Atlantic States Marine Fisheries Commission

Shad & River Herring Management Board

October 22, 2012
3:15 – 5:15 p.m.
Philadelphia, Pennsylvania

Draft Agenda

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

1.	Welcome/Call to Order *(M. Duval)*	3:15 p.m.
2.	Board Consent • Approval of Agenda • Approval of Proceedings from August 7, 2012	3:15 p.m.
3.	Public Comment	3:20 p.m.
4.	Review of NOAA Fisheries Possible Endangered Species Act Listing of River Herring (*K. Taylor)* **Possible Action**	3:30 p.m.
5.	Update on NEFMC Amendments 4/5 and MAFMC Amendment 14 *(K. Taylor)*	4:10 p.m.
6.	Review of MAFMC Amendment 15 Scoping Document *(K. Taylor)* **Action**	4:20 p.m.
7.	Review and consider approval of American Shad and River Herring Sustainable Fishing Plans **Action** • Technical Committee Report *(L. Miller)*	4:45 p.m.
8.	Consider FMP Review and State Compliance *(K. Taylor)*	5:05 p.m.
9.	Other Business/Adjourn	5:15 p.m.

The meeting will be held at the Radisson Plaza Warwick Hotel