbill sea turtle (*Eretmochelys imbricate*)	Endangered	No

Fish		
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered	No
Atlantic salmon (*Salmo salar*)	Endangered	Yes
Atlantic sturgeon *(Acipenser oxyrinchus)*		
Gulf of Maine DPS	Threatened	Yes
New York Bight DPS, Chesapeake Bay DPS, Carolina DPS & South Atlantic DPS	Endangered	Yes
Cusk	Candidate	Yes
Pinnipeds		
Harbor seal (*Phoca vitulina*)	Protected (MMPA)	Yes
Gray seal (*Halichoerus grypus*)	Protected (MMPA)	Yes
Harp seal (*Phoca groenlandicus*)	Protected (MMPA)	Yes
Hooded seal (*Cystophora cristata*)	Protected (MMPA)	Yes
Critical Habitat		
North Atlantic Right Whale[6]	ESA (Protected)	No

Notes:
[1] A strategic stock is defined under the MMPA as a marine mammal stock for which: (1) the level of direct human-caused mortality exceeds the potential biological removal level; (2) based on the best available scientific information, is declining and is likely to be listed as a threatened species under the ESA within the foreseeable future; and/or (3) is listed as a threatened or endangered species under the ESA, or is designated as depleted under the MMPA (Section 3 of the MMPA of 1972).
[2] The status of the species is defined by whether the species is listed under the ESA as endangered (species are at risk of extinction) or threatened (species at risk of endangerment), or protected under the MMPA. Note, marine mammals listed under the ESA are also protected under the MMPA. Candidate species are those species in which ESA listing may be warranted.
3 There are two species of pilot whales: short finned (G. melas melas) and long finned (G. macrorhynchus). Due to the difficulties in identifying the species at sea, they are often just referred to as Globicephala spp.
4 Prior to 2008, this species was called “common dolphin.”
5 This includes the following Stocks of Bottlenose Dolphins: Western North Atlantic Offshore, Northern Migratory Coastal (strategic stock), and Southern Migratory Coastal (strategic stock).
[6] Originally designated June 3, 1994 (59 FR 28805); Expanded on January 27, 2016 (81 FR 4837).

Cusk are a NMFS "candidate species" under the ESA. Candidate species are those petitioned species for which NMFS has determined that listing may be warranted under the ESA and those species for which NMFS has initiated an ESA status review through an announcement in the Federal Register. If a species is proposed for listing, the conference provisions under Section 7 of the ESA apply (see 50 CFR 402.10); however, candidate species receive no substantive or procedural protection under the ESA. As a result, this species will not be discussed further in this and the following sections; however, NMFS recommends that project proponents consider implementing conservation actions to limit the potential for adverse effects on cusk from any

proposed action. Additional information on cusk can be found at http://www.nmfs.noaa.gov/pr/species/esa/candidate.htm

7.4 SPECIES AND CRITICAL HABITAT NOT LIKELY AFFECTED BY THE FMP

Based on available information, it has been determined that the FMP is not likely to affect multiple ESA listed and/or marine mammal protected species or any designated critical habitat (see Table 33). This determination has been made because either the occurrence of the species is not known to overlap with the area primarily affected by the action and/or there have never been documented interactions between the species and the primary gear type (i.e., hook and line and pot/trap) used to prosecute the tautog fishery (see Waring *et al*. 2014, 2015, 2016; NMFS NEFSC FSB 2015, 2016; http://www.nefsc.noaa.gov/fsb/take_reports/nefop.html). In the case of critical habitat, this determination has been made because the action will not affect the essential physical and biological features of North Atlantic right whale critical habitat and therefore, will not result in the destruction or adverse modification of this species critical habitat (NMFS 2015a,b).

7.5 SPECIES POTENTIALLY AFFECTED BY THE FMP

Table 33 provides a list of sea turtle, marine mammal, and fish species present in the affected environment of the tautog fishery, and that may also be affected by the operation of this fishery. Of primary concern is the potential for the fishery to interact (e.g., bycatch, entanglement) with these species. To understand the potential risk of an interaction, it is necessary to consider (1) species occurrence in the affected environment of the fishery and how the fishery will overlap in time and space with this occurrence; and (2) data and observed records of protected species interaction with particular fishing gear types. Information on species occurrence in the affected environment of the tautog fishery is provided in this section, while information on protected species interactions with specific fishery gear is provided in Section 7.6.

7.5.1 Sea Turtles

Green (North Atlantic DPS), Kemp's ridley, leatherback, and loggerhead (Northwest Atlantic Ocean DPS) sea turtle are the four ESA listed species of sea turtles that occur in the area of operation for the 13 GAR fisheries (see Table 33). Three of the four species are considered hard-shelled turtles (i.e., green, loggerhead, and Kemp's ridley). Additional background information on the range-wide status of the other four species, as well as a description and life history of the species, can be found in a number of published documents, including sea turtle status reviews and biological reports (NMFS and USFWS 1995; Hirth 1997; Turtle Expert Working Group [TEWG] 1998, 2000, 2007, 2009; Conant *et al*. 2009; NMFS and USFWS 2007a,b, 2013, 2015; Seminoff *et al*. 2015), and recovery plans for the loggerhead sea turtle (Northwest Atlantic DPS; NMFS and USFWS 2008), leatherback sea turtle (NMFS and USFWS 1992), Kemp's ridley sea turtle (NMFS *et al.* 2011), and green sea turtle (NMFS and USFWS 1991).

Hard-shelled Sea Turtles

Distribution

In U.S. Northwest Atlantic waters, hard-shelled turtles commonly occur throughout the continental shelf from Florida (FL) to Cape Cod, Massachusetts (MA), although their presence varies with the seasons due to changes in water temperature (Shoop and Kenney 1992; Epperly *et al.* 1995a, 1995b; Braun and Epperly 1996; Mitchell *et al.* 2003; Braun-McNeill *et al.* 2008; TEWG 2009). While hard-shelled turtles are most common south of Cape Cod, MA, they are known to occur in the Gulf of Maine (GOM). Loggerheads, the most common hard-shelled sea turtle in the GAR, feed as far north as southern Canada. Loggerheads have been observed in waters with surface temperatures of 7 °C to 30 °C, but water temperatures ≥11 °C are most favorable (Shoop and Kenney 1992; Epperly *et al.* 1995b). Sea turtle presence in U.S. Atlantic waters is also influenced by water depth. While hard-shelled turtles occur in waters from the beach to beyond the continental shelf, they are most commonly found in neritic waters of the inner continental shelf (Mitchell *et al.* 2003; Braun-McNeill and Epperly 2002; Morreale and Standora 2005; Blumenthal *et al.* 2006; Hawkes *et al.* 2006; McClellan and Read 2007; Mansfield *et al.* 2009; Hawkes *et al.* 2011; Griffin *et al.* 2013).

Seasonality

Hard-shelled sea turtles occur year-round in waters off Cape Hatteras, North Carolina (NC) and south. As coastal water temperatures warm in the spring, loggerheads begin to migrate to inshore waters of the southeast United States and also move up the Atlantic Coast (Epperly *et al.* 1995a, 1995b, 1995c; Braun-McNeill and Epperly 2002; Morreale and Standora 2005; Griffin *et al.* 2013), occurring in Virginia (VA) foraging areas as early as late April and on the most northern foraging grounds in the GOM in June (Shoop and Kenney 1992). The trend is reversed in the fall as water temperatures cool. The large majority leave the GOM by September, but some remain in Mid-Atlantic and Northeast areas until late fall. By December, sea turtles have migrated south to waters offshore of NC, particularly south of Cape Hatteras, and further south (Shoop and Kenney 1992; Epperly *et al.* 1995b; Hawkes *et al.* 2011; Griffin *et al.* 2013).

Leatherback Sea Turtles (Non-Hard Shelled Sea Turtles)

Leatherbacks, a pelagic species, are known to use coastal waters of the U.S. continental shelf and to have a greater tolerance for colder water than hard-shelled sea turtles (James *et al.* 2005; Eckert *et al.* 2006; Murphy *et al.* 2006; NMFS and USFWS 2013; Dodge *et al.* 2014). Leatherback sea turtles engage in routine migrations between northern temperate and tropical waters (NMFS and USFWS 1992; James *et al.* 2005; James *et al*. 2006; Dodge *et al.* 2014). They are found in more northern waters (i.e., Gulf of Maine) later in the year (i.e., similar time frame as hard-shelled sea turtles), with most leaving the Northwest Atlantic shelves by mid-November (James *et al.* 2005; James *et al*. 2006; Dodge *et al.* 2014).

7.5.2 Marine Mammals

7.5.2.1 Large Whales

As provided in Table 34, as North Atlantic right, humpback, fin, sei, and minke whales are found throughout the waters of the Northwest Atlantic Ocean, these species will occur in the affected environment of the tautog fishery. In general, these species follow an annual pattern of migration between low latitude (south of 35°N) wintering/calving grounds and high latitude spring/summer foraging grounds (primarily north of 41°N; Waring *et al*. 2014; Waring *et al*. 2015; Waring *et al*. 2016; NMFS 1991, 2005, 2010, 2011a, 2012). This, however, is a simplification of whale movements, particularly as it relates to winter movements. It remains unknown if all individuals of a population migrate to low latitudes in the winter, although, increasing evidence suggests that for some species (e.g., right and humpback whales), some portion of the population remains in higher latitudes throughout the winter (Waring *et al*. 2014; Waring *et al*. 2015; Waring *et al*. 2016; Khan *et al*. 2009, 2010, 2011, 2012; Brown *et al*. 2002; NOAA 2008; Cole *et al*. 2013; Clapham *et al*. 1993; Swingle *et al*. 1993; Vu *et al*. 2012). Although further research is needed to provide a clearer understanding of large whale movements and distribution in the winter, the distribution and movements of large whales to foraging grounds in the spring/summer is well understood. Movements of whales into higher latitudes coincide with peak productivity in these waters. As a result, the distribution of large whales in higher latitudes is strongly governed by prey availability and distribution, with large numbers of whales coinciding with dense patches of preferred forage (Mayo and Marx 1990; Kenney *et al*. 1986, 1995; Baumgartner *et al*. 2003; Baumgartner and Mate 2003; Payne *et al*.1986, 1990; Brown *et al.* 2002; Kenney and Hartley 2001; Schilling *et al.* 1992). For additional information on the biology, status, and range wide distribution of each whale species please refer to: Waring *et al*. 2014; Waring *et al*. 2015; Waring *et al*. 2016; NMFS 1991, 2005, 2010, 2011a, 2012.

To further assist in understanding how the tautog fishery may overlaps in time and space with the occurrence of large whales, a general overview on species occurrence and distribution in the area of operation for the tautog fishery is provided in the following table (Table 34).

Table 34. Large whale occurrence in the area of operation for the tautog fishery

Species	Prevalence and Approximate Months of Occurrence
North Atlantic Right Whale	• Distributed throughout all continental shelf waters from the GOM to the South Atlantic Bight (SAB) throughout the year; however, increasing evidence of year round presence in the GOM. • New England waters (GOM and GB regions) = **Foraging Grounds** (January through October)). Seasonally important foraging grounds include, but not limited to: › Cape Cod Bay (January-April);

Species	Prevalence and Approximate Months of Occurrence
	› Great South Channel (April-June); › western Gulf of Maine (April-May, and July-October); › Jordan Basin (August-October); › Wilkinson Basin (April-July); and › northern edge of GB (May-July); • Mid-Atlantic waters: Migratory pathway to/from northern (high latitude) foraging and southern calving grounds. • Increasing evidence of wintering areas (approximately November – January) in: › Cape Cod Bay; › Jeffreys and Cashes Ledges; › Jordan Basin; and › Massachusetts Bay (e.g., Stellwagen Bank).
Humpback	• Distributed throughout all continental shelf waters of the Mid-Atlantic (SNE included), GOM, and GB throughout the year. • New England waters (GOM and GB regions) = **Foraging Grounds** (March-November). • Mid-Atlantic waters: Migratory pathway to/from northern (high latitude) foraging and southern (West Indies) calving grounds. • Increasing evidence of whales remaining in mid- and high- latitudes throughout the winter. Specifically, increasing evidence of wintering areas (for juveniles) in Mid-Atlantic (e.g., waters in the vicinity of Chesapeake and Delaware Bays; peak presence approximately January through March) and Southeastern coastal waters.
Fin	• Distributed throughout all continental shelf waters of the Mid-Atlantic (SNE included), GOM, and GB throughout the year. • Mid-Atlantic waters: › Migratory pathway to/from northern (high latitude) foraging and southern (low latitude) calving grounds; and › Possible offshore calving area (October-January). • New England(GOM and GB)/SNE waters = **Foraging Grounds** (greatest densities March-August; lower densities September-November).Important foraging grounds include: > Massachusetts Bay (esp. Stellwagen Bank);

Species	Prevalence and Approximate Months of Occurrence
	> Great South Channel; > Waters off Cape Cod (~40-50 meter contour); > GOM; > Perimeter (primarily eastern) of GB; and > Mid-shelf area off the east end of Long Island. • Evidence of wintering areas in mid-shelf areas east of New Jersey (NJ), Stellwagen Bank; and eastern perimeter of GB.
Sei	• Uncommon in shallow, inshore waters of the Mid-Atlantic (SNE included), GB, and GOM; however, occasional incursions during peak prey availability and abundance. • Primarily found in deep waters along the shelf edge, shelf break, and ocean basins between banks. • Spring through summer, found in greatest densities in offshore waters of the GOM and GB; sightings concentrated along the northern, eastern (into Northeast Channel) and southwestern (in the area of Hydrographer Canyon) edge of GB.
Minke	• Widely distributed throughout continental shelf waters (<100m deep) of the Mid-Atlantic (SNE included), GOM, and GB. • Most common in the EEZ from spring through fall, with greatest abundance found in New England waters.
***Sources*:** NMFS 1991, 2005, 2010, 2011a, 2012; Hain *et al.* 1992; Payne *et al*. 1984; Good 2008; Pace and Merrick 2008; McLellan *et al*. 2004; Hamilton and Mayo 1990; Schevill *et al*. 1986; Watkins and Schevill 1982; Payne *et al*.1990; Winn *et al.* 1986; Kenney et al. 1986, 1995; Khan *et al*. 2009, 2010, 2011, 2012; Brown *et al*. 2002; NOAA 2008; 50 CFR 224.105; CETAP 1982; Clapham *et al*. 1993; Swingle *et al*. 1993; Vu *et al*. 2012; Baumgartner *et al*. 2011; Cole *et al*. 2013; Risch *et al*. 2013; Waring *et al*. 2014; Waring *et al*. 2015; Waring *et al*. 2016; 81 FR 4837(January 27, 2016); NMFS 2015b; Bort et al. 2015.	

7.5.3 Small Cetacean

As provided in Table 35, as Atlantic white sided dolphins, short and long finned pilot whales, Risso's dolphins, short beaked common dolphins, harbor porpoise, and several stocks of bottlenose dolphins are found throughout the year in the Northwest Atlantic Ocean, these species will occur in the affected environment of the tautog fishery (Waring *et al*. 2014; Waring *et al*. 2015; Waring *et al*. 2016). Within this range; however, there are seasonal shifts in species distribution and abundance. To further assist in understanding how fisheries may overlap in time and space with the occurrence of small cetaceans, a general overview of species occurrence and distribution in the area of operation for the tautog fishery is provided in the following table (Table 35). For additional information on the biology, status, and range wide distribution of each species please refer to Waring *et al*. (2014), Waring *et al.* (2015), and Waring *et al*. (2016).

Table 35. Small cetacean occurrence in the area of operation of the tautog fishery.

Species	Prevalence and Approximate Months of Occurrence
Atlantic White Sided Dolphin	• Distributed throughout the continental shelf waters (primarily to 100 meter isobath) of the Mid-Atlantic (north of 35°N), SNE, GB, and GOM ; however, most common in continental shelf waters from Hudson Canyon (~ 39°N) to GB, and into the GOM. • **January-May**: low densities found from GB to Jeffreys Ledge. • **June-September**: Large densities found from GB, through the GOM. • **October-December**: intermediate densities found from southern GB to southern GOM. • South of GB (SNE and Mid-Atlantic), low densities found year round, with waters off Virginia (VA) and NC representing southern extent of species range during winter months.
Short Beaked Common Dolphin	• Regularly found throughout the continental shelf-edge-slope waters (primarily between the 100-2,000 meter isobaths) of the Mid-Atlantic, SNE, and GB (esp. in Oceanographer, Hydrographer, Block, and Hudson Canyons). • Less common south of Cape Hatteras, NC, although schools have been reported as far south as the Georgia (GA)/South Carolina (SC) border. • **January-May**: occur from waters off Cape Hatteras, NC, to GB (35° to 42°N). • **Mid-summer-autumn**: Occur primarily on GB with small numbers present in the GOM; *Peak abundance* found on GB in the autumn.
Risso's Dolphin	• **Spring through fall**: Distributed along the continental shelf edge from Cape Hatteras, NC, to GB. • **Winter**: distributed in the Mid-Atlantic Bight, extending into oceanic waters. • Rarely seen in the GOM; primarily a Mid-Atlantic continental shelf edge species (can be found year round).

Species	Prevalence and Approximate Months of Occurrence
Harbor Porpoise	• Distributed throughout the continental shelf waters of the Mid-Atlantic (north of 35°N), SNE, GB, and GOM. • **July-September**: Concentrated in the northern GOM (waters < 150 meters); low numbers can be found on GB. • **October-December**: widely dispersed in waters from NJ to Maine (ME); seen from the coastline to deep waters (>1,800 meters). • **January-March**: intermediate densities in waters off NJ to NC; low densities found in waters off New York (NY) to GOM. • **April-June**: widely dispersed from NJ to ME; seen from the coastline to deep waters (>1,800 meters).
Bottlenose Dolphin	**Western North Atlantic Offshore Stock** • Distributed primarily along the outer continental shelf and continental slope in the Northwest Atlantic from GB to FL. • Depths of occurrence: ≥40 meters **Western North Atlantic Northern Migratory Coastal Stock** • Warm water months (e.g., July-August): distributed from the coastal waters from the shoreline to approximately the 25-meter isobaths between the Chesapeake Bay mouth and Long Island, NY. • Cold water months (e.g., January-March): stock occupies coastal waters from Cape Lookout, NC, to the NC/VA border. **Western North Atlantic Southern Migratory Coastal Stock** • **October-December**: stock occupies waters of southern NC (south of Cape Lookout) • **January-March**: stock moves as far south as northern FL. • **April-June**: stock moves north to waters of NC. • **July-August**: stock is presumed to occupy coastal waters north of Cape Lookout, NC, to the eastern shore of VA.

Species	Prevalence and Approximate Months of Occurrence
Pilot Whales: *Short- and Long-Finned*	**Short- Finned Pilot Whales** • Except for area of overlap (see below), primarily occur south of 40°N (Mid-Atl and SNE waters); although low numbers have been found along the southern flank of GB, but no further than 41°N. • May through December (approximately): distributed primarily near the continental shelf break of the Mid-Atlantic and SNE; individuals begin shifting to southern waters (i.e., 35°N and south) beginning in the fall. **Long-Finned Pilot Whales** • Except for area of overlap (see below), primarily occur north of 42°N. • Winter to early spring (November through April): primarily distributed along the continental shelf edge-slope of the Mid-Atlantic, SNE, and GB. • Late spring through fall (May through October): movements and distribution shift onto/within GB, the Great South Channel, and the GOM. **Area of Species Overlap:** between approximately 38°N and 41°N.

Notes : [1] Information presented in table is representative of small cetacean occurrence in the Northwest Atlantic continental shelf waters out to the 2,000 meter isobath.

***Sources*:** Waring *et al*. 1992, 2007**,** 2014, 2015, 2016**;** Payne and Heinemann 1993; Payne *et al.* 1984; Jefferson *et al*. 2009.

7.5.4 Pinnipeds

As provided in Table 36, harbor, gray, harp, and hooded seals will occur in the affected environment of the tautog fishery. Specifically, pinnipeds are found in the nearshore, coastal waters of the Northwest Atlantic Ocean. They are primarily found throughout the year or seasonally from New Jersey to Maine; however, increasing evidence indicates that some species (e.g., harbor seals) may be extending their range seasonally into waters as far south as Cape Hatteras, North Carolina (35°N) (Waring *et al*. 2007, 2014, 2015, 2016). To further assist in understanding how the tautog fishery may overlap in time and space with the occurrence of

pinnipeds, a general overview of species occurrence and distribution in the area of operation of the tautog fishery is provided in the following table. For additional information on the biology, status, and range wide distribution of each species of pinniped please refer to Waring *et al*. (2007), Waring *et al*. (2014), Waring *et al*. (2015), Waring *et al*. (2016).

Table 36. Pinniped occurrence in the area of operation of the tautog fishery.

Species	Prevalence
Harbor Seal	• Primarily distributed in waters from NJ to ME; however, increasing evidence indicates that their range is extending into waters as far south as Cape Hatteras, NC (35°N). • **Year Round**: Waters of ME • **September-May**: Waters from New England to NJ.
Gray Seal	• Distributed in waters from NJ to ME. • **Year Round**: Waters from ME to MA. • **September-May**: Waters from Rhode Island to NJ.
Harp Seal	• Winter-Spring (approximately January-May): Waters from ME to NJ.
Hooded Seal	• Winter-Spring (approximately January-May): Waters of New England.
***Sources*:** Waring *et al*. 2007 (for hooded seals); Waring *et al*. 2014; Waring *et al*. 2015;Waring *et al*. 2016.	

7.5.5 Atlantic Sturgeon

Table 37 lists the 5 DPSs of Atlantic sturgeon that occur in the affected environment of the tautog fishery and that may be affected by the operation of this fishery. The marine range of U.S. Atlantic sturgeon extends from Labrador, Canada, to Cape Canaveral, Florida. All five DPSs of Atlantic sturgeon have the potential to be located anywhere in this marine range; in fact, results from genetic studies show that, regardless of location, multiple DPSs can be found at any one location along the Northwest Atlantic coast (ASSRT 2007; Dovel and Berggren 1983; Dadswell *et al*. 1984; Kynard *et al*. 2000; Stein *et al*. 2004a; Dadswell 2006; Laney *et al*. 2007; Dunton *et al*. 2010; Dunton *et al*. 2012; Dunton *et al*. 2015; Erickson *et al*. 2011; Wirgin *et al*. 2012; O'Leary *et al*. 2014; Waldman *et al.* 2013; Wirgin *et al*. 2015a,b).

Table 37. Atlantic Sturgeon DPSs that occur in the area of operation for the tautog fishery

Species	Listed Under the ESA
Gulf of Maine (GOM) DPS	threatened
New York Bight (NYB) DPS	endangered
Chesapeake Bay (CB) DPS	endangered
Carolina DPS	endangered
South Atlantic (SA) DPS	endangered

Based on fishery- independent and dependent data, as well as data collected from tracking and tagging studies, in the marine environment, Atlantic sturgeon appear to primarily occur inshore of the 50 meter depth contour (Stein *et al*. 2004 a,b; Erickson *et al*. 2011; Dunton *et al*. 2010); however, Atlantic sturgeon are not restricted to these depths, as excursions into deeper continental shelf waters have been documented (Timoshkin 1968; Collins and Smith 1997; Stein *et al*. 2004a,b; Dunton *et al*. 2010; Erickson *et al*. 2011). Data from fishery-independent surveys and tagging and tracking studies also indicate that some Atlantic sturgeon may undertake seasonal movements along the coast (Erickson *et al.* 2011; Dunton *et al*. 2010; Wipplehauser 2012). For instance, tagging and tracking studies found that satellite-tagged adult sturgeon from the Hudson River concentrated in the southern part of the Mid-Atlantic Bight, at depths greater than 20 meters, during winter and spring, while in the summer and fall, Atlantic sturgeon concentrations shifted to the northern portion of the Mid-Atlantic Bight at depths less than 20 meters (Erickson *et al.* 2011).

Within the marine range of Atlantic sturgeon, several marine aggregation areas have been identified adjacent to estuaries and/or coastal features formed by bay mouths and inlets along the U.S. eastern seaboard (i.e., waters off North Carolina, Chesapeake Bay, and Delaware Bay; New York Bight; Massachusetts Bay; Long Island Sound; and Connecticut and Kennebec River Estuaries); depths in these areas are generally no greater than 25 meters (Bain *et al.* 2000; Savoy and Pacileo 2003; Stein *et al*. 2004a; Laney *et al*. 2007; Dunton *et al*. 2010; Erickson *et al*. 2011; Oliver *et al*. 2013; Waldman *et al.* 2013; O'Leary *et al*. 2014; Wipplehauser 2012; Whipplehauser and Squiers 2015). Although additional studies are still needed to clarify why these particular sites are chosen by Atlantic sturgeon, there is some indication that they may serve as thermal refuge, wintering sites, or marine foraging areas (Stein *et al*. 2004a; Dunton *et al*. 2010; Erickson *et al*. 2011).

7.5.6 Atlantic Salmon (Gulf of Maine DPS)

The wild populations of Atlantic salmon are listed as endangered under the ESA. Their freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Dennys River, while the marine range of the GOM DPS extends from the GOM (primarily northern portion of the GOM), to the coast of Greenland (Fay *et al*. 2006; NMFS

& USFWS 2005, 2016). In general, smolts, post-smolts, and adult Atlantic salmon may be present in the GOM and coastal waters of Maine in the spring (beginning in April), and adults may be present throughout the summer and fall months (Baum 1997; Fay *et al*. 2006; Hyvarinen *et al*. 2006; Lacroix & Knox 2005; Lacroix & McCurdy 1996; Lacroix *et al*. 2004; NMFS & USFWS 2005, 2016; Reddin 1985; Reddin & Friedland 1993; Reddin & Short 1991). For additional information on the on the biology, status, and range wide distribution of the GOM DPS of Atlantic salmon, refer to NMFS and USFWS (2005, 2016); Fay *et al*. (2006).

7.6 INTERACTIONS BETWEEN GEAR AND PROTECTED RESOURCES

Protected species in Table 33 are all known to be vulnerable to interactions with various types of fishing gear. Available information on gear interactions with a given species (or species group) is provided in the sections below. These sections are not a comprehensive review of all fishing gear types known to interact with a given species; emphasis is only being placed on the primary gear types used to prosecute the tautog fishery (i.e., hook and line and pot/trap gear).

7.6.1 Marine Mammals

Pursuant to the MMPA, NMFS publishes a List of Fisheries (LOF) annually, classifying U.S. commercial fisheries into one of three categories based on the relative frequency of incidental serious injuries and/or mortalities of marine mammals in each fishery (i.e., Category I=frequent; Category II=occasional; Category III=remote likelihood or no known interactions; 82 FR 3655 (January 12, 2017)). In the Northwest Atlantic, the 2017 MMPA LOF (82 FR 3655 (January 12, 2017) categorizes commercial Northeast and Mid-Atlantic bottom trawl, and Atlantic mixed species trap/pot fisheries as Category II fisheries.2 General hook and line gear associated with rod and reel fishing has not been categorized as it is primarily prosecuted by recreational fisheries.

7.6.2 Large Whales

7.6.2.1 Hook and Line Gear

Large whales are known to interact with hook and line gear; however, in the most recent (2010-2014) mortality and serious injury determinations for baleen whales, the majority of cases identified with confirmed hook and line or monofilament entanglement did not result in the serious injury or mortality to the whale (89.5% observed/reported whales had a serious injury value of 0; 10.5% had a serious injury value of 0.75; none of the cases resulted in mortality; Henry *et al*. 2016).[3] In fact, 85.0% of the whales observed or reported with a hook/line or monofilament entanglement were resighted gear free and healthy; confirmation of the health of the other remaining whales remain unknown as no resightings had been made over the timeframe of the assessment (Henry *et al*. 2016). Based on this information, while large whale

2 Atlantic mixed species trap/pot fisheries include, but are not limited to: crab (red, Jonah, and rock), hagfish, finfish (black sea bass, scup, tautog, cod, haddock, pollock, redfish (ocean perch), and white hake), conch/whelk, and shrimp

3 Any injury leading to a significant health decline (e.g., skin discoloration, lesions near the nares, fat loss, increased cyamid loads) is classified as a serious injury (SI) and will result in a SI value set at 1 (Henry *et al*. 2016).

interactions with hook and line gear are possible, there is a low probability that an interaction will result in serious injury or mortality to any large whale species.

7.6.2.2 Bottom Trawl Gear

With the exception of minke whales, there have been no observed interactions with large whales and bottom trawl gear. To date, bottom trawl interactions with minke whales have only been observed in the MMPA LOF Category II Northeast bottom trawl fisheries. From the period of 2008-2012, the estimated annual mortality attributed to this fishery was 7.8 minke whales for 2008, and zero minke whales from 2009-2012; no serious injuries were reported during this time (Waring *et al*. 2015). Based on this information, from 2008-2012, the estimated annual average minke whale mortality and serious injury attributed to the northeast bottom trawl fishery was 1.6 (CV=0.69) whales (Waring *et al*. 2015). Lyssikatos (2015) estimated that from 2008-2013, mean annual serious injuries and mortalities from the northeast bottom trawl fishery were 1.40 (CV=0.58) minke whales. Based on above information, bottom trawl gear is likely to pose a low interaction risk to any large whale species. Should an interaction occur, serious injury or mortality to any large whale is possible; however, relative to other gear types discussed below (i.e., fixed gear (pot/trap)), bottom trawl gear represents a low source serious injury or mortality to any large whale.

7.6.2.3 Pot/Trap Gear

The greatest entanglement risk to large whales is posed by fixed fishing gear (e.g., sink gillnet and trap/pot gear) comprised of lines (vertical or ground) that rise into the water column. Any line can become entangled in the mouth (baleen), flippers, and/or tail of the whale when the animal is transiting or foraging through the water column (Johnson *et al*. 2005; NMFS 2014; Kenney and Hartley 2001; Hartley *et al*. 2003; Whittingham *et al*. 2005a,b). For instance, in a study of right and humpback whale entanglements, Johnson *et al*. (2005) attributed: (1) 89% of entanglement cases, where gear could be identified, to fixed gear consisting of pot and gillnets and (2) entanglement of one or more body parts of large whales (e.g., mouth and/or tail regions) to four different types of line associated with fixed gear (the buoy line, groundline, floatline, and surface system lines).[4] Although available data (e.g., Johnson *et al*. (2005), Waring *et al*. (2016); Henry *et al*. (2016))provides insight into large whale entanglement risks with fixed fishing gear, determining which part of fixed gear creates the most entanglement risk for large whales is difficult (Johnson *et al.* 2005). The difficulties arise from uncertainties surrounding the nature of the entanglement event, as well as unknown biases associated with reporting effort and the lack of information about the types and amounts of gear being used (Johnson *et al.* 2005). As a result, any type or part of fixed gear is considered to create an entanglement risk to large whales and should be considered potentially dangerous to large whale species (Johnson *et al.* 2005).

4 Buoy line connects the gear at the bottom to the surface system. Groundline in trap/pot gear connects traps/pots to each other to form trawls; in gillnet gear, groundline connects a gillnet, or gillnet bridle to an anchor or buoy line. Floatline is the portion of gillnet gear from which the mesh portion of the net is hung. The surface system includes buoys and high-flyers, as well as the lines that connect these components to the buoy line.

Table 38 summarizes confirmed human-caused injury and mortality to humpback, fin, sei, minke, and North Atlantic right whales along the Gulf of Mexico Coast, U.S. East Coast, and Atlantic Canadian Provinces from 2010 to 2014 (Henry *et al.* 2016); the data provided in Table Z5 is specific to confirmed injury or mortality to whales from entanglement in fishing gear. As many entanglement events go unobserved, and because the gear type, fishery, and/or country of origin for reported entanglement events are often not traceable, it is important to recognize that the information presented likely underestimates the rate of large whale serious injury and mortality due to entanglement. Further studies looking at scar rates for right whales and humpbacks suggests that entanglements may be occurring more frequently than the observed incidences indicate (NMFS 2014; Robbins 2009; Knowlton *et al.* 2012).

Table 38. Summary of confirmed human-caused injury or mortality to fin, minke, humpback, sei, and North Atlantic right whales from 2010-2014 due to entanglement in fishing gear.[1]

Species	Total Confirmed Entanglement: Serious Injury[2]	Total Confirmed Entanglement: Non-Serious Injury	Total Confirmed Entanglement: Mortality	Entanglement Events: Total Average Annual Injury and Mortality Rate (US waters/Canadian waters/unassigned waters)
North Atlantic Right Whale	16	31	8	4.65 (0.4/0/4.25)
Humpback Whale	30	53	8	6.85 (1.55/0/5.3)
Fin Whale	6	1	4	1.8 (0.2/0.8/0.8)
Sei Whale	0	0	0	0
Minke Whale	20	11	16	6.4 (1.7/2.45/2.25)

Notes:

[1]Information presented is based on confirmed human-caused injury and mortality events along the Gulf of Mexico Coast, US East Coast, and Atlantic Canadian Provinces; it is not specific to US waters only.

[2] NMFS defines a serious injury as an injury that is more likely than not to result in mortality (for additional details see: http://www.nmfs.noaa.gov/pr/pdfs/serious_injury_procedure.pdf)

***Source*:** Henry *et al.* 2016

Pursuant to the MMPA, NMFS publishes a LOF annually, classifying U.S. commercial fisheries into one of three categories based on the relative frequency of incidental serious injurious and mortalities of marine mammals in each fishery (i.e., Category I=frequent; Category II=occasional; Category III=remote likelihood or no known interactions). Large whales, in particular, humpback, fin, minke, and North Atlantic right whales, are known to interact with Category I and II fisheries in the (Northwest) Atlantic Ocean. In addition, as provided in Table

38, humpback, fin, and North Atlantic right whales are considered strategic stocks under the MMPA. Section 118(f)(1) of the MMPA requires the preparation and implementation of a Take Reduction Plan (TRP) for any strategic marine mammal stock that interacts with Category I or II fisheries. In response to its obligations under the MMPA, in 1996, NMFS established the Atlantic Large Whale Take Reduction Team (ALWTRT) to develop a plan (Atlantic Large Whale Take Reduction Plan (ALWTRP or Plan)) to reduce serious injury to, or mortality of large whales, specifically, humpback, fin, and North Atlantic right whales, due to incidental entanglement in U.S. commercial fishing gear.[5] In 1997, the ALWTRP was implemented; however, since 1997, the Plan has been modified; recent adjustments include the Sinking Groundline Rule and Vertical Line Rules (72 FR 57104, October 5, 2007; 79 FR 36586, June 27, 2014; 79 FR 73848, December 12, 2014; 80 FR 14345, March 19, 2015; 80 FR 30367, May 28, 2015).

The TRP consists of regulatory (e.g., universal gear requirements, modifications, and requirements; area-and season- specific gear modification requirements and restrictions; time/area closures) and non-regulatory measures (e.g., gear research and development, disentanglement, education and outreach) that, in combination, seek to assist in the recovery of North Atlantic right, humpback, and fin whales by addressing and mitigating the risk of entanglement in gear employed by commercial fisheries, specifically trap/pot and gillnet fisheries (http://www.greateratlantic.fisheries.noaa.gov/Protected/whaletrp/; 73 FR 51228; 79 FR 36586; 79 FR 73848; 80 FR 14345; 80 FR 30367). The TRP recognizes trap/pot and gillnet Management Areas in Northeast, Mid-Atlantic, and Southeast regions of the U.S, and identifies gear modification requirements and restrictions for Category I and II gillnet and trap/pot fisheries in these regions; these Category I and II fisheries must comply with all regulations of the Plan.[6] For further details on the ALWTRP please see:
http://www.greateratlantic.fisheries.noaa.gov/Protected/whaletrp/

7.6.3 Small Cetacean and Pinnipeds

7.6.3.1 Hook and Line and Pot/Trap Gear

Over the past several years, observer coverage has been limited for fisheries prosecuted with hook and line or trap/pot gear. In the absence of extensive observer data for these fisheries, stranding data provides the next best source of information on species interactions with hook and line or trap/pot gear. It is important to note, however, stranding data underestimates the extent of human-related mortality and serious injury because not all of the marine mammals that die or are seriously injured in human interactions are discovered, reported, or show signs of entanglement. Additionally, if gear is present, it is often difficult to definitively attribute the animal's death to the gear interaction, or if pieces of gear are absent, attribute the death or serious injury to a specific fishery or fishing gear type. As a result, the conclusions below should

5 The measures identified in the ALWTRP are also beneficial to the survival of the minke whale, which are also known to be incidentally taken in commercial fishing gear.

6 The fisheries currently regulated under the ALWTRP include: Northeast/Mid-Atlantic American lobster trap/pot; Atlantic blue crab trap/pot; Atlantic mixed species trap/pot; Northeast sink gillnet; Northeast anchored float gillnet; Northeast drift gillnet; Mid-Atlantic gillnet; Southeastern U.S. Atlantic shark gillnet; and Southeast Atlantic gillnet (NMFS 2014c).

be taken with these considerations in mind, and with an understanding that interactions may occur more frequently than what we are able to detect at this time.

Table 39 provides a list of small cetacean and pinniped species that may be affected by the tautog fishery. Of these species, only several bottlenose dolphin stocks have been identified as species at risk of becoming seriously injured or killed by hook and line or trap/pot gear. For each dolphin stock identified, stranding data provides the best source of information on species interaction history with pot/trap and hook and line gear types. Specifically, based on stranding data from 2007-2013, estimated mean annual mortality for each stock due to interactions with trap/pot gear was approximately one animal;, interactions with hook and line gear also caused approximately one annual mortality for each stock (Waring *et al*. 2014; Waring *et al*. 2016).[7] Based on this and the best available information, hook and line or trap/pot gear is not expected to pose an interaction risk to pinniped species. Interaction risks to small cetaceans (specifically bottlenose dolphins) are expected to be low. Should an interaction with a small cetacean occur, serious injury or mortality to the animal is possible; however, relative to other gear types discussed below (i.e., trawl or gillnet gear), hook and line or trap/pot gear represents a low source serious injury or mortality to any small cetacean.

7.6.3.2 Bottom Trawl Gear

Small cetaceans and pinnipeds are vulnerable to interactions with bottom trawl gear. Species that have been observed incidentally injured and/or killed by MMPA LOF Category II (occasional interactions) Northeast bottom or Mid-Atlantic trawl fisheries are provided in Table 39 (Waring *et al*. 2014; Waring *et al*. 2015; Waring *et al*. 2016; 82 FR 3655 (January 12, 2017)). Of the species provided, short-beaked common dolphins and Atlantic white-sided dolphins are the most frequently observed bycaught marine mammal species in Northeast bottom trawl gear, followed by gray seals, long-finned pilot whales, and risso's dolphins (Lyssikatos 2015). In the Mid-Atlantic, the most frequently observed bycaught marine mammal species in Mid-Atlantic bottom trawl gear was common dolphins, followed by Risso's dolphins, gray seals, offshore bottlenose dolphins, and harbor seals (Lyssikatos 2015).

7 Stranding data provided in Waring *et al*. (2015) was not considered in estimating mean annual mortality as not all bottlenose dolphin stocks are addressed in this stock assessment report. As all bottlenose dolphin stocks are considered in Waring *et al.* (2014) and Waring *et al*. (2016), these stock assessment reports were used to estimate mean annual mortality. Estimates of mean annual mortality were calculated based on the total number of animals that stranded between 2007-2013, and that were determined to have incurred serious injuries or mortality as result of interacting with hook and line or trap/pot gear. Please note, for bottlenose dolphin stocks, Waring *et al*. (2014) and Waring *et al*. (2016) provides two categories for trap/pot gear: (Atlantic Blue) Crab Pot, and Other Pot gear. We combined the two to get an overall number of interactions associated with trap/pot gear in general. In addition, any animals released alive with no serious injuries were not included in the estimate. Also, if maximum or minimum number of animals stranded were provided, to be conservative, we considered the maximum estimated number in calculating our mean annual estimate of mortality.

Table 39. Small cetacean and pinniped species observed seriously injured and/or killed by Category II bottom trawl fisheries in the affected environment of the tautog fishery.

Fishery	Category	Species Observed or reported Injured/Killed
Northeast Bottom Trawl	II	Harp seal
		Harbor seal
		Gray seal
		Long-finned pilot whales
		Short-beaked common dolphin
		White-sided dolphin
		Harbor porpoise
		Bottlenose dolphin (offshore)
		Risso's dolphin
Mid-Atlantic Bottom Trawl	II	White-sided dolphin
		Pilot whales (spp)
		Short-beaked common dolphin
		Risso's dolphin
		Bottlenose dolphin (offshore)
		Gray seal
		Harbor seal
Sources: Waring *et al*. 2016; MMPA LOF 82 FR 3655 (January 12, 2017).		

7.6.4 Sea Turtles

7.6.4.1 Hook and Line Gear

ESA-listed species of sea turtles are known to interact with hook and line gear and are more commonly reported in nearshore, southern waters (Sea Turtle Disentanglement Network; NMFS 2013). Hook and line gear can cause injury and mortality to sea turtles, and therefore, can pose a risk to these species. However, the extent to which these interactions impact sea turtle populations is still under investigation and, therefore, no conclusions can currently be made on the impact of hook and line gear on the continued survival of sea turtle populations.

7.6.4.2 Bottom Trawl Gear

Sea turtle interactions bottom trawl gear have been observed in the Gulf of Maine, Georges Bank, and the Mid-Atlantic; however, most of the observed interactions have occurred in the Mid-Atlantic (see Murray 2011; Murray 2013; Murray 2015; Warden 2011a, b). As few sea turtle interactions have been observed in the Gulf of Maine and Georges Bank regions of the Northwest Atlantic, there is insufficient data available to conduct a robust model-based analysis

on sea turtle interactions with bottom trawl gear in these regions or produce a bycatch estimate for these regions. As a result, the bycatch estimates and discussion below are based on observed sea turtle interactions bottom trawl gear in the Mid-Atlantic.

Bottom trawl gear poses an injury and mortality risk to sea turtles, specifically due to forced submergence (Sasso and Epperly 2006). Green, Kemp's ridley, leatherback, loggerhead, and unidentified sea turtles have been documented interacting (e.g.., bycaught) with bottom trawl gear. However, estimates are available only for loggerhead sea turtles. Warden (2011a,b) estimated that from 2005-2008, the average annual loggerhead interactions in bottom trawl gear in the Mid-Atlantic8 was 292 (CV=0.13, 95% CI=221-369), with an additional 61 loggerheads (CV=0.17, 95% CI=41-83) interacting with trawls, but released through a Turtle Excluder Device.[9] The 292 average annual observable loggerhead interactions equates to approximately 44 adult equivalents (Warden 2011a,b). Most recently, Murray (2015) estimated that from 2009-2013, the total average annual loggerhead interactions in bottom trawl gear in the Mid-Atlantic10 was 231 (CV=0.13, 95% CI=182-298); this equates to approximately 33 adult equivalents (Murray 2015b). Bycatch estimates provided in Warden (2011a) and Murray (2015) are a decrease from the average annual loggerhead bycatch in bottom otter trawls during 1996-2004, which Murray (2008) estimated at 616 sea turtles (CV=0.23, 95% CI over the nine-year period: 367-890). This decrease is likely due to decreased fishing effort in high-interaction areas (Warden 2011a, b).

7.6.4.3 Pot/Trap Gear

Leatherback, loggerhead, green, and Kemp's ridley sea turtles are known to interact with trap/pot gear, with interactions primarily associated with entanglement in vertical lines, although sea turtles can also become entangled in groundline or surface systems. Records of stranded or entangled sea turtles indicate that fishing gear can wrap around the neck, flipper, or body of the sea turtle and severely restrict swimming or feeding (Balazs 1985, STDN 2016). As a result, sea turtles can incur injuries and in some cases, mortality immediately or at a later time.

NMFS Northeast Region Sea Turtle Disentanglement Network's (STDN) database, a component of the Sea Turtle Stranding and Salvage Network, provides the most complete dataset of sea entanglements. Based on information provided in this database, a total of 333 sea turtle entanglements in vertical line gear were reported to the STDN and NMFS GARFO between 2002 and 2016 (STDN 2016).[11] Of the 333 reports, 316 were classified as probable or confirmed vertical line gear entanglement with a high confidence rating. Out of the 316 confirmed and

8 Warden (2011a) defined the Mid-Atlantic as south of Cape Cod, Massachusetts, to approximately the North Carolina/South Carolina border.

9 Turtle Excluder Devices (TEDs) allow sea turtles to escape the trawl net, reducing injury and mortality resulting from capture in the net. TEDregulations can be found at: 50 CFR 223.206, 68 FR 8456, and 50 CFR 223.206.

10 Murray 2015 defined the Mid-Atlantic as the boundaries of the Mid-Atlantic Ecological Production; roughly waters west of 71°W to the North Carolina/South Carolina border)

11 Data for 2016 was only available through September; data through the remainder of 2016 is still being processed.

probable entanglement events, there were 147 cases in which the gear type associated with the entanglement could be assigned to a specific fishery. The majority of interactions involved leatherback sea turtles (130) followed by loggerhead (16), and green (1) sea turtles. Of the 130 leatherbacks, 68.5 % of the vertical line interactions involved gear associated with the lobster fishery (vertical line), 17.7 % the whelk fishery, 7.7% the seabass fishery, 2.3 % the crab fishery, 1.5 % the conch fishery, 1.5% research , and 0.77 % whelk and lobster fishery (both trap/pots present). Of the 16 loggerheads, 56.3% involved interactions with vertical line associated with the whelk fishery and 43.8% the crab fishery. The one green sea turtle case involved an interaction with vertical line associated with the whelk fishery.

7.6.5 Atlantic Sturgeon

7.6.5.1 Hook and Line Gear

ESA-listed species of Atlantic sturgeon are known to interact with hook and line gear, particularly in nearshore waters from the Gulf Maine to Southern New England (NMFS 2013). Injury and mortality to Atlantic sturgeon can be incurred by hook and line gear interactions, and therefore, can pose a risk to these species. However, the extent to which these interactions are impacting Atlantic sturgeon DPSs is still under investigation and therefore, no conclusions can currently be made on the impact of hook and line gear on the continued survival of Atlantic sturgeon DPSs (NMFS 2013; NMFS 2011b).

7.6.5.2 Bottom Trawl Gear

Atlantic sturgeon interactions (i.e., bycatch) with bottom trawl gear have been observed since 1989; these interactions have the potential to result in the injury or mortality of Atlantic sturgeon (NMFS NEFSC FSB 2015, 2016). Three documents, covering three time periods, that use data collected by the Northeast Fisheries Observer Program to describe bycatch of Atlantic sturgeon in gillnet and bottom trawl gear: Stein et al. (2004b) for 1989-2000; ASMFC (2007) for 2001-2006; and Miller and Shepard (2011) for 2006-2010; none of these documents provide estimates of Atlantic sturgeon bycatch by Distinct Population Segment. Miller and Shepard (2011), the most of the three documents, analyzed fishery observer data and VTR data in order to estimate the average annual number of Atlantic sturgeon interactions in gillnet and otter trawl in the Northeast Atlantic that occurred from 2006 to 2010. This timeframe included the most recent, complete data and as a result, Miller and Shepard (2011) is considered to represent the most accurate predictor of annual Atlantic sturgeon interactions in the Northeast gillnet and bottom trawl fisheries (NMFS 2013).

Based on the findings of Miller and Shepard (2011), NMFS (2013) estimated that the annual bycatch of Atlantic sturgeon in bottom otter trawl gear to be 1,342 sturgeon. Miller and Shepard (2011) observed Atlantic sturgeon interactions in trawl gear with small (< 5.5 inches) and large (≥ 5.5 inches) mesh sizes. Based on NEFOP observed sturgeon mortalities,Miller and Shepard (2011) concluded that, gillnet gear, in general, posed a greater risk of mortality to Atlantic sturgeon than did trawl gear. Estimated mortality rates in gillnet gear were 20.0%, while those in otter trawl gear were 5.0% (Miller and Shepard 2011; NMFS 2013). Similar conclusions were reached in Stein *et al*. (2004b) and ASMFC (2007) reports; after review of

observer data from 1989-2000 and 2001-2006, both studies concluded that observed mortality is much higher in gillnet gear than in trawl gear. However, an important consideration to these findings is that observed mortality is considered a minimum of what actually occurs and therefore, the conclusions reached by Stein *et al*. (2004b), ASMFC (2007), and Miller and Shepard (2011) are not reflective of the total mortality associated with either gear type. To date, total Atlantic sturgeon mortality associated with gillnet or trawl gear remains uncertain.

7.6.5.3 Pot/Trap Gear

To date, there have been no observed/documented interactions with Atlantic sturgeon and pot/trap gear (NMFS NEFSC FSB 2015, 2016). Based on this information, pot/trap gear is not expected to pose an interaction risk to any Atlantic sturgeon and therefore, is not expected to be a source of injury or mortality to this species.

7.6.6 Atlantic Salmon

7.6.6.1 Pot/Trap and Hook and Line Gear

To date, there have been no observed/documented interactions with Atlantic salmon and hook and line or pot/trap gear (NMFS NEFSC FSB 2015, 2016). Based on this information, these gear types are not expected to pose an interaction risk to any Atlantic salmon and therefore, are not expected to be source of injury or mortality to this species.

7.6.6.2 Bottom Trawl Gear

Atlantic salmon interactions (i.e., bycatch) with bottom trawl gear have been observed since 1989; in many instances, these interactions have resulted in the injury and mortality of Atlantic salmon (NMFS NEFSC FSB 2015, 2016). According to the Biological Opinion issued by NMFS Greater Atlantic Regional Fisheries Office on December 16, 2013, NMFS Northeast Fisheries Science Center's (NEFSC) Northeast Fisheries Observer and At-Sea Monitoring Programs documented a total of 15 individual salmon incidentally caught on more than 60,000 observed commercial fishing trips from 1989 through August 2013 (NMFS 2013; Kocik *et al*. 2014). Of these fifteen Atlantic salmon, four were observed bycaught in bottom otter trawl gear (Kocik (NEFSC), pers. comm (February 11, 2013) in NMFS 2013). Since 2013, no additional Atlantic salmon have been observed in bottom trawl gear (NMFS NEFSC FSB 2015, 2016). Based on the above information, bottom trawl interactions with Atlantic salmon are likely rare (NMFS 2013; Kocik *et al*. 2014).

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Appendix 1.

Millstone Entrainment Sampling

Samples have been taken since 1976 at the Millstone Nuclear Power Plant in Waterford, Connecticut. Sampling frequency varies seasonally; over the period in which tautog eggs and larvae are collected, samples are taken day and night three times (May) or twice (June through August) a week. A conical plankton net (1.0 x 3.6 m, 335 microns mesh size) collects samples at outflow sites at the Millstone Nuclear Power Plant. Readings from four flowmeters mounted in the mouth of the net account for variations in horizontal and vertical flow. Sample volume is typically about 200 m^3. All ichthyoplankton collections are immediately fixed in 10% formalin.

Samples are split repeatedly in the laboratory using a NOAA Bourne splitter. Successive splits are sorted and counted until at least 50 larvae (and 50 eggs for samples processed for eggs) are found, or until one half of the sample volume was processed. Tautog eggs are enumerated in all samples collected from April through October. Tautog and Cunner have eggs of similar appearance and were distinguished on the basis of a weekly bimodal distribution of egg diameters (Williams 1967).

Means of annual cumulative sum of egg entrainment for the years 2013 – 2015 show that 63% of the eggs are captured between weeks 18 and 30 (May 1 – July 31), 71% are captured between weeks 18 and 32 (May 1 – mid-August), and 78% are captured between weeks 18 and 34 (Figure 1). As Tautog eggs hatch between 42-48 hours after spawning (Kuntz and Radcliffe, 1918), the presence of eggs is a good indicator of spawning activity.

Other resources

Other studies of Tautog in southern New England indicate that the majority of spawning takes place between May and end of July, with continued spawning through the end of August (LaPlante and Schultz, 2007; Berrien and Sibunka, 1999).

References

Berrien, Peter and Sibunka, John (1999) Distribution patterns of fish eggs in the U.S. Northeast Continental Shelf Ecosystem, 1977-1987. Seattle, WA, NOAA/National Marine Fisheries Service, (NOAA Technical Report NMFS, 145)

Kuntz A., Radcliffe L. (1918) Notes on the embryology and larval development of twelve teleostean fishes. U.S. Bulletin of the Bureau of Marine Fisheries, 35, 87–134.

LaPlante L.H., Schultz E.T (2007) Annual Fecundity of Tautog in Long Island Sound: Size Effects and Long-Term Changes in a Harvested Population. Transactions of the American Fisheries Society 136:1520–1533.

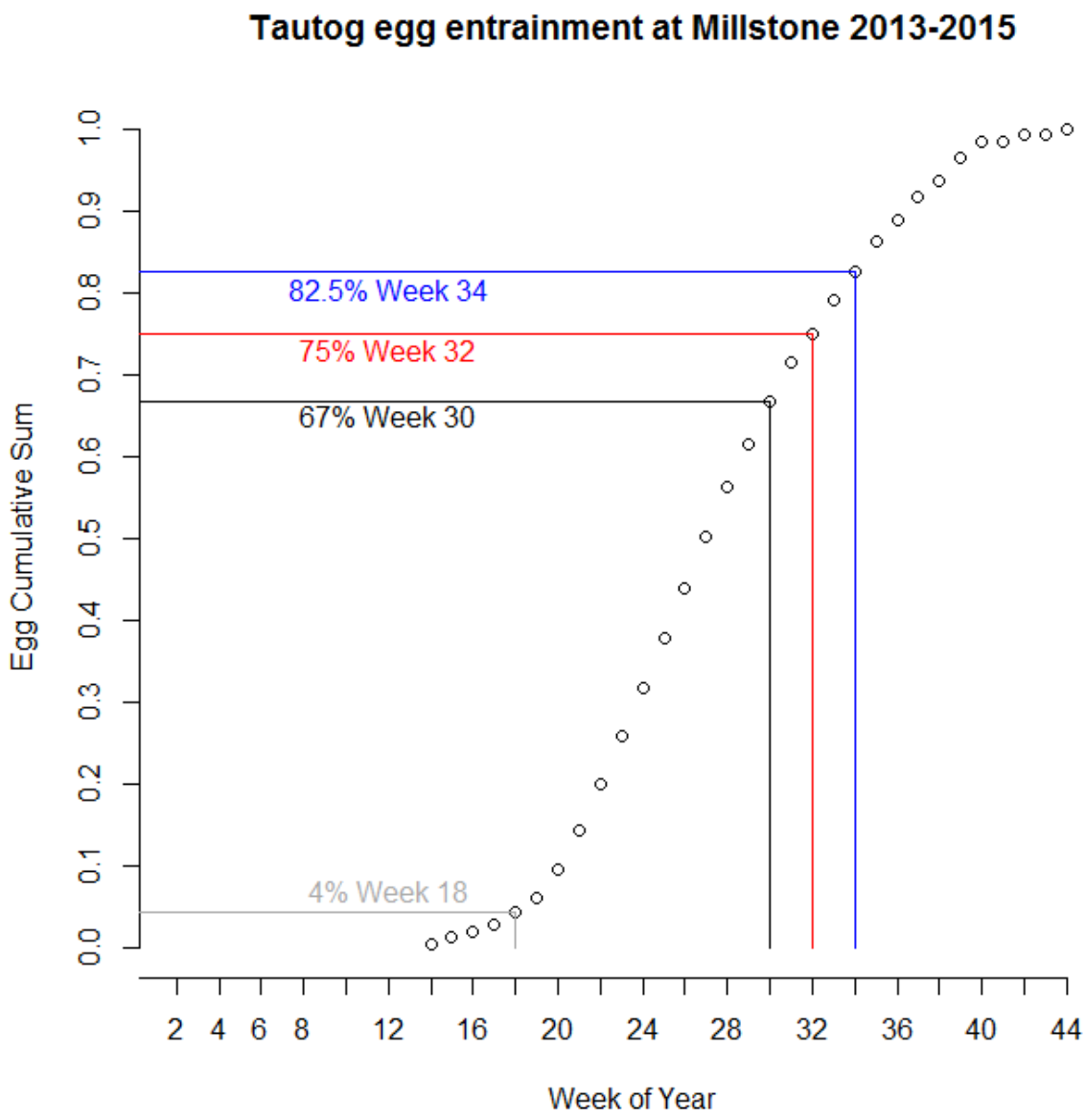

Figure 1: Mean annual cumulative sum of Tautog egg entrainment at the Dominion Millstone Power Station (Waterford, CT) for the years 2013-2015

Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: Tautog Management Board

FROM: Toni Kerns ISFMP Director

DATE: July 25, 2017

SUBJECT: Public Comment on Tautog Draft Amendment I

The following pages represent a summary of all comments received by ASMFC on American draft Amendment I to the Tautog FMP as of 5:00 PM (EST) on July 14, 2017 (closing deadline).

A total of 253 written comments were received on Draft Amendment I. Of those comments, 8 were from organizations, 21 were from individuals, 2 form letters (one with 4 copies and one with 3 copies) and 1 petition with 317 signatures. Public hearings were held in 8 jurisdictions. Approximately 167 individuals attended the hearings.

The following tables (pages 2-10) are provided to give the Board an overview of the support for specific options and issues contained in Draft Amendment I. This is then followed by written comment (individual, groups, and form letters). Public Hearing summaries were provided in briefing materials.

Public Comment Summary Tables

FMP Goals (pg 48-49)	Option A: Maintain the 1996 Goals (A-E)	Option B: Revised Goal Statement
Written Comments		
Individual Letters	2	
Groups/Organization Letters	3	1
Form Letters		
Hearings		
MA	x	
RI		x
CT		
NY		
NJ		
DE		
MD		x
VA		

Objectives(Pg49-51)	Option A: Maintain the 1996 objectives (A-J)	Option B: Suggest modifying or removing select objectives - F and SSB Targets	Option C: Suggest modifying or removing select objectives - Regional management	Option D: Suggest modifying or removing select objectives - EEZ management	Option E: Suggest modifying or removing select objectives - Habitat	Option F: Suggest modifying or removing select objectives - Monitoring	Option G: Suggest modifying or removing select objectives - Illegal harvest	Option H: Insert all modifications identified under Options B-G
Written Comments								
Individual Letters	2						1	
Group/Organization Letters	3				1	1	2	
Form Letters								
Hearings								
MA								
RI								
CT								
NY								
NJ								
DE								
MD								x
VA								1

Biological Reference Points (Pg 53-54)	Option A: Status Quo - Reference Points can be Modified via a Management Document	Option B: Reference Points can be Modified via Board Action (i.e., Management Document Not Required)
Written Comments		
Individual Letters	2	
Group/Organization Letters	5	
Form Letters		
Hearings		
MA		
RI		no objection
CT		
NY		
NJ		
DE		
MD	1	1
VA		1

F Target (pg 54-55)	Option A: Status Quo	Option B: Managing to the Regional Target F	Sub-Option B1: No time requirement	Sub-Option B2: Board action within one year	Sub-Option B3: Board action within two years
Written Comments					
Individual Letters	2				
Group/Organization Letters	3	1	1	1	
Form Letters					
Hearings					
MA					
RI	1				
CT					
NY					
NJ					
DE					
MD		5		1	3
VA		1		x	

Probability of Achieving F Target (pg 55)	Option A: Status Quo	Option B: 50% Probability of Achieving F Target
Written Comments		
Individual Letters	2	
Group/Organization Letters	4	1
Form Letters		
Hearings		
MA		1
RI		x
CT		
NY		
NJ		
DE		
MD	2	
VA		1

F Rebuilding Schedule (pg 55-56)	Option A: Status Quo	Option B: Three Years	Option C: Five Years
Written Comments			
Individual Letters	2		
Group/Organization Letters	24	1	
Form Letters			
Hearings			
MA		x	
RI		1	
CT			
NY			
NJ			
DE			
MD			3
VA		1	

Other Comments: Overfishing should be ended immediately.

Stock Rebuilding Schedule (pg 56)	Option A: Status Quo (from Addendum IV)	Option B: Stock Rebuilding Schedule can be Developed via an Addendum	Option C: Stock Rebuilding Schedule can be Developed via an Addendum, NTE 10 years
Written Comments			
Individual Letters	2		
Group/Organization Letters	3	1	1
Form Letters			
Hearings			
MA		x	
RI			
CT			
NY			
NJ			
DE			
MD		3	
VA			1

Regional Management (pg 65-66)	Option A: Status Quo - Coastwide Management	Option B: Regional Management	Sub-Option B1: LIS line from Montauk Pt, NY to Watch Hill, RI	Sub-Option B2: LIS line from Orient Pt, NY to Watch Hill, RI
Written Comments				
Individual Letters	2	5	1	
Group/Organization Letters	3	2	1	
Form Letters				
Hearings				
MA		x		
RI		x		
CT	x	1		
NY	79			
NJ		2		
DE		x		
MD		10		
VA		1		

Other Comments:

- Defer action until a more reasonable approach can be determined to not split NY in the middle of the state.
- Favor the regional approach but do not favor an unenforceable regulation where a state is split. Favor regions but thinks NJ should be in a region with Delaware.
- No region should face such a large reduction as LIS (48-50%).

MARI Rec Management Measures	Option A: Status Quo	Option B: All Measures Consistent - 3 fish poss limit in Mar-May and Aug-Oct 14, 4 fish Oct 15-Dec 31	Option C: All measures consistent - 3 fish poss limit
Written Comments			
Individual Letters	4		
Group/Organization Letters	3		
Form Letters			
Hearings			
MA			
RI	x		
CT			
NY			
NJ			
DE			
MD			
VA			

Other Comments:

Propose 6 fish bag limit Sept-Dec and April-May, and 1 fish all other times of the year

LIS Rec Measures	Option A1: State Specific Reductions to Current Measures	Option B1: Regional 16", 1 Fish, Apr (CT), Oct-Dec (CT & NY)	Option B2: Regional 17", 2 Fish, Apr (CT), Aug (CT), Oct-Dec (CT & NY)	Option B3: Regional 16", 1 Fish, Oct-Nov (CT & NY)	Option C: Recreational Slot Limit 16-18"
Written Comments					
Individual Letters	3				
Group/Organization Letters					
Form Letters					
Hearings					
MA					
RI					
CT					
NY					
NJ					
DE					
MD					
VA					

Other Comments:

- Favor status quo measures.
- Believe that the data used as a basis for setting the allowable catch limit (ACL), bag limit and season is inaccurate.
- If implemented, it will lead to overly restrictive regulation that will have a negative effect on the local economy while not effectively protecting the stock.
- Provide measures to the for-hire fleet that are more generous than measures for private boats
- Protect fish during the spawning season.

- Dropping the bag to 4 fish will be very hard on the for-hire fleet any lower will be devastating. Separate the regulations for the for-hire fleet. Eliminate the spring and summer fishery in CT and shorten the fall in both states. Put in a slot limit of 16-22" to protect the large egg-bearing females.

LIS Commercial Measures	Option A1: State Specific Reductions to Current Measures	Option B1: Regional 16" min size, commercial quota	Option B2: Regional 16" min size, status quo	Option C: Commercial slot limit, 16-18"
Written Comments				
Individual Letters	3			
Group/Organization Letters				
Form Letters				
Hearings				
MA				
RI				
CT				
NY				
NJ				
DE				
MD				
VA				

Other Comments:
Restrict Commercial fishing to a daily possession limit equal to the recreational fishery. Restrict the type of gear Commercial fishermen may use, specifically rod and reel. Include closure for spawning. Ban the sale of live tautog. The Commercial Lobster fishery is allowed to take too many tautog as bycatch in their pots.

Close the commercial pot fishery especially in the spring. Possession limit should be similar to the recreational fishery and have options for spawning closures.

NYNJ Recreational Measures	Option A1: State-specific reductions to current measures	Option B1: 15" min, 4 fish bag	Option B2: 16" min, 4 or 6 bag limit	Option C1: Recreational slot limit 15-18", 4 fish bag limit
Written Comments				
Individual Letters	3			
Group/Organization Letters	2			
Form Letters				
Hearings				
MA				
RI				
CT				
NY				
NJ				do not favor
DE				
MD				
VA				

Other Comments:

- Opposed to option B2, would be disaster for rebuilding biomass at Barnegat Light.
- C1 is Okay, but ending March 31 would eliminate the shore angler. Against a slot limit and opposed to an August and September closure.
- Propose Bay versus ocean regulations (like striped bass).

NYNJ Commercial Measures	Option A1: State-specific reductions to current measures	Option B1: 15" min, 28 fish bag NYB, no bag in NJ	Option B2: 16" min, 31 fish bag NYB, no bag in NJ	Option B3: 15" min, 65,486 lb quota NYB, 23,529 lb quota NJ	Option C2: Commercial slot limit 15-18", 34 fish bag NYB, no bag NJ
Written Comments					
Individual Letters	3				
Group/Organization Letters	1				
Form Letters					
Hearings					
MA					
RI					
CT					
NY					
NJ					
DE					
MD					
VA					

Other Comments:

Possession limit should be similar to the recreational fishery and have options for spawning closures

DelMarVa Recreational Measures	Option A: Status Quo	Option B: Spwn Closure May & June; 4 fish bag all states, 15" min size DE, 16" VA & MD	Option C: Spwn Closure May & June; 5 fish bag DE Jul-Mar, 4 fish bag MD, 3 fish bag VA, 16" all states	Option D: Spwn Closure May & June; 4 fish bag & 16" min size all states
Written Comments				
Individual Letters	3			
Group/Organization Letters				
Form Letters				
Hearings				
MA				
RI				
CT				
NY				
NJ				
DE			x	
MD		x		favor a modified D
VA				1

DelMarVa Commercial Measures	Option A: Status Quo	Option B: Modified rec measures for DE and MD implemented as com measures; VA remains status quo
Written Comments		
Individual Letters	3	
Group/Organization Letters		
Form Letters		
Hearings		
MA		
RI		
CT		
NY		
NJ		
DE		
MD		
VA		1

Commercial Quota	Option A: Status Quo	Option B: Commercial Quota Procedures
Written Comments		
Individual Letters	3	
Group/Organization Letters	1	
Form Letters		
Hearings		
MA		
RI		2
CT		
NY		
NJ		
DE		
MD		x
VA		1

Commercial Tagging Program and Tag Application	Option A: Status Quo	Option B: Implement a Commercial Harvest Tagging Program	Option A: Harvester Application at Harvest or Upon Landing	Option B: Application by Dealer
Written Comments				
Individual Letters	5	3		
Group/Organization Letters	1	4	2	
Form Letters				
Hearings				
MA				x
RI		x	3	
CT				
NY	x			
NJ		x	7	
DE		x	x	
MD		x	x	
VA		2	2	

Other Comments:

Instead of putting the burden on the Commercial Fisherman to tag fish, do not allow recreational fishermen to land live tautog. They could keep them live for culling purposes while fishing but must kill all fish to be harvested before reaching the marina

TO: Toni Kerns, ASMFC ISFMP Director

FROM: Jason McNamee (RI DEM) & Daniel McKiernan (MA DMF), Tautog Management Board Administrative Members

DATE: September 21, 2017

SUBJECT: Tautog Amendment 1 Management Proposal for Massachusetts/Rhode Island Area

As requested by the Tautog Management Board, staff from Rhode Island DEM and Massachusetts DMF have worked cooperatively to devise a regional management proposal for the MA/RI area as required under Amendment 1. This proposal can now be reviewed by the Technical Committee and Management Board.

Tautog in the MA/RI region are not overfished nor is overfishing occurring. Our proposal is conservation neutral and will improve management of the stock in the region. Emphasis was placed on creating similar recreational regulations to promote compliance among anglers fishing between the region's two states.

Feel free to contact Dan or Jason if you have any questions.

Tautog Management Options – MARI Region

Background:

In October of 2016 the Tautog Management Board (Board) approved the creation of an Amendment to the fishery management plan for tautog. The Amendment will set forth management measures for the recreational and commercial fisheries through the creation of regional management plans, which match the structure of the current stock assessment regions.

Four regions will be established by the Amendment. Each region will implement tautog management programs that utilize minimum size limits, maximum possession limits, quotas, and seasonal closures that are designed to achieve a specific regional harvest goal. The MARI region will contain the states of Massachusetts and Rhode Island. All states within a region will agree to the regulations implemented within the region, though they may differ. The goal, however, will be to get the regulations as consistent as possible.

Per the outcome of the Tautog Board meeting on January 31, 2017, the MARI region is not overfished and overfishing is not occurring based on the selection of SPR reference points. Despite this, some modest changes to management may be warranted in this region to bring the two states management plans in to synchrony. The following is a method and an option for the states of RI and MA to consider for tautog management.

Methods and Results:

MRIP data were queried to evaluate tautog catches from years 2013-2016 during waves 2-6 in Massachusetts and Rhode Island. Trip and harvest data were expanded using the MRIP weighting factor. MRIP raw trip and catch data were read in and merged on ID CODE. Trips with multiple contributors were identified using the leader code, and group catch was partitioned among contributors, such that each contributor has an integer value for catch. Trips over the bag limit were managed so that credit was not achieved for illegal harvest, but added back in for final calculations.

Massachusetts and Rhode Island data were analyzed separately, with separate tables to detail the estimate reductions and/or harvest increases based on the proposed regulations for 2018. The proposed scenario includes establishing four seasons for the recreational tautog fishery: spring (April 1 - May 31), summer (June 1 -July 31), late summer (August 1 – October 14), and fall (Oct 15 – Dec 31). The recreational fishery outside of these time periods will be closed. Intercept month was used to partition trip data down at a finer scale than wave.

The following scenario was evaluated:

1. 3-fish bag limit during April 1 - May 31
2. 1-fish bag limit from June 1 – July 31 in MA (RI will remain closed)
3. 3-fish bag limit from August 1 – October 14
4. 5-fish bag limit from October 15 – December 31

Massachusetts

The current recreational regulations in Massachusetts include a minimum fish size of 16", a 3-fish bag limit, and a season that is open 365 days of the year. The evaluation of MA catches against possible management actions assumes that the minimum size remains at 16".

The effects of the new management plan in MA as outlined in the scenario above is shown in Table 1 below. In general, the new management plan increases harvest in the fall period due to the increased bag limit, however the decrease during the summer spawning period offsets this increase to some degree. This leads to a predicted increase in harvest for MA, an average of 7% increase in harvest for the time period examined.

Table 1 – MA observed harvest in numbers of fish under status quo regulations versus predicted harvest in numbers of fish under the new regulatory scenario.

Year	Observed	Predicted	Change
2013	57,736	73,057	+27%
2014	100,297	93,265	-7%
2015	39,860	35,680	-10%
2016	24,243	35,541	+47%

Rhode Island

The current recreational regulations in Rhode Island include a minimum fish size of 16", a 3-fish bag limit from April 15 – May 31, a closure from June 1 – July 31, a 3-fish bag from August 1 – Oct 14, and a 6-fish bag from October 15 – December 31. The evaluation of RI catches against possible management actions assumes that the minimum size remains at 16".

The effects of the new management plan in RI as outlined in the scenario above is shown in Table 2 below. In general, the new management plan decreases harvest in the fall period due to the decreased bag limit, however the increase in season during the spring period offsets this decrease to some degree. This leads to a predicted decrease in harvest for RI, an average of 7% reduction in harvest for the time period examined.

Table 2 – RI observed harvest in numbers of fish under status quo regulations versus predicted harvest in numbers of fish under the new regulatory scenario.

Year	Observed	Predicted	Change
2013	136,190	128,954	-5%
2014	68,768	66,781	-3%
2015	98,404	85,621	-13%
2016	86,528	81,182	-6%

Regional result

Taking the above two state specific analyses together, the resulting impact to the regional harvest is a modest decrease of 2% from the current regulations (Table 3). This is a reduction of 2,737 fish. The MARI region is not overfished and overfishing is not occurring, therefore these changes essentially keep harvest at status quo, and as a result, harvest should not impact stock status. It is anticipated that moving towards more consistent regulations will add value by way of better understanding of fishery rules between the two states whose fisheries overlap. Additionally it is hoped that adding in the tagging program will help to minimize illegal harvest, thus further offsetting the increase in harvest seen in the effort to synchronize the two states management plans.

Table 3 – Average observed harvest in numbers of fish under status quo regulations versus predicted harvest in numbers of fish under the new regulatory scenario.

Regional Average	Observed	Predicted	Change
2013 - 2016	153,007	150,270	-2%

Projection

Using similar methodology to that used for the update assessment projections in 2016, a projection was run with the decreased harvest to verify that this will not impact stock status. Differences in what was used for these projections from what was used in the update assessment projections is that updated landings in metric tons were used instead of total removals, and these landings were decreased by 2% for the projection years based on the outcome of the management analysis above. The years were updated to the most recent 3 years, based on MRIP data (Table 4). It is important to note that this decreases the landings as recreational harvest has declined in both MA and RI relative to the assumptions made during the update assessment.

It is not necessarily a direct comparison to use a 2% decrease in weight as equating to the 2% decrease in numbers calculated for the new management program, but given time constraints, this assumption was made and is believed to be close enough for this exercise. Two final differences are that a Beverton-Holt stock recruit relationship was used, and the projection window was extended to 2025. Given these two elements, the impact of the stock recruit relationship assumption is believed to be minimal.

The result of the projections, assuming that the harvest decreases by 2%, is that we do not increase above the SPR F threshold of 0.49, but we do increase above the SPR F target of 0.28 slightly in 2 of the projection years before declining back below it. This maintains the MARI region in a not overfishing state, and therefore does not impact the stock status determination with regard to F. The maximum F for the projection period is 0.286 (Table 5, Figure 1). This F allows for stock rebuilding over time (Figure 2), though rebuilding occurs slowly and has a short term period of decline. The period of decline does drop the SSB below the SPR threshold for 5 of the projection years, but it rebuilds back above it during the projection period.

Table 4 – Recreational and commercial harvest for MARI region for 2014 – 2016 with the combined 3 year average.

Year	2014	2015	2016
MA recreational	181.354 mt	82.155 mt	32.814 mt
RI recreational	135.152 mt	170.732 mt	153.543 mt
Combined Commercial	50 mt	50 mt	50 mt
Combined 3 year Average	302 mt		
Decreased harvest assumption for projection	296 mt		

Table 5 – Projected fishing mortality for new management scenario.

Year	F rate
2016	0.227
2017	0.241
2018	0.255
2019	0.272
2020	0.282
2021	0.286
2022	0.285
2023	0.277
2024	0.268
2025	0.258

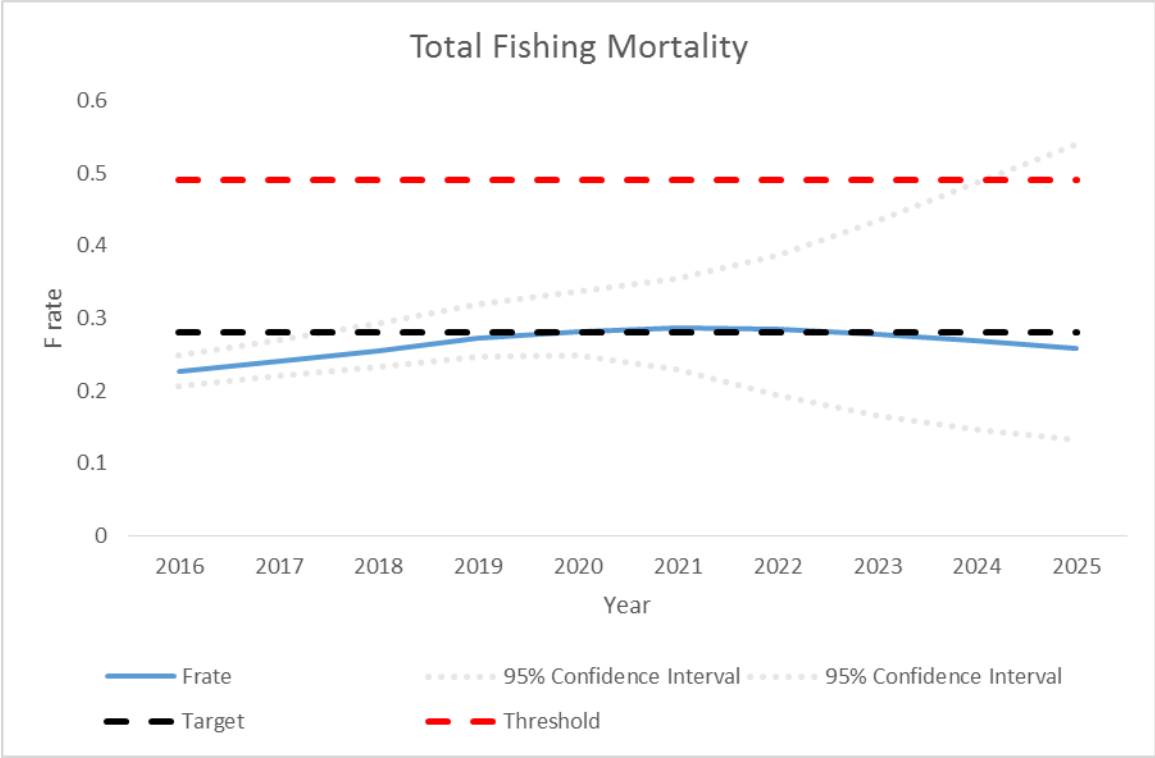

Figure 1 – Projected Fishing mortality with 95% confidence intervals.

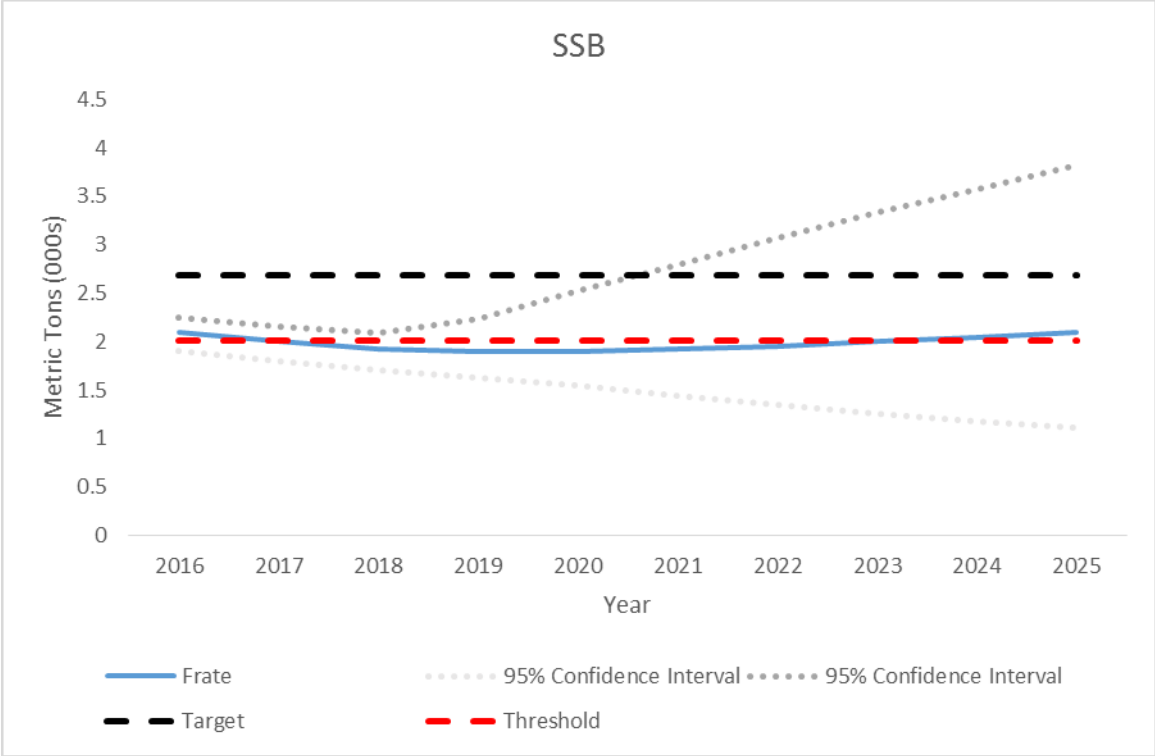

Figure 2 – Projected Spawning Stock Biomass with 95% confidence intervals.

Conclusion

The predicted harvest associated with the new proposed management plan is not ideal and has some short term impacts to the population, but these impacts are minimal compared to the current state of the stock. The attributes of relatively consistent regulations between the states in the region and the improved accountability of harvest with the tagging program may prevent the projected declines from occurring or may mitigate them to some extent, therefore we believe there is value in moving forward with this set of measures for the MARI region. The MARI region will continue to be proactive in their management and if large changes occur that were not accounted for in the analyses above that might lead to negative consequences for the stock, management adjustments will be made.

Connecticut Department of
ENERGY &
ENVIRONMENTAL
PROTECTION

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Rob Klee, Commissioner

New York State
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Conservation
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Basil Seggos, Commissioner

Memorandum

TO: Toni Kerns, Interstate Fisheries Management Program Director
Atlantic States Marine Fisheries Commission

FROM: Justin Davis, Supervising Fisheries Biologist
CT DEEP Marine Fisheries

Gregory Wojcik, Fisheries Biologist
CT DEEP Marine Fisheries

John Maniscalco, Finfish Unit Leader
NY DEC Division of Marine Resources

DATE: September 26, 2017

Long Island Sound Tautog Fishery Options for Draft Amendment 1 to the Tautog FMP

Background

The 2016 Tautog Stock Assessment Update concluded that the Long Island Sound (LIS) tautog stock was overfished and overfishing was occurring. Draft Amendment 1 to the Tautog FMP included regulation options to end overfishing in the LIS tautog fishery (which occurs in both CT and NY state waters). Specifically, the proposed measures, assuming 2018 implementation, provided a 50% probability of achieving the F target by 2021 (three-year time frame), and translated into an estimated 47-50% reduction in annual tautog harvest.

Both CT DEEP and NY DEC held public hearings on Draft Amendment 1 during summer of 2017. At these hearings, members of the public expressed overwhelmingly negative response to the management measures proposed in the Draft Amendment. Adoption of these measures for Long Island Sound would produce severely disjointed tautog regulations within the relatively small NY/CT/RI region. For instance: although recreational anglers in all three areas would be subject to a 16" minimum length limit during the fall (when the majority of tautog angling occurs), LIS anglers would potentially be subject to a one fish bag limit while RI anglers and NY anglers fishing outside of LIS would be subject to six and four fish bag limits, respectively. Such an outcome would subject the LIS for-hire sector to undue economic hardship, as customers would likely make the relatively short drives to ports in adjacent areas to take advantage of higher bag limits. Anglers and businesses fishing from New Jersey would have even more disparate regulations that include higher bag limits (4-6 fish) and a 15" minimum size limit during the fall fishery. In addition, owners of tackle shops frequented by LIS anglers reported that the tautog fishery was directly (through sales of bait and tackle used for tautog) and indirectly (through driving almost all foot traffic into the store) responsible for the majority of their revenue during fall months. Therefore, the substantial curtailing of LIS tautog angling likely to result from adoption of Draft Amendment 1 regulations would also cause tackle shop owners undue economic hardship. Finally, the disjointed regional regulations prescribed by Draft Amendment 1 as currently constituted would create substantial public outreach and enforcement

challenges for NY DEC, as NY state waters would be divided between two management regions (LIS and NJ/NY Bight) subject to very different tautog regulations.

CT DEEP and NY DEC also feel that there are strong reasons to reconsider LIS regulations options in Draft Amendment 1 on biological and technical grounds. Despite the overfished/overfishing determination from the 2016 stock assessment update, there are positive indicators for the future condition of the LIS tautog stock, including strong 2013 and 2015 year classes (Figure 1) and a slow but steady increase in biomass since the adoption of more conservative management measures in 2012 pursuant to Addendum VI (Figure 2). Additionally, tautog are a slow-growing, long-lived species; a timeframe longer than that proposed in Draft Amendment 1 (three years) may therefore be more appropriate and realistic to achieve substantial change in the condition of the LIS tautog stock. The calculations underlying the proposed management options in the Draft Amendment relied heavily on data from the Marine Recreational Information Program (MRIP). Recent MRIP estimates of annual recreational tautog harvest in LIS displayed high levels of inter-annual variation (e.g. 31-304% variation in CT during 2013-15) absent changes to prevailing management, calling into question precision of the estimates and therefore the precision of harvest reduction estimates calculated using these data. Additionally, multiple parties raised substantial concerns over the accuracy of MRIP estimates for the for-hire sector during public hearing.

Proposed Management Options

For the reasons detailed above, CT and NY are jointly proposing alternative tautog management measures for LIS for inclusion in Draft Amendment 1. These management options (Attachment 1) propose lower levels of annual harvest reduction (18.4% - 31.4%). It is our strong opinion that these alternative measures will effectively end overfishing of the LIS tautog stock, albeit over a longer time frame, while avoiding the severe socio-economic impacts and enforcement challenges likely to result from adoption of current Draft Amendment 1 management options.

Methods

The options provided include seasonal reductions, possession limit reductions, size limit increases as well as reductions associated with two slot limits (see Attachment 1). Any combinations of reductions between the size, season and creel limits were accounted for using the formula (x+y)-(x*y) where x = the percent reduction associated with season closures and y = the percent reduction associated with size/possession limit reductions.

- Seasonal Adjustment Analysis: harvest reductions achieved by closing days in the season were estimated for options 1, 3 and 5 using harvest-per-day (HPD) rates derived from MRIP (Table 1). HPD rates by wave were estimated using the mean of 2013-2015 MRIP harvest estimates, using only intercepts where "area fished" was within LIS. Since both NY and CT fall seasons are open for portions of both waves 5 and 6, harvest estimates for the fall fishery were calculated by aggregating data from both waves.

  All six options propose opening for the month of April in NY to create greater regulatory consistency for LIS anglers (CT is currently open during April; see Attachment 1). Very little harvest is expected during April in both states. CT MRIP harvest estimates from wave 2 have been less than 2,000 tautog since 1990. It is estimated that a total of 2,000 tautog will be harvested in April in NY based on MRIP harvest estimates from 2008-2011 when the spring season was open (note: the minimum size limit during these years was 14").

  All options assume no changes in the harvest rate of non-compliant fish that are below the current minimum length of 16". MRIP measured lengths (non-imputed) indicate that 19.1% of the harvest was below the current legal minimum size.

Table 1. Harvest-Per-Day Rates

	2013	2014	2015
NEW YORK			
WAVE 5	168	1,036	1,695
WAVE 6	304	196	682
CONNECTICUT			
WAVE 4	71	28	47
WAVE 5	2,980	12,228	4,579
WAVE 6	958	1,319	615

- Size and Possession Limit Analysis: the MRIP sample size of measured tautog in 2013-2015 was a total of 894 fish for both CT and NY (harvested from LIS only). This sample size allowed compilation of a robust length frequency table for use in reduction estimation. The length frequency table was weighted by the MRIP effort estimates in all calculations. Two minimum lengths were evaluated for options 2 and 3: an increase to 16.5" (resulting in an 11.5% harvest reduction) and 17" (31.4% reduction).

  A possession limit reduction from four to three fish was analyzed using combined MRIP harvest data from 2013-2015. There was a total of 220 trips with harvest used in analyses of adjusted creel limits for the spring and fall fishery. The proportion of 'saved' fish was converted to number of fish and applied to the total season's harvest. The CT summer fishery creel limit remains two fish (status quo) for all options. The CT summer season only accounts for 1.6% of the annual LIS harvest.

- Slot Limit Analysis: the methods used to calculate the reduction associated with a harvest slot limit in proposed options 4 and 6, are the same as provided in Draft Amendment 1, Section 4.2.3.3. Since a slot limit will result in an increase in discarded fish, these analyses incorporated the discard mortality rate (2.5%) of fish released above the slot maximum (i.e. the reductions calculated for option 4 and 6 reflect reductions in total removals; harvest + discard mortality).

- Model Projections: all projections used to determine the number of years needed to reach the F target under each option followed the same methodology outlined in the 2016 Tautog Stock Assessment Update. In addition to estimating years needed to reach the F target under each option, we also estimated the probability of reducing F below the F threshold in three years (matching the timeframe prescribed for reaching F target in Draft Amendment 1) and the number of years needed to achieve a 50% probability of reducing F below the threshold. These metrics provide additional information on the timeframes in which each option might be expected to end overfishing of the LIS tautog stock. All model projections assumed equivalent percent reductions to the recreational and commercial fishery.

- Commercial Fishery: The commercial fishery accounts for approximately 10% of annual LIS tautog harvest. Given the relatively minor contribution of commercial harvest, we have chosen not to prescribe commercial regulations for any option at this time. It is our intent that if one of the alternate management options presented in this document is approved for LIS tautog, that the corresponding percent reduction in annual recreational harvest will be applied to the commercial sector (note that, as stated above, model projections assumed these equivalent reductions in commercial harvest). Regulations that achieve the necessary reduction in commercial harvest will be formulated using changes to season length and/or bag limits (length limits for the commercial fishery will be kept

consistent with the recreational fishery) and using the same methods described above for reduction estimation in the recreational fishery.

Results

- Annual LIS tautog harvests (recreational + commercial) under the six management options presented here are expected to range from 342.92 mt (31.4% reduction from status quo) to 407.96 mt (18.4% reduction; see Table 2). For comparison, the mean annual harvest during 2013-2015 was 499.95 mt.

TABLE 2 ***OPTIONS***	***1***	***2***	***3***	***4***	***5***	***6***
PERCENT REDUCTION IN HARVEST	20.3%	30.5%	18.4%	22.5%	23.6%	31.4%
PROJECTED HARVEST (STATUS QUO = 499.95)	398.46	347.47	407.96	387.46	381.96	342.92
PROBABILITY OF BEING UNDER F-THRESHOLD IN 3 YEARS	33%	59%	28%	32%	41%	67%
NUMBER OF YEARS TO ACHIEVE F-TARGET WITH A 50% PROBABILITY	12	8	14	NA	10	8
NUMBER OF YEARS REQUIRED TO BE BELOW F-THRESHOLD WITH A 50% PROBABILITY	5	3	7	5	5	2

- For options other than Option 4, the number of years required to achieve the F target with 50% probability ranged from a low of eight (Option 2: 17" min. length, status quo bags and seasons) to a high of 14 (Option 3: 16.5" min. length, status quo bags, reductions in fall season). For comparison, Draft Amendment 1 measures were designed to achieve the F target with 50% probability in three years.
- The projection run using the Option 4 slot limit management measures (16"-19" slot limit, 3 fish creel limit) was unable to achieve F target; it did, however, estimate that F threshold would be achieved with a 50% probability in five years. This suggests that there is a potential need to have further reductions in the short term in order to allow the slot-aged fish to rebuild and pass beyond the slot before harvest can increase using this option. The model not being able to achieve F target may also be the result of using a twelve-plus age group which could be inadequate to assess fishing mortality using slot limit management measures on such a long lived fish.
- Multiple options could end overfishing of the LIS tautog stock within relatively short time frames. Option 1 (status quo min length of 16", reductions in bags and fall season), Option 2 (17" min. length, status quo bags and seasons), and Option 5 (status quo min length of 16", reductions in bags and fall season) all have a 50% probability of reducing F below the threshold in five years or less. Option 2 would provide a 50% probability of ending overfishing within the same three-year timeframe prescribed for reaching the F target within Draft Amendment 1. The probability of ending overfishing of the LIS tautog stock within three years was approximately 33% or greater under each of these options.

Figure 1. Recruitment estimates for LIS region (Fig. 5.2.5 from 2016 Tautog Stock Assessment Update).

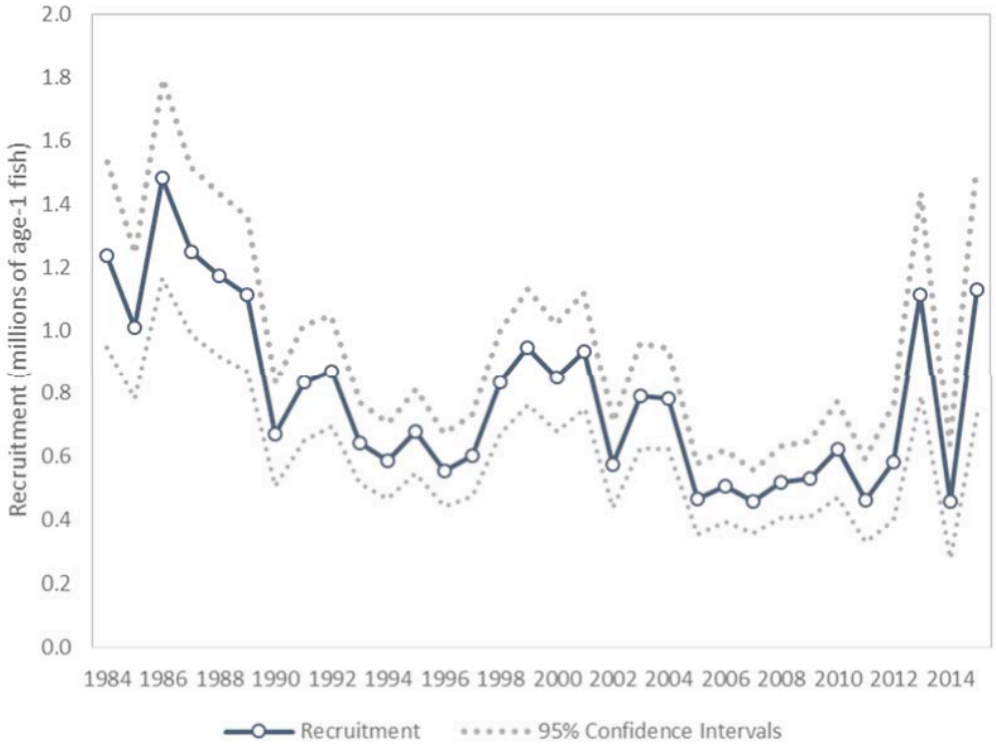
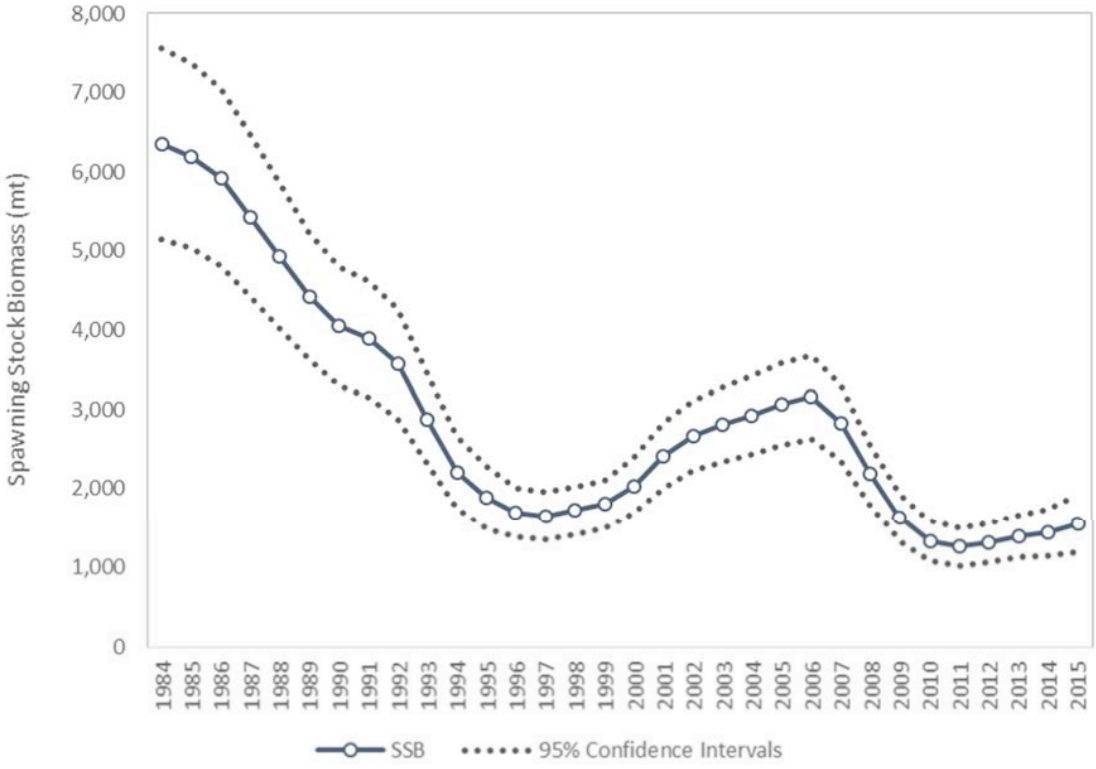


Figure 2. Estimates of spawning stock biomass for the LIS region (Figure 5.2.3 from 2016 Tautog Stock Assessment Update).



Attachment 1, Proposed Options.

Status Quo

	Minimum Length	Creel Limit	CT Days Open	NY Days Open
Spring Season	16”	4	30	0
Summer Season		2	62	0
Fall Season		4	58	71

Option 1 (20.3% Reduction)

	Minimum Length	Creel Limit	CT Days Open	NY Days Open
Spring Season	16”	3 (-1)	30	30 (+30)
Summer Season		2	62	0
Fall Season		3 (-1)	50 (-8)	60 (-11)

Option 2 (30.5% Reduction)

	Minimum Length	Creel Limit	CT Days Open	NY Days Open
Spring Season	17” (+1”)	4	30	30 (+30)
Summer Season		2	62	0
Fall Season		4	58	71

Option 3 (18.4% Reduction)

	Minimum Length	Creel Limit	CT Days Open	NY Days Open
Spring Season	16.5” (+.5”)	4	30	30 (+30)
Summer Season		2	62	0
Fall Season		4	53 (-5)	63 (-8)

Option 4 (22.5% Reduction)

	Minimum Length	Creel Limit	CT Days Open	NY Days Open
Spring Season	16”-19”	3 (-1)	30	30 (+30)
Summer Season	Slot	2	62	0
Fall Season	Limit	3 (-1)	58	71

Option 5 (23.6% Reduction)

	Minimum Length	Creel Limit	CT Days Open	NY Days Open
Spring Season	16”	3 (-1)	30	30 (+30)
Summer Season		2	62	0
Fall Season		3 (-1)	48 (-10)	57 (-14)

Option 6 (31.4% Reduction)

	Minimum Length	Creel Limit	CT Days Open	NY Days Open
Spring Season	16”-18” Slot Limit	4	30	30 (+30)
Summer Season		2	62	0
Fall Season		4	58	71

COMMONWEALTH of VIRGINIA

Marine Resources Commission
2600 Washington Avenue
Third Floor
Newport News, Virginia 23607

Molly Joseph Ward
Secretary of Natural Resources

John M.R. Bull
Commissioner

September 12, 2017

TO: Toni Kerns, ISFMP Director

FROM: Joe Cimino, Deputy Chief Fisheries Division, VMRC

RE: Amendment 1 to the Tautog FMP consideration for commercial seasonal changes

The Virginia Marine Resources Commission (VMRC) has restricted both the commercial and recreational fisheries in Virginia to make harvest reductions in recent years, such as those implemented because of Addenda V and VI. Once it is adopted, Amendment 1 will create the possibility for regional management options by setting regional targets for biological reference points. Some of the potential recreational options in the Amendment, or others currently being considered as conservationally equivalent, would result in a slight liberalization for Virginia. However, as a region, these options are projected to achieve a harvest reduction for the recreational fishery. Since Addendum VI regulations have been in place, Virginia's commercial landings have averaged 5% of the total DELMARVA landings (2012-2016 commercial and recreational landings combined). Below is a table that provides commercial landings for Virginia for April and May. Prior to the seasonal closure for May, the maximum amount of commercial landings was under 2,000 pounds for the month. Monthly harvest for April has exceeded 4,000 pounds, which is relevant to a May opening, given environmental and fisheries-related variability. Therefore, assuming a two-week opening at the beginning of May for Virginia, the VMRC would consider an additional 2,000 pounds of landings as a high-end estimate for the Technical Committee to incorporate into the region's F value.

Virginia Commercial Tautog Landings, by month (in pounds; May was closed to harvest in 2008)

Year	April	May
2000	1,662	1,881
2001	2,520	677
2002	3,047	1,159
2003	2,373	290
2004	4,014	156
2005	1,065	315
2006	2,282	385
2007	955	277
2008	1,231	
2009	2,124	
2010	2,649	
2011	3,831	
2012	4,174	
2013	1,928	
2014	4,123	
2015	1,599	
2016	1,684	
2017	2,501	

REVIEW OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
FISHERY MANAGEMENT PLAN FOR
TAUTOG
(Tautoga onitis)

2015 and 2016 Fishing Years

(January 1 – December 31)

Prepared by the Tautog Plan Review Team

Caitlin Starks, ASMFC, Chair
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Sabrina Lovell, NOAA

October 2017

2017 REVIEW OF THE
ASMFC FISHERY MANAGEMENT PLAN FOR
TAUTOG (*Tautoga onitis*)
Fishing Years 2015 and 2016

I. Status of Fishery Management Plan

Date of FMP Approval	March 1996
Amendments	None
Addenda	Addendum I (May 1997) Addendum II (November 1999) Addendum III (February 2002) Addendum IV (January 2007) Addendum V (August 2007) Addendum VI (March 2011, revised March 2012)
Stock Assessments	Benchmark: 1999, 2005, 2015 Update: 2011 (revised in 2012), 2016
Management Unit	US state waters from Massachusetts through North Carolina.
States with Declared Interest	Massachusetts Rhode Island Connecticut New York New Jersey Delaware Maryland Virginia
Active Boards/Committees	Tautog Management Board (Board) Tautog Plan Development Team (PDT) Tautog Plan Review Team (PRT) Tautog Technical Committee (TC) Tautog Stock Assessment Subcommittee (SAS) Tautog Advisory Panel (AP)

History of Management

Fishery Management Plan for Tautog

The FMP established the following goals and objectives:

Goals

- To perpetuate and enhance stocks of tautog through interstate fishery management so as to allow a recreational and commercial harvest consistent with the long term maintenance of self-sustaining spawning stocks.
- To maintain recent (i.e. 1982 – 1991) utilization patterns and proportions of catch taken by commercial and recreational harvesters.
- To provide for the conservation, restoration and enhancement of tautog critical habitat for all life history stages.
- To maintain a healthy age structure.
- To conserve the tautog resource along the Atlantic coast to preserve ecological benefits such as biodiversity and reef community stability, while maintaining the social and economic benefits of commercial and recreational utilization.

Objectives

- To establish criteria, standards, and procedures for plan implementation as well as determination of states' compliance with management plan provisions.
- To allow harvest that maintains spawning stock biomass in a condition that provides for perpetuation of self-sustaining spawning stocks in each spawning area, based on maintaining young-of-the-year indices, SSB, size and age structure, or other measures of spawning success at or above historical levels as established in the plan.
- To achieve compatible equitable management measures among jurisdictions throughout the fishery management unit.
- To enact management recommendations which apply to fish landed in each state, so that regulations apply to fish caught both inside and outside of state waters.
- To promote cooperative interstate biological, social, and economic research, monitoring and law enforcement.
- To encourage sufficient monitoring of the resource and collection of additional data, particularly in the southern portion of the species range, that are necessary for development of effective long-term management strategies and evaluation of the management program. Effective stock assessment and population dynamics modeling require more information on the status of the resource and the biology/community ecology of tautog than is currently available, in particular to facilitate calculation of F and stock trends.

- To identify critical habitats and environmental factors that support or limit long term maintenance and productivity of sustainable tautog populations.
- To adopt and promote standards of environmental quality necessary to the long term maintenance and productivity of tautog throughout their range.
- To develop strategies that reduce fishing mortality, restore size competition and the historical recreational/commercial split, consider ecological and socio-economic impacts and identify problems associated with the offshore fishery. Compatible regulations between the states and the EEZ are essential.

The FMP adopted a fishing mortality rate (F) target of 0.15 to rebuild the stocks and prevent overfishing; however, an interim target of 0.24 would apply for two years (1997–1998). States were required to implement state-specific, Board-approved plans to reduce F from the coastwide average of 0.58 (i.e., a 55% reduction), or an alternative state-specific F, if it could be demonstrated as equivalent. Recreational and commercial minimum size limits of 13" in 1997 and 14" beginning in 1998 were required. Tautog pots and traps were also required to have degradable fasteners on one panel or door.

Addendum I

Addendum I modified the FMP's compliance schedule to allow all states until April 1, 1998 to implement management measures to reach the interim F target. Several states were having difficulty determining a state-specific F to meet the original compliance schedule due to data deficiencies. In addition, the compliance schedule implemented the interim F target one year earlier in the area north of Delaware Bay (April 1, 1997) than further to the south (April 1, 1998). The addendum also delayed the implementation of management measures to achieve the permanent F target from April 1, 1999 to April 1, 2000. Finally, the Addendum included *de minimis* requirements and corrected several typographical errors in the FMP.

Addendum II

Addendum II further extended the compliance schedule to achieve the permanent F target until April 1, 2002 because the effects of the regulations to achieve the interim F target were uncertain. It also listed four issues to be considered in subsequent revisions of the FMP: (1) development of alternative F targets that will allow states to quantify harvest reductions associated with a variety of management approaches, (2) clarification of the F targets to be met by sector or overall state program, (3) monitoring requirements to improve fisheries and biological data collection, and (4) data requirements to analyze management options by fishing modes within commercial and recreational fisheries.

Addendum III and Technical Addendum I

Addendum III addressed the four issues listed in Addendum II. It adopted a new F target based on achieving 40% of the spawning stock biomass ($F_{40\%\ SSB}$), which was estimated at 0.29 (compared to the coastwide average F estimate of 0.41). The addendum required states to maintain current or more restrictive measures for 2002 and implement measures to achieve the new F target—a 48% reduction through restrictions in the recreational fishery only—by April 1, 2003. It also updated information on tautog habitat and established monitoring requirements to

support stock assessments. Technical Addendum 1 corrected a typographical error in Addendum III.

Addendum IV

Addendum IV established SSB target and threshold reference points based on a benchmark stock assessment completed in 2005. The target was set as the average SSB over 1982–1991, and the threshold at 75% of this value. It also set a new F target of 0.20 to initiate rebuilding. States were required to implement recreational management programs to achieve a 28.6% reduction in F relative to 2005 (and maintain existing commercial management programs) by January 1, 2008.

Addendum V

As individual states developed management proposals to comply with Addendum IV's mandated reduction in fishing mortality, it became apparent that commercial harvest of tautog had grown in proportion to the recreational fishery in some states. The Board approved Addendum V to give states flexibility for implementing reductions in their recreational *and/or* commercial fisheries to reach the fishing mortality target rate of F = 0.20 established in Addendum IV by January 1, 2008.

Addendum VI

Based on the 2011 stock assessment update indicating that tautog were still overfished and experiencing overfishing, Addendum VI reduced the F target to 0.15 to rebuild the stock. States were required to implement Board-approved regulations in their commercial and/or recreational fisheries to reduce harvest by 39%. The addendum also allowed for regional considerations if a state or group of states could demonstrate that the local F is below the rates indicated in the stock assessment update.

II. Status of Stocks

A benchmark stock assessment with data through 2013 was completed and peer-reviewed in 2014. The assessment proposed regional stock definitions based on life history characteristics and harvest patterns. While several stock structures were modeled, the Technical Committee preferred the following three-region breakdown: Southern New England (MA-CT), New Jersey-New York (NJ-NY), and Delaware-Maryland-Virginia (DMV). Each region was assessed independently using the statistical catch-at-age model ASAP.

The Board accepted the benchmark stock assessment for management use and initiated Draft Amendment 1 in May 2015 to develop regional management alternatives. To further develop a range of regional alternatives for Draft Amendment 1, the Board requested additional spatial resolution in the Mid-Atlantic region, specifically development of a separate assessment for Long Island Sound that includes Connecticut plus New York's north shore of Long Island (LIS), and an assessment for the rest of New York through New Jersey (NJ-NYB). ASAP assessments for these two regions were conducted in early 2016 and subsequently accepted for management use. This resulted in the northernmost region including only Maryland and Rhode Island (MARI).

In 2016 a stock assessment update was completed in which all four regions (MARI, LIS, NJ-NYB, and DMV) were updated incorporating landings and index data through 2015. **The assessment update indicated that all regions except MARI were overfished in 2015. It also found overfishing was occurring in the LIS and NJ-NYB regions in 2015**. Overfishing was not occurring in the MARI nor DMV regions, although F was still above the target in the MARI region. F was at the target in the DMV region. The current overfishing and overfished definitions for management use are shown in Table 1, and spawning stock biomass (SSB) for each region relative to the respective targets and thresholds are shown in Figures 1-4. It is important to note that the status determinations were made using SPR reference points for the MARI and DMV regions, and MSY reference points for the LIS and NJ-NYB regions.

III. Status of Assessment Advice

The current reference points for this fishery are based on a regional stock assessment update that includes data through 2015. The peer review panel in the 2005 and 2015 benchmark stock assessments advised a regional approach for tautog because of the potential for sub-stock structure; this species does not appear to make north-south migrations. The 2015 benchmark stock assessment peer review panel endorsed the use of estimates from the ASAP regional model and believes the new reference points should be used in conjunction with a regional management approach. The Board has approved the benchmark stock assessment and subsequent assessment updates for management use, but the regional reference points have not been adopted. Regional management alternatives are included in Draft Amendment 1, which went out for public comment in early 2017 and will be reviewed by the Tautog management board for approval in late 2017. The next assessment (update or benchmark) has not been scheduled.

IV. Status of the Fishery

Total Harvest

Between 1981 and 2016[1], the total coastwide harvest (recreational harvest + commercial landings) for tautog peaked at 17.8 million pounds in 1986. Landings have significantly declined, even before state regulations were implemented to restrict landings. Since the Tautog FMP was implemented in 1996, the highest total harvest was in 2002 at nearly 5.8 million pounds, which is about 32% of the historic peak. Total harvest during the managed period from 1996-2016 averaged 3.3 million pounds per year (Figure 6).

Recreational Harvest

Tautog is predominantly taken by the recreational fishery, which accounts for a consistent average of 90% of coastwide landings by weight from 1981 to 2016 (Table 2). Coastwide, anglers caught a historic high of 16.9 million pounds of tautog in 1986 (Figure 6, Table 2). However, 1986

[1] Systematic recreational data collection for tautog began in 1981, while commercial data exists back to 1950.

was a unique year in which recreational harvest in Massachusetts was unusually high. Since then, harvest has generally declined. The smallest harvests occurred in both 1998 and 2011, at 1.5 million pounds each year, which equal 9% of the historic high and 31% of the time series average. Recreational harvest increased from 2015 to 2016, with totals of 2.0 and 2.7 million lbs in each respective year. The time series average for recreational harvest from 1981-2016 is 4.7 million pounds per year. At the state level, Connecticut and New York anglers harvested the most tautog in 2015 and 2016, respectively (Tables 4 and 5).

Recreational live discards have generally increased relative to harvest over the time series. Prior to the FMPs implementation in 1996, discards were usually less than harvest, but since 1996 the estimated number of fish discarded annually has generally been 2-3 times greater than the harvested number (Table 4). In 2015 and 2016, live discards were 4.8 and 6 times the estimated harvest, respectively. Recreational discard mortality for tautog is estimated in the 2016 stock assessment update at 2.5%.

Commercial Landings

Historically, tautog was considered a "trash fish" until the late 1970s, when demand increased and directed fishery developed. Landings quickly rose, peaking in 1987 with nearly 1.2 million pounds, then quickly began to decline. In 1992, states began to implement regulations, which contributed to a decline in landings (Figure 7, Table 2). The value (dollars per pound) for tautog has increased since the late 1970s, coinciding with the increase of landings. In 2015, the value reached $3.76 per pound (Figure 7).

Commercial landings accounted for only 11% and 9% of all total landings coastwide in 2015 and 2016, respectively. Yet, in some states commercial landings were more significant; 2016 Massachusetts commercial landings made up 44.5% of total tautog landings by weight (Table 3). At the state level, New York's commercial tautog fishery landed the greatest amount in both 2015 and 2016, with Massachusetts landing the second greatest amount in these years (Table 6). Data on commercial discards are not available.

V. Status of Research and Monitoring

Addendum III requires all states to collect the following data to continue support of a coast-wide stock assessment: commercial and recreational catch estimates and 200 age and length samples per state, within the range of lengths commonly caught by the fisheries[2]. Table 9 lists number and source of samples collected by states in 2015 and 2016. A list of monitoring programs performed by each state is given below. Details of monitoring results are found in the state compliance reports.

[2] Addendum III also required a suitable time series of fisheries independent indices of abundance as determined by the Tautog Technical Committee; however the TC has not defined this and as such there are no fishery independent monitoring requirements

Massachusetts

Fishery-independent:

- Directed sampling of pots and rod and reel for age and growth parameters
- Spring and fall coast-wide resource assessment trawl surveys
- Saltonstall-Kennedy grant through NOAA Fisheries to evaluate the efficacy of a rod and reel survey for tautog; pilot study began in 2016 and will evaluate a rod and reel survey's ability to address limitations in generating reliable indices of abundance from our trawl survey
- Tautog samples also obtained in ventless trap survey that is used primarily to assess lobster

Fishery-dependent:

- Commercial landings data are collected at the trip level from harvesters and primary buyers
- Market sampling for length data

Rhode Island

Fishery-independent:

- Narragansett Bay monthly trawl survey
- Narragansett Bay beach seine survey
- RI coastal ponds beach seine survey

Fishery-dependent:

- Fall recreational fishery sampling for age and length
- Fish Pot Survey collects age data
- Commercial landings monitored by the Standard Atlantic Fisheries Information System (SAFIS). Recreational fishery monitored by Marine Recreational Information Program (MRIP) calculation methodology.

Connecticut

Fishery-independent:

- Tautog abundance monitored since 1984 via Connecticut's Long Island Sound Trawl Survey.

Fishery-dependent:

- Mandatory commercial fishery reporting requirements include monthly logbooks of daily fishing activity and sales from fishermen and monthly reports of individual purchase transactions from dealers; reported annually to the ACCSP SAFIS Data Warehouse

New York

Fishery-independent:

- Finfish Trawl Survey: since 1987 (except for 2005 and 2006, when there were no data) uses small-mesh trawls to sample 60 to 80 randomly chosen stations each month from May through October.
- Long Island Sound Tautog Study: 35 fish traps were deployed between June 16 and November 1, 2016 between Mattituck Inlet, Mattituck NY, and Rocky Point in East Marion, NY. Traps were placed near submerged rocks where blackfish would be expected to be found. Traps were checked and all fish measured weekly.

Fishery-dependent:

- Samples collected from commercial markets and dockside in April, May, July, September, October and November 2016; Age data used to obtain an age-length key.

New Jersey

Fishery-independent:

- Five near shore (within the 15 fathom isobath boundary) trawl surveys are conducted each year in January/February, April, June, August, and October. All tautog are weighed and measured, and catch per unit effort (CPUE) in number of fish per tow and biomass (kilograms) per tow is calculated each year.

Fishery-dependent:

- Ongoing biological data collection since 1993 with emphasis in recent years of encompassing the entire year and seasonality of the fishery while amassing length, weight, sex and age data.
- Sampling from the commercial fishery and the party/charter boat sector of the recreational fishery.
    - Sampling on the commercial vessels focus on the collection of live length, weight and sex data from fish retained for sale in the live fish market
    - Age data from undersize fish donated to onboard New Jersey Atlantic Coastal Cooperative Statistical Program (ACCSP) staff members for biological sampling.
    - From the recreational fishery, length, sex and age data are collected strictly from fish retained for harvest

Delaware

Fishery-independent:

- Delaware Bay and Inland Bay surveys from April through October
    - Juvenile 16 ft. trawl surveyconducted monthly from April through October
    - 30 ft. adult finfish abundance trawl conducted from March to December.

Fishery-dependent:

- Mandatory, fisherman-reported, monthly logbook submissions to the State of Delaware.

- 100 operculum bones were collected in the spring recreational season and 101 operculum bones were collected in the fall season for constructing age-length keys.

Maryland

Fishery-independent:

- Maryland Department of Natural Resources (MDNR) Coastal Bays Fishery Investigations (CBFI) Trawl and Beach Seine Survey.
  CBFI SAV Habitat Survey was conducted in Sinepuxent Bay in 2016

Fishery-dependent:

- Sampling for aging structures was conducted by hook and line during two charter boat trips in the spring of 2016.

Virginia

Fishery-independent:

- None

Fishery-dependent:

- Biological Sampling Program collects biological data (lengths, weights, otoliths) from Virginia's commercial and recreational fisheries.
- Samples are collected from commercial hook-and-line gear, haul seines, pots and traps, and pound nets.
- Virginia's recreational fishery participates in the MRIP biological sampling program, Virginia Game Fish Tagging Program, and VMRC Marine Sport Fish Collection Project.

VI. Status of Management Measures and Issues

Draft Amendment 1 was initiated by the Management Board in May 2015. The amendment updates the 1996 FMP with new fishery management principles and consolidates associated addenda into a single document. The document proposes regional management for tautog to address the overfishing stock status present in some regions. In addition, a commercial harvest tagging program is proposed to address an illegal, unreported and undocumented fishery that has persisted for more than a decade. If approved, Draft Amendment 1 would be the comprehensive management document for tautog management in state waters.

The amendment went out for public comment in June and July 2017. The Board will consider final approval of Draft Amendment 1 at the October 2017 meeting.

VII. Implementation of FMP Compliance Requirements

A. Submission of Compliance Report

All states in the tautog management unit submitted state compliance reports for fishing years 2015 and 2016.

B. De Minimis Status Requests

Addendum I established qualifications for *de minimis* status. A state must prove that its commercial landings in the most recent year for which data are available did not exceed the greater of 10,000 pounds or 1% of the coastwide commercial landings, whichever is greater. States must request *de minimis* status each year and requests for *de minimis* status will be reviewed by the PRT as part of the annual FMP review process.

A state that is granted *de minimis* status is still required to implement the 14" minimum size limit for the commercial fishery, the pot and trap degradable fastener provisions, and regulations in the commercial fishery that are consistent with those in the recreational fishery. If granted *de minimis* status, a state must continue to collect 200 age/length samples as required in Addendum III. *De minimis* status does not impact a state's compliance requirements in the recreational fishery.

The commercial landings threshold for *de minimis* status for both 2015 and 2016 is 10,000 pounds. The states of Delaware and Maryland qualify for and have requested continued *de minimis status* for the commercial sector. The PRT recommends that the Board approve the states of Delaware, Maryland, and North Carolina's requests.

C. Regulatory Requirements: 14" minimum size limit for recreational and commercial fisheries (FMP); degradable fasteners on one panel or door in fish pots and traps (FMP); and state-specific management programs to achieve the target F of 0.15 (Addendum VI).

State regulations are summarized in Tables 7 and 8. The PRT finds that each state has met the regulatory requirements and recommends that Board find all states in compliance with the regulatory requirements.

D. Biological Sampling Requirements: commercial and recreational catch estimates; and 200 age/length samples (Addendum III)

Most states collected 200 or more age/length samples in 2015 and 2016 as required by Addendum III (Table 9). Rhode Island fell short with 178 and 158 samples. Sampling is dependent on the donation of tautog racks from the recreational fishery, and sampling on board recreational charter vessels. Staff were unable to obtain 200 samples due to low participation of recreational fishers. Additionally, in 2016 the Fish Pot Survey ended early due to vessel problems and therefore only a limited number of samples were obtained.

The PRT finds that all states meet (or tried to meet) the intent of the Addendum III sampling requirements and recommends the Board find all states in compliance with the sampling requirements of the FMP .

As some states are unable to meet the 200 age/length sample requirement, the PRT suggests that the required number of samples should be proportional to a state's harvest up to 200 samples, rather than set at a fixed number.

The PRT recommends that the TC be tasked with evaluating the biological sampling needs to support continued regional stock assessments for tautog, and recommending any revisions to the biological sampling requirements.

VIII. Prioritized Research Needs

The Technical Committee identified the following research recommendations to improve the stock assessment and our understanding of tautog population and fishery dynamics. Research recommendations are organized by topic and level of priority. Research recommendations that should be completed before the next benchmark assessment are underlined. The Technical Committee will update these recommendations as part of the next benchmark stock assessment.

8.1 Fishery-Dependent Priorities

High

- Expand biological sampling of the commercial catch for each gear type over the entire range of the stock (including weight, lengths, age, sex, and discards).
- Continue collecting operculum from the tautog catch as the standard for biological sampling in addition to collecting paired sub-samples of otoliths and operculum.
- Increase catch and discard length sampling from the commercial and recreational fishery for all states from Massachusetts through Virginia.
- Increase collection of effort data for determining commercial and recreational CPUE.
- Increase MRIP sampling levels to improve recreational catch estimates by state and mode. Current sampling levels are high during times of the year when more abundant and popular species are abundant in catches, but much lower in early spring and late fall when tautog catches are more likely.

8.2 Fishery-Independent Priorities

High

- Conduct workshop and pilot studies to design a standardized, multi-state fishery independent survey for tautog along the lines of MARMAP and the lobster ventless trap survey.

- Establish standardized multi-state long-term fisheries-independent surveys to monitor tautog abundance and length-frequency distributions, and to develop YOY indices.

- Enhance collection of age information for smaller fish (<20 cm) to better fill in age-length keys.

8.3 Life History, Biological, and Habitat Priorities

Moderate

- Define local and regional movement patterns and site fidelity in the southern part of the species range. This information may provide insight into questions of aggregation versus recruitment to artificial reef locations, and to clarify the need for local and regional assessment.

- Assemble regional reference collections of paired operculum and otolith samples and schedule regular exchanges to maintain and improve the precision of age readings between states that will be pooled in the regional age-length keys.

- Calibrate age readings every year by re-reading a subset of samples from previous years before ageing new samples. States that do not currently assess the precision of their age readings over time should do so by re-ageing a subset of their historical samples.

Low

- Evaluate the potential impacts of climate change on tautog range, life history, and productivity.

- Conduct a tag retention study to improve return rates, particularly in the northern region.

- Define the status (condition and extent) of optimum or suitable juvenile habitats and trends in specific areas important to the species. It is critical to protect these habitats or to stimulate restoration or enhancement, if required.

- Define the specific spawning and pre-spawning aggregating areas and wintering areas of juveniles and adults used by all major local populations, as well as the migration routes used by tautog to get to and from spawning and wintering areas and the criteria or times of use. This information is required to protect these areas from damage and overuse or excessive exploitation.

- Define larval diets and prey availability requirements. This information can be used as determinants of recruitment success and habitat function status. Information can also be used to support aquaculture ventures with this species.

- Define the role of prey type and availability in local juvenile/adult population dynamics over the species range. This information can explain differences in local abundance, movements, growth, fecundity, etc. Conduct studies in areas where the availability of primary prey, such as blue mussels or crabs, is dependent on annual recruitment, the effect of prey recruitment variability as a factor in tautog movements (to find better prey fields), mortality (greater predation exposure when leaving shelter to forage open bottom), and relationship between reef prey availability/quality on tautog condition/fecundity.

- Define the susceptibility of juveniles to coastal/anthropogenic contamination and resulting effects. This information can explain differences in local abundance, movements, growth, fecundity, and serve to support continued or increased regulation of the inputs of these contaminants and to assess potential damage. Since oil spills seem to be a too frequent coastal impact problem where juvenile tautog live, it may be helpful to conduct specific studies on effects of various fuel oils and typical exposure concentrations, at various seasonal temperatures and salinities. Studies should also be conducted to evaluate the effect of common piling treatment leachates and common antifouling paints on YOY tautog. The synergistic effects of leaked fuel, bilge water, treated pilings, and antifouling paints on tautog health should also be studied.

- Define the source of offshore eggs and larvae (in situ or washed out coastal spawning).

- Confirm that tautog, like cunner, hibernate in the winter, and in what areas and temperature thresholds, for how long, and if there are special habitat requirements during these times that should be protected or conserved from damage or disturbance. This information will aid in understanding behavior variability and harvest availability.

8.4 Management, Law Enforcement, and Socioeconomic Priorities

Moderate

- Collect data to assess the magnitude of illegal harvest of tautog and the efficacy of the tagging program.

Low

- Collect basic sociocultural data on tautog user groups including demographics, location, and aspects of fishing practices such as seasonality.

Figures & Tables

Figure 1. Spawning Stock Biomass targets and thresholds for MARI region.
Source: 2016 ASMFC Tautog Stock Assessment Update.

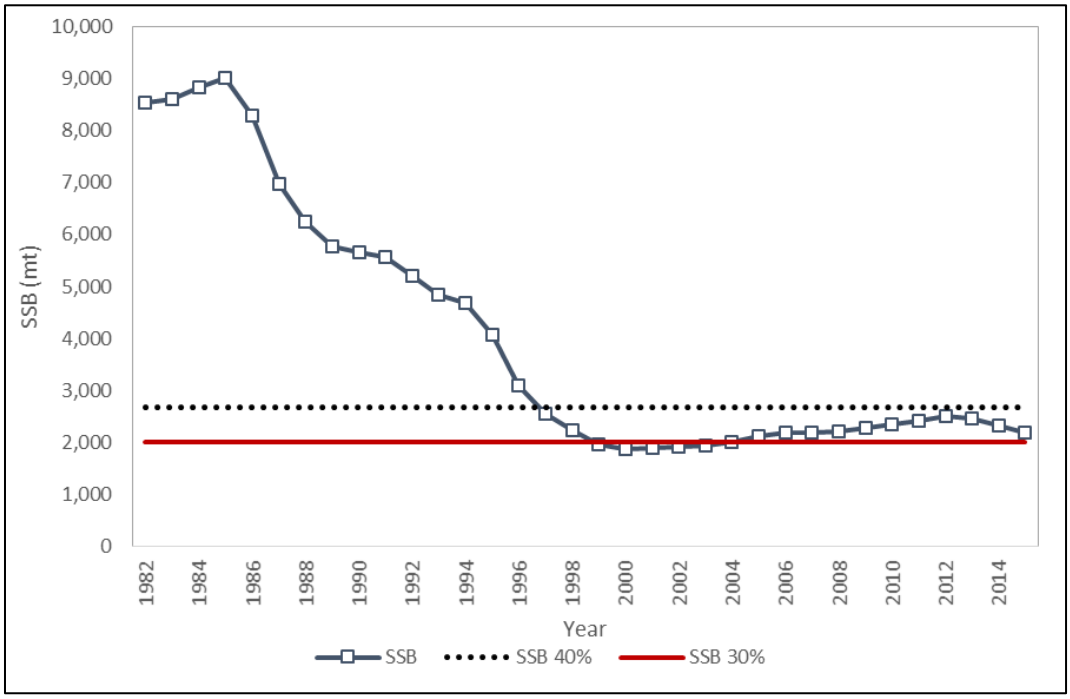

Figure 2. Spawning Stock Biomass targets and thresholds for LIS region.
Source: 2016 ASMFC Tautog Stock Assessment Update.

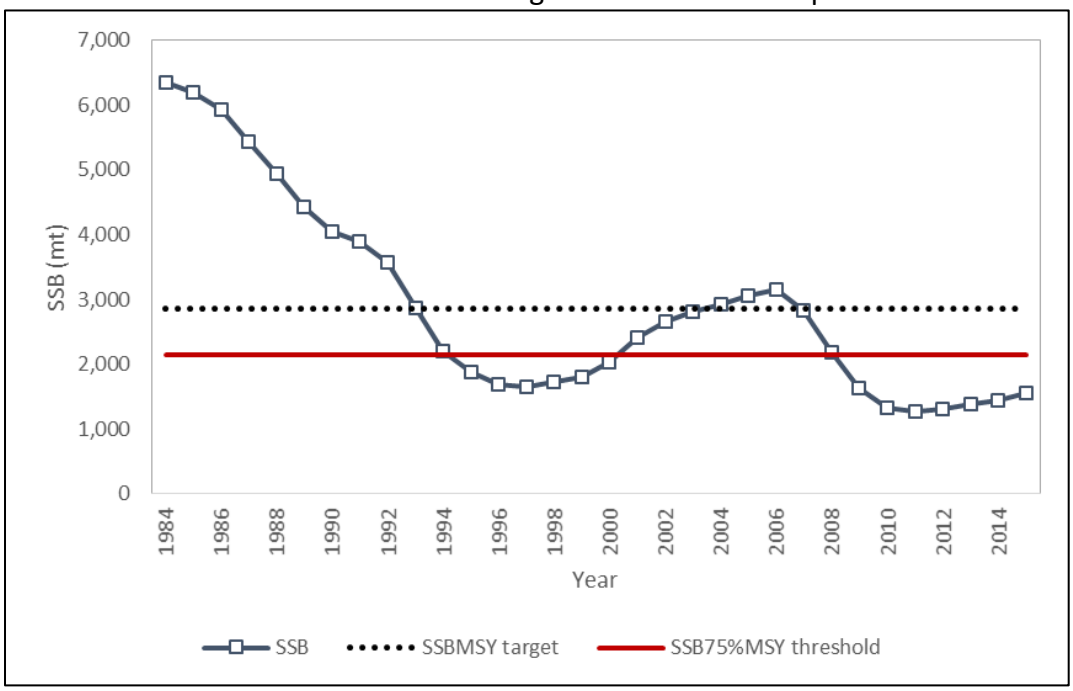

Figure 3. Spawning Stock Biomass targets and thresholds for NJ-NYB region.
Source: 2016 ASMFC Tautog Stock Assessment Update.

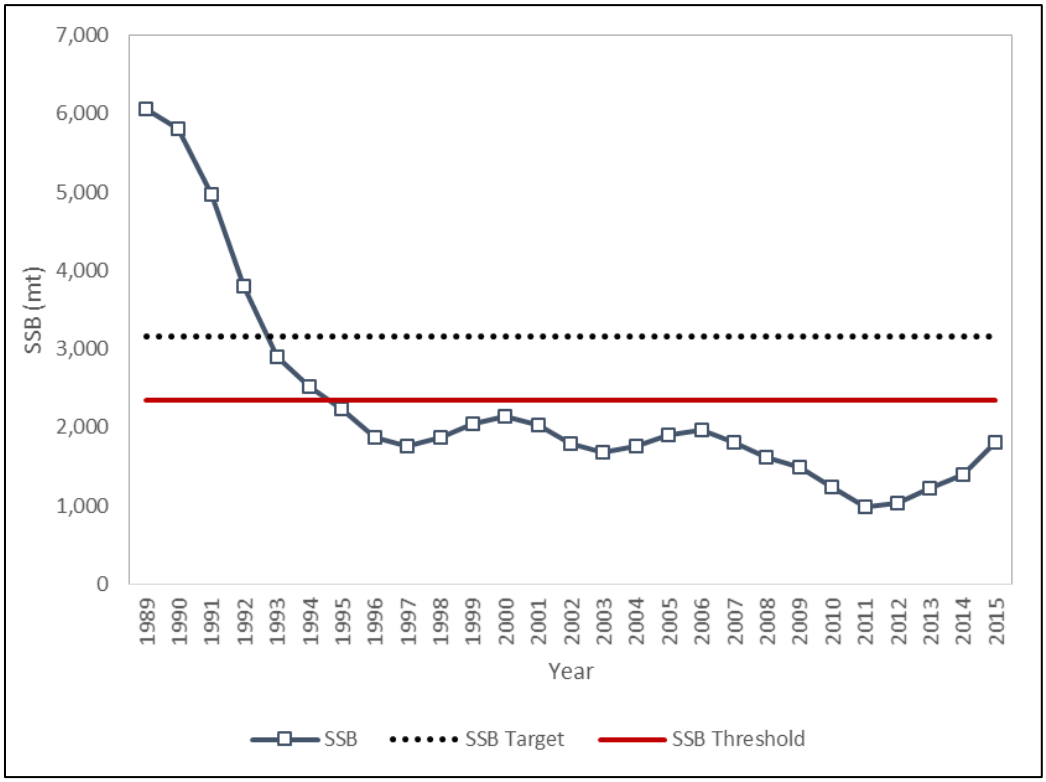

Figure 4. Spawning Stock Biomass targets and thresholds for DMV region.
Source: 2016 ASMFC Tautog Stock Assessment Update.

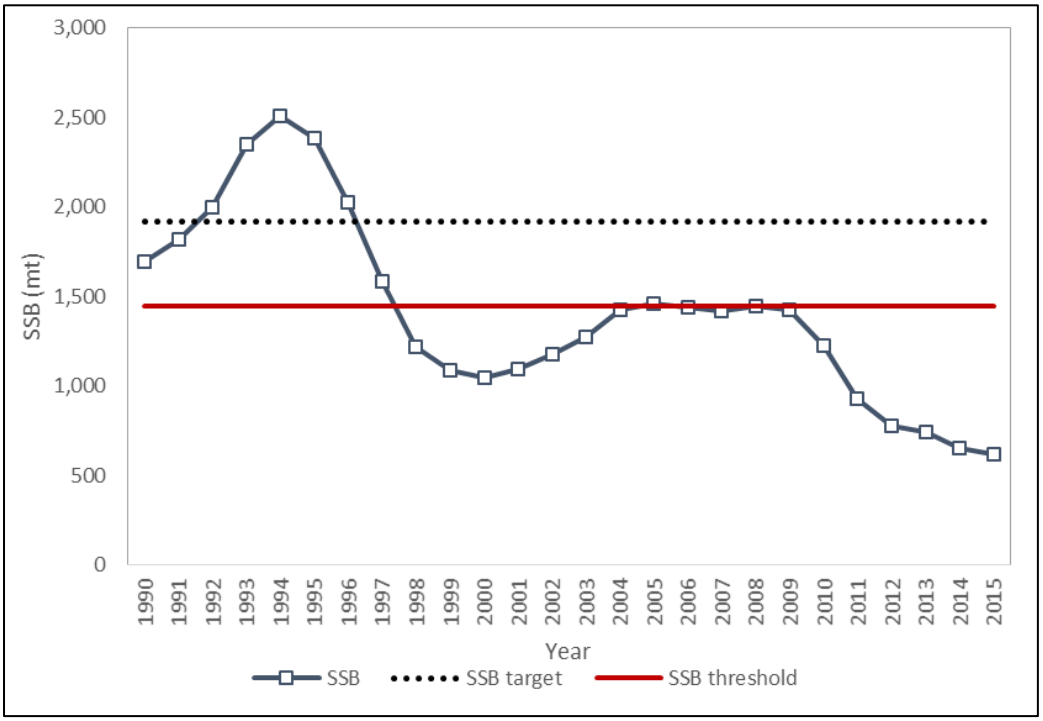

Figure 5. Recreational tautog harvest in 2015 and 2016 by wave.

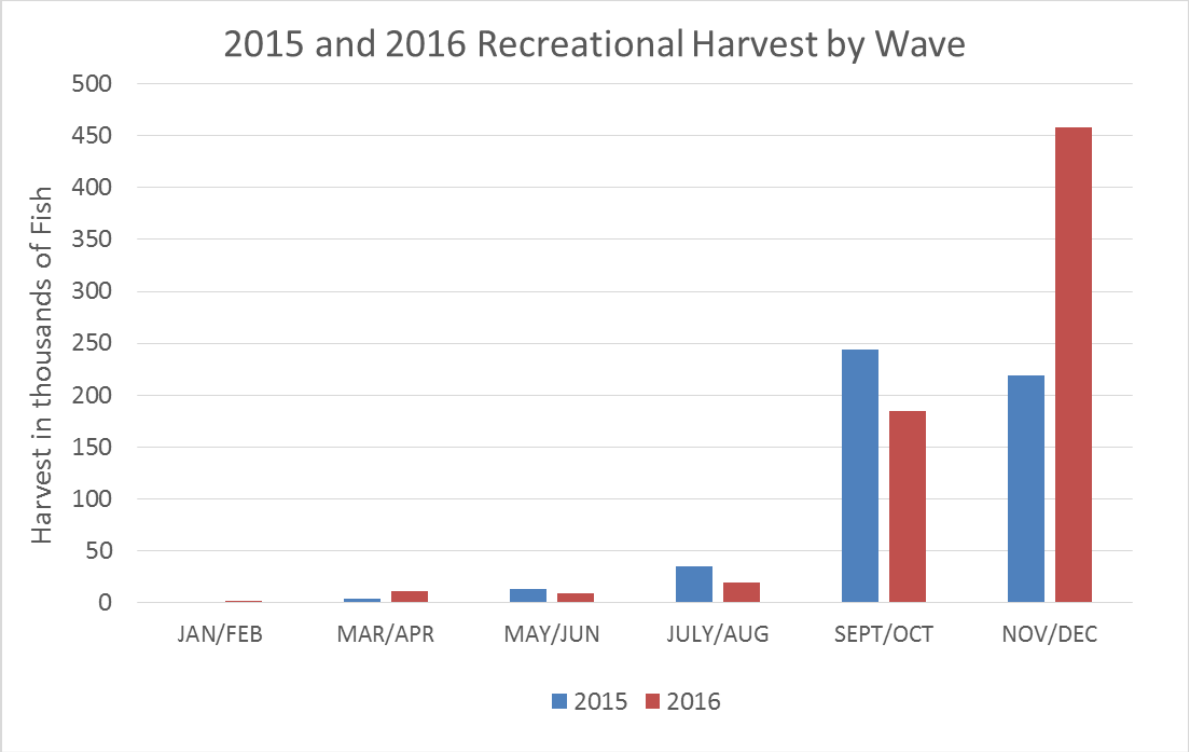

Figure 6. Total tautog harvest (recreational A+B1 and commercial, excluding discard). Source: NMFS, MRIP.

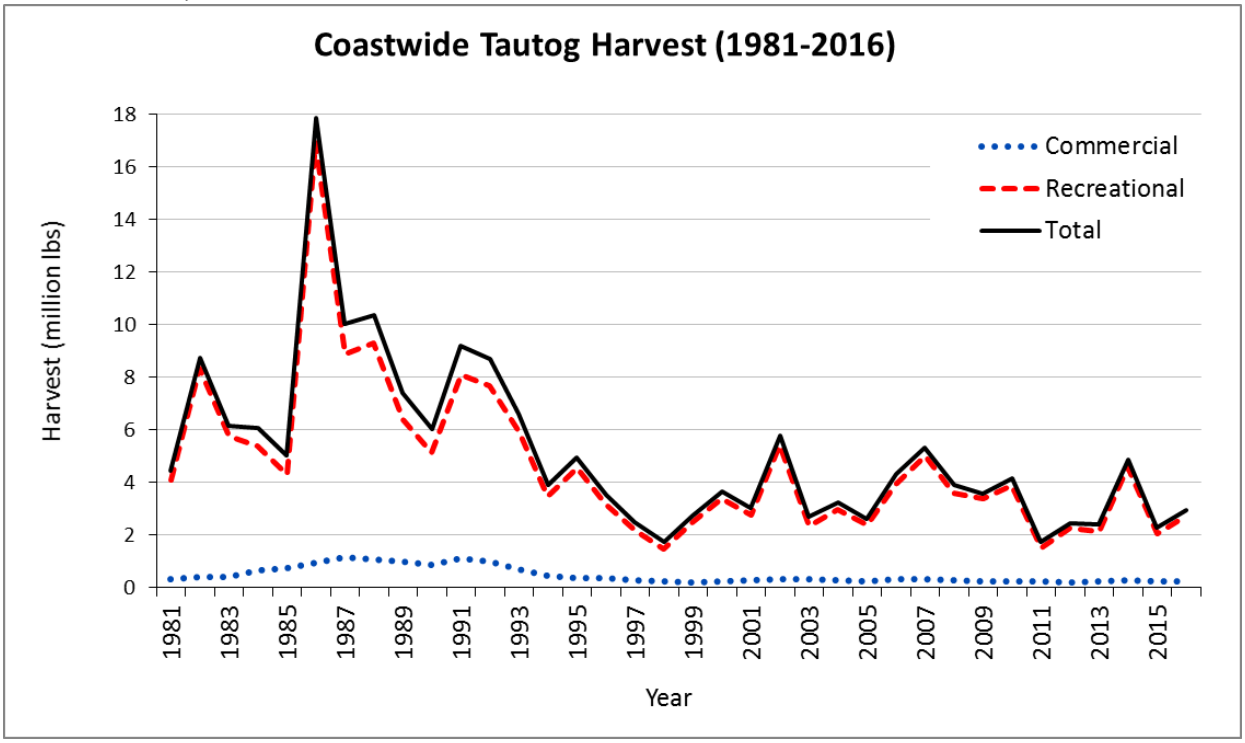

Figure 7. Changes in tautog commercial landings (lbs) and value ($/lb) over time.

Source: NMFS. Values unadjusted for inflation.

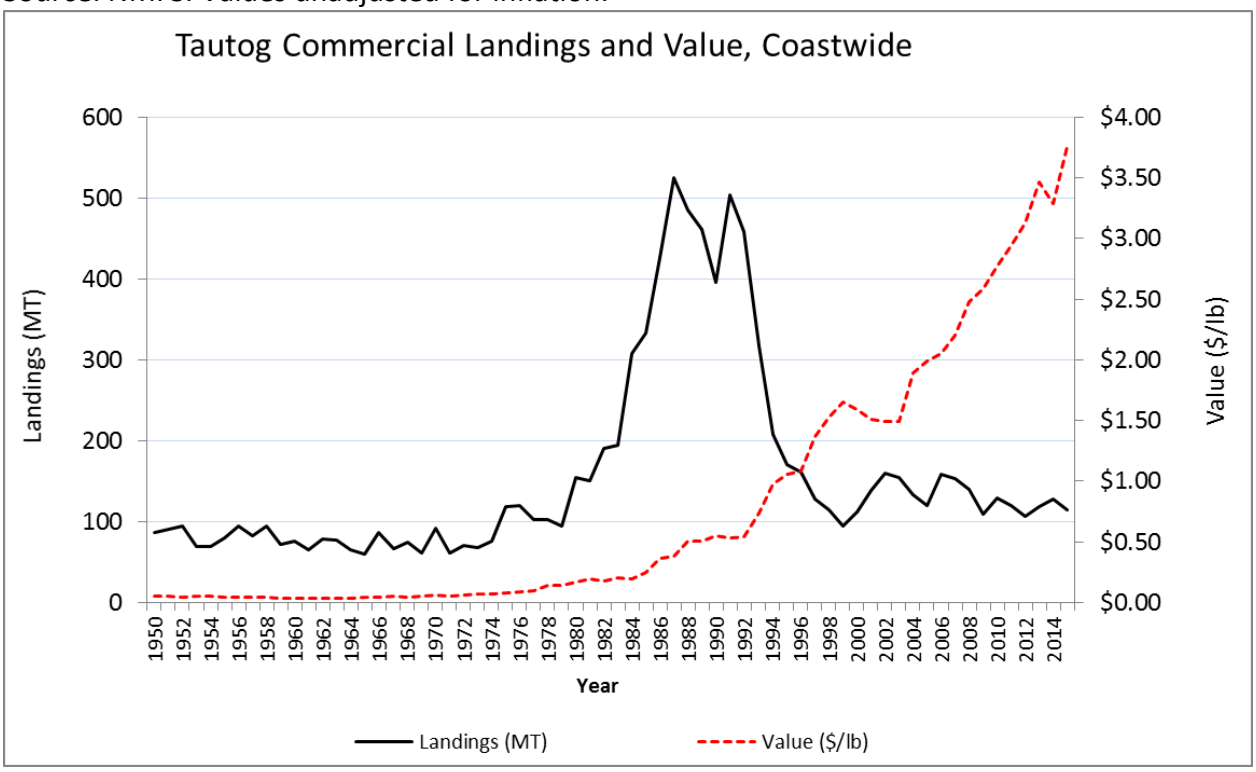

Table 1. Current fishing mortality and biomass targets and thresholds for each region. Source: 2016 Tautog Assessment Update (ASMFC).

Region	F_{target}	$F_{threshold}$	F_{3yravg}	SSB_{target}	$SSB_{threshold}$	SSB_{2015}	MSY or SPR	Status
MARI	0.28	0.49	0.23	3,631 mt	2,723 mt	2,196 mt	SPR	Not overfished, overfishing not occurring
LIS	0.28	0.49	0.51	2,865 mt	2,148 mt	1,603 mt	MSY	Overfished, overfishing
NJ-NYB	0.20	0.34	0.54	3,154 mt	2,351 mt	1,809 mt	MSY	Overfished, overfishing
DMV	0.16	0.24	0.16	1,919 mt	1,447 mt	621 mt	SPR	Overfished, overfishing not occurring

Table 2. Tautog recreational and commercial landings from 1981 – 2016, in pounds. Source: State Compliance Reports, NMFS, and ACCSP Data Warehouse.

Year	Commercial Landings (lbs)	Recreational Harvest, A + B1 (lbs)	Total Harvest (lbs)	%Recreational
1981	332,000	4,115,046	4,447,561	**92.5**
1982	419,656	8,337,959	8,757,614	**95.2**
1983	427,919	5,749,537	6,178,736	**93.1**
1984	677,615	5,381,193	6,058,808	**88.8**
1985	734,370	4,305,086	5,039,457	**85.4**
1986	941,012	16,906,397	17,847,409	**94.7**
1987	1,157,280	8,888,783	10,046,062	**88.5**
1988	1,071,017	9,301,700	10,372,717	**89.7**
1989	1,016,631	6,377,750	7,395,958	**86.2**
1990	873,510	5,156,175	6,029,685	**85.5**
1991	1,110,344	8,101,442	9,215,355	**87.9**
1992	1,012,176	7,671,225	8,683,401	**88.3**
1993	698,493	5,927,020	6,625,513	**89.5**
1994	459,529	3,468,112	3,927,641	**88.3**
1995	375,567	4,567,374	4,942,941	**92.4**
1996	357,434	3,184,899	3,542,335	**90.0**
1997	280,912	2,204,039	2,484,951	**88.7**
1998	254,186	1,479,761	1,733,948	**85.3**
1999	208,825	2,532,689	2,741,515	**92.4**
2000	247,456	3,398,349	3,645,804	**93.2**
2001	305,487	2,749,700	3,055,188	**90.0**
2002	351,451	5,431,146	5,782,596	**93.9**
2003	342,651	2,357,940	2,700,591	**87.4**
2004	299,602	2,959,167	3,250,218	**91.2**
2005	292,194	2,379,790	2,665,337	**90.2**
2006	349,602	3,923,886	4,312,596	**91.0**
2007	340,898	5,009,022	5,309,156	**94.4**
2008	310,896	3,589,421	3,909,229	**91.9**
2009	242,723	3,408,159	3,576,790	**95.3**
2010	286,724	3,885,106	4,192,231	**93.7**
2011	262,226	1,503,075	1,754,723	**85.8**
2012	213,854	2,248,763	2,419,740	**91.3**
2013	259,744*	2,158,564	2,408,672	**89.3**
2014	279,541**	4,608,252	4,878,458	**94.5**
2015	245,168	2,043,033	2,285,615	**89.4**
2016	268,425***	2,704,453	2,968,569	**91.1**

* 2013 commercial landings do not include data from Maryland, which was confidential.
**2014 commercial landings did not include Connecticut, which was confidential
***2016 commercial landings did not include Maryland, which was confidential

Table 3. Tautog landings by sector for 2015 and 2016: percent recreational (A + B1) and commercial based on weight.

	2015		2016	
State	**Commercial Landings (%)**	**Recreational (A+B1) (%)**	**Commercial Landings (%)**	**Recreational (A+B1) (%)**
MA	25.4	74.6	44.5	55.5
RI	11.1	88.9	13.0	87.0
CT	1.4	98.6	1.1	98.9
NY	23.1	76.9	10.4	89.6
NJ	3.3	96.7	3.1	96.9
DE	7.6	92.4	2.0	98.0
MD	8.5	91.5	confidential	confidential
VA	12.0	88.0	10.3	89.7
NC	3.4	96.6	1.0	99.0
Coastwide	11.1	88.9	9.0	91.0

Table 4. Recreational harvest (A+B1) and discards for tautog in number of fish, 1981-2016 (MRIP).

Year	MA	RI	CT	NY	NJ	DE	MD	VA	NC	Coastwide Total	Coastwide Live Discards (B2)
1981	228,736	233,508	100,308	721,062	132,271	3,457	4,670	236,768	3,072	1,663,852	386,614
1982	1,051,022	214,938	231,187	646,693	583,550	137,328	35,105	71,599	15,062	2,986,485	292,888
1983	670,508	245,796	200,676	612,163	344,580	4,350	2,126	579,795	36,549	2,696,543	676,332
1984	258,256	490,128	287,470	286,077	516,086	28,388	42,835	207,192	NA	2,116,431	647,963
1985	100,941	115,404	182,318	1,105,234	840,627	62,001	486	91,957	8,252	2,507,218	718,180
1986	1,980,719	671,592	333,396	1,183,114	2,369,852	141,290	5,476	322,905	12,660	7,021,003	1,103,147
1987	617,068	130,729	312,430	929,887	1,015,123	99,706	90,523	126,783	3,698	3,325,949	1,405,775
1988	621,679	207,799	234,198	828,183	564,286	94,491	107,570	368,320	4,462	3,030,988	1,244,947
1989	250,077	116,506	303,782	562,549	710,958	249,928	34,709	284,477	11,354	2,524,340	1,068,626
1990	233,444	153,433	75,871	953,622	841,770	61,526	45,467	111,998	3,428	2,480,562	1,237,775
1991	176,905	291,946	191,137	871,221	1,067,283	128,985	26,770	168,068	6,804	2,929,119	2,260,230
1992	357,949	193,786	319,221	413,236	1,018,205	68,769	106,255	100,952	5,249	2,583,621	1,607,758
1993	216,553	118,775	180,055	505,632	773,213	82,475	60,231	300,484	4,785	2,242,204	1,971,467
1994	78,483	82,304	150,109	196,937	208,003	65,837	157,260	231,740	2,271	1,172,942	1,480,320
1995	72,461	54,570	120,259	118,006	707,963	300,303	43,542	222,186	3,178	1,642,466	2,103,564
1996	79,798	55,528	72,558	82,826	470,431	57,751	9,695	224,447	6,605	1,059,640	1,158,157
1997	39,075	70,628	32,200	92,907	196,724	65,133	85,682	106,678	11,432	700,457	1,090,444
1998	25,034	56,084	66,797	68,887	11,667	62,584	6,512	50,923	9,487	357,975	1,398,973
1999	91,476	52,136	15,701	196,564	165,505	95,309	20,180	42,880	8,437	688,187	2,286,716
2000	87,552	38,687	10,648	79,245	462,371	113,686	20,129	34,725	5,555	852,596	1,731,884
2001	115,658	39,993	16,579	45,913	467,728	50,541	23,715	28,985	2,418	791,532	2,033,955
2002	102,662	62,423	100,240	629,772	347,831	185,684	42,038	25,987	4,514	1,501,153	3,177,322
2003	46,808	120,061	167,875	128,729	102,593	63,181	13,555	76,236	12,185	731,221	1,679,385
2004	21,816	124,419	16,464	278,749	90,214	70,608	8,690	150,703	9,137	770,799	1,739,740
2005	72,038	160,524	35,699	84,280	43,055	60,831	28,129	60,484	13,603	558,646	1,456,161
2006	79,639	81,611	200,708	246,882	200,725	111,028	14,894	105,137	1,234	1,041,857	2,648,386
2007	91,304	125,233	352,819	223,798	300,179	99,605	43,308	60,992	15,181	1,312,419	3,629,353
2008	34,237	103,760	167,179	318,899	172,518	101,735	19,128	56,384	689	974,528	2,495,079
2009	24,879	85,416	85,915	346,276	127,403	119,941	37,963	60,470	2,895	891,160	2,309,449
2010	45,743	197,062	116,058	145,663	374,599	56,505	57,338	127,221	3,720	1,123,910	2,878,417
2011	32,828	19,304	25,823	111,406	136,674	45,483	11,853	46,441	981	430,792	1,923,086
2012	24,796	104,425	194,101	61,508	37,611	46,570	5,356	13,920	9,936	498,222	2,021,177
2013	57,736	136,190	104,451	76,797	111,377	38,368	3,851	5,976	5,963	540,706	2,185,251
2014	100,297	68,768	318,201	300,399	169,879	50,467	494	25,917	3,997	1,038,419	4,066,058
2015	39,860	98,404	125,819	99,119	157,008	7,483	2,988	11,540	2,014	544,235	2,579,952
2016	24,243	86,528	165,315	270,944	83,466	30,032	1,870	17,127	1,517	681,042	4,105,503

Table 5. Recreational harvest (A + B1) for tautog in pounds, by state, 1981-2016.
Source: MRFSS/MRIP, State Compliance Reports.

Year	MA	RI	CT	NY	NJ	DE	MD	VA	NC
1981	790,610	664,568	242,337	1,496,039	161,423	6,584	10,296	742,653	536
1982	3,226,868	777,930	610,608	1,674,949	1,241,155	428,036	90,645	271,919	15,849
1983	1,837,262	615,595	458,582	1,124,844	414,957	4,437	6,551	1,267,165	20,144
1984	733,876	1,809,822	733,710	541,805	717,261	95,740	79,110	669,869	NA
1985	328,041	277,384	471,185	2,034,903	741,656	144,859	1,107	298,797	7,154
1986	7,862,584	2,042,584	838,346	2,833,208	2,132,571	264,744	10,049	918,138	4,173
1987	1,751,372	507,424	1,106,606	2,288,076	2,130,955	387,075	266,094	442,751	8,430
1988	2,255,930	612,123	610,171	2,380,285	1,331,833	249,803	446,947	1,410,003	4,605
1989	1,076,366	296,889	1,038,217	1,018,015	1,289,185	743,339	78,391	806,336	31,012
1990	895,327	389,579	200,000	1,980,289	1,256,488	142,627	59,720	229,442	2,703
1991	798,889	1,007,549	648,634	2,352,646	2,189,144	354,498	106,223	619,214	24,645
1992	1,668,485	656,712	1,048,639	1,199,558	2,485,693	183,854	159,730	255,995	12,559
1993	752,598	389,733	531,023	1,800,794	1,361,612	217,881	105,231	758,410	9,738
1994	373,189	328,668	417,438	585,037	330,551	152,033	177,358	1,101,130	2,708
1995	309,224	237,093	402,616	369,643	1,722,713	793,339	115,993	613,348	3,405
1996	397,284	248,840	245,816	193,045	1,123,174	158,751	26,483	778,315	13,191
1997	166,042	301,109	84,297	331,529	483,639	204,419	182,995	391,258	58,751
1998	96,695	316,339	231,622	208,743	41,431	257,348	27,648	273,515	26,420
1999	363,471	223,763	61,142	761,446	511,673	358,328	37,677	203,249	11,940
2000	442,816	203,602	58,475	258,100	1,812,960	373,581	56,126	188,187	4,502
2001	502,247	165,380	63,157	171,927	1,482,613	159,961	72,357	127,555	4,503
2002	521,611	265,116	447,140	2,135,221	1,184,560	652,007	104,246	116,797	4,448
2003	221,843	479,345	603,861	315,384	164,327	200,618	43,212	308,838	20,512
2004	104,513	682,329	77,219	965,837	276,724	243,467	21,633	553,866	33,579
2005	376,624	815,377	148,564	310,961	145,311	221,132	89,237	242,590	29,994
2006	296,636	380,140	842,213	782,424	734,509	406,336	47,463	430,157	4,008
2007	349,950	635,094	1,383,278	823,475	1,065,237	301,005	144,111	246,827	60,045
2008	106,871	491,403	715,317	1,094,903	518,813	365,619	62,710	232,557	1,228
2009	70,806	322,955	305,077	1,478,263	414,249	400,120	130,369	268,314	18,006
2010	163,057	918,693	409,370	508,487	1,044,598	151,793	201,769	477,734	9,605
2011	129,669	80,300	88,728	450,171	381,449	152,899	33,859	184,445	1,555
2012	94,699	534,716	982,891	252,745	133,048	171,329	17,670	49,988	11,677
2013	197,775	629,896	389,918	355,232	395,539	138,051	18,681	23,836	9,636
2014	399,812	297,955	1,643,470	1,365,338	579,934	187,915	3,004	121,352	9,472
2015	181,119	376,395	512,650	373,240	508,685	25,580	11,897	50,787	2,680
2016	72,342	338,501	705,146	1,162,729	262,665	100,253	7,708	52,236	2,873

Table 6. Commercial landings for tautog in pounds, by state, 1981-2016.

Source: personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, Silver Spring, MD (commercial 1981 – 2009) and ACCSP Data Warehouse (2010). States are sorted from north to south.

Year	MA	RI	CT	NY	NJ	DE	MD	VA	NC
1981	102,900	69,800	20,500	81,400	54,400	1,000	1,200	700	na
1982	69,300	86,300	21,200	90,400	148,200	800	100	2,600	656
1983	57,600	142,600	33,500	88,400	100,600	800	na	1,700	319
1984	68,100	334,700	32,700	102,500	129,700	1,400	2,600	1,200	4,715
1985	63,300	403,200	50,100	84,500	125,500	3,200	2,400	1,639	531
1986	165,800	363,100	104,200	201,300	100,700	300	2,600	1,800	1,006
1987	250,000	420,500	159,200	225,200	95,200	500	3,800	2,700	80
1988	277,100	328,900	112,100	255,000	88,000	600	6,100	2,800	214
1989	352,100	214,800	99,700	285,400	51,900	500	4,000	7,500	531
1990	289,074	211,084	82,008	181,543	99,112	500	3,954	5,151	1,079
1991	354,346	371,597	54,000	226,413	93,022	1,300	3,164	5,058	1,211
1992	292,291	359,767	65,700	169,011	116,332	200	4,058	4,389	424
1993	160,336	201,593	86,064	89,467	153,474	300	1,432	5,423	351
1994	37,062	130,719	43,000	71,375	162,641	400	1,718	11,441	1,134
1995	35,298	94,989	20,466	72,879	115,970	600	4,416	30,020	929
1996	32,579	64,817	33,327	105,466	89,435	1,599	3,622	26,137	452
1997	64,240	39,601	14,519	78,228	49,726	841	7,663	25,471	623
1998	91,319	20,304	6,905	68,892	42,426	1,715	5,682	14,770	2,173
1999	75,619	26,090	12,961	37,886	27,307	844	6,489	20,901	728
2000	96,001	43,719	8,504	39,953	39,636	272	3,896	14,794	674
2001	84,330	56,065	22,259	62,795	60,152	287	4,591	14,587	414
2002	148,073	50,007	26,781	60,805	36,605	629	5,010	22,834	705
2003	86,205	56,749	40,784	72,264	66,766	3,816	5,213	10,705	98
2004	88,192	36,581	26,037	76,606	49,910	3,064	6,049	13,079	84
2005	99,344	42,838	24,053	52,525	61,163	2,210	4,338	5,667	56
2006	147,609	46,629	16,841	68,432	55,532	433	5,411	8,533	47
2007	95,820	63,428	30,002	73,787	62,979	2,814	3,293	8,588	187
2008	73,867	48,024	20,160	88,552	63,958	2,253	2,942	10,946	194
2009	54,703	50,896	20,298	87,289	14,591	2,116	1,638	11,132	61
2010	75,317	44,054	16,484	92,487	49,213	1,770	1,285	6,081	34
2011	57,787	47,427	14,205	82,534	42,125	2,192	1,333	14,590	28
2012	67,870	50,127	5,638	69,786	4,112	1,444	1,040	49,983	227
2013	69,686	53,433	5,886	110,680	7,662	415	confid	11,776	206
2014	63,191	53,384	confid	121,538	31,665	1,071	1,147	7,545	137
2015	61,752	47,137	7,250	111,925	17,219	2,107	1,103	6,937	94
2016	58,095	50,686	7,558	135,487	8,486	2,083	confid	5,884	30

Table 7. State recreational regulations implemented for tautog in the 2015 and 2016 fishing years.

STATE	SIZE LIMIT (inches)	POSSESSION LIMITS (number of fish/ person/ day)	OPEN SEASONS (dates inclusive)
Massachusetts	16”	3	Jan 1 – Dec 31
Rhode Island	16”	3 3	Apr 15 – May 31 Aug 1 – Oct 15
		6 (up to 10 per vessel)	Oct 16- Dec 15 (private)
		6	Oct 20 – Dec 15 (party, charter)
Connecticut	16”	2 2 ~~4~~	Apr 1-Apr 30 July 1 – Aug 31 Oct 10 – Dec 6
New York	16”	~~4~~	Oct 5 – Dec 14
New Jersey	15”	~~4~~ ~~4~~ 1 6	Jan 1 – Feb 28 Apr 1 – Apr 30 Jul 17 – Nov 15 Nov 16 – Dec 31
Delaware	15”	5 3 5 5	Jan 1 – Mar 31 Apr 1 – May 11 July 17 – Aug 31 Sept 29 – Dec 31
Maryland	16”	~~4~~ 2 ~~4~~	Jan 1- May 15 May 16 – Oct 3 Nov 1 – 26
Virginia	16"	3	Jan 1 - Apr 30 Sept 20 - Dec 31

Table 8. State commercial regulations implemented for tautog in the 2015 and 2016 fishing years.

STATE	SIZE LIMIT	POSSESSION LIMITS (number of fish)	OPEN SEASONS	QUOTA (pounds)	GEAR RESTRICTIONS
Massachusetts	16”	40	April 16-28% Quota Sept 1-100% of Quota*	54,984, 57,985	Mandatory pot requirements. Limited entry and area/time closures for specific gear types.
Rhode Island	16”	10	Apr 15 - May 31 Aug 1 - Sept 15 Oct 15 - Dec 31	51,348**	Harvest allowed by permitted gear types only.
Connecticut	16”	4 (restricted licenses) 10 (all other)	Apr 1- Apr 30 Jul 1 - Aug 31 Oct 8 - Dec 24	-	Mandatory pot requirements.
New York	15”	25 (10 fish w/ lobster gear and when 6 lobsters are in possession)	Jan 1 - Feb 28 Apr 8 –Dec 31	-	Mandatory pot requirements. Gill or trammel net is prohibited.
New Jersey	15”	*> 100 lbs requires directed fishery permit*	Jan 1 - 15 June 11 - 30 Nov 9 - Dec 31	103,000	Mandatory pot requirements.
Delaware	15”	5 3 5 5	Jan 1 - Mar 31 Apr 1 - May 11 July 17 - Aug 31 Sept 29 - Dec 31	-	Mandatory pot requirements.
Maryland	16”	4 2 4	Jan 1- May 15 May 16 - Oct 31 Nov 1 - 26	-	Mandatory pot requirements.
Virginia	15”	-	Jan 1 – Jan 21 Mar 1 – Apr 30 Nov 1 – Dec 31	-	Mandatory pot requirements. Pots prohibited in tidal waters.

* Massachusetts’ spring open season closes when the Director projects that 28% of the quota is taken, and fall season closes when the Director projects 100% of the quota is taken.

** Rhode Island’s quota of 51,438 lbs is divided equally among the three sub-periods.

Table 9. Number of age/length samples by state in 2015 and 2016. Addendum III requires all states to collect 200 samples per year. Source: State compliance reports

State	2015 Samples	2016 Samples	Sample Sources
MA	553	779	Fishery independent pot, rod and reel, and trawl surveys, ventless trap survey for Lobster
RI	178	158	Recreational fishery sampling, RIDFW Fish Pot Survey
CT	318	276	Long Island Sound Trawl Survey
NY	256	232	Commercial markets and dockside sampling
NJ	425	621	Recreational fishery, commercial sampling and NJ Bureau of Marine Fisheries Ocean Trawl Survey
DE	200	201	Recreational sampling
MD	200	200	Coastal Bays Fishery Investigations Trawl and Beach Seine Survey
VA	491	221	Commercial sampling and Marine Sport Fish Collection Project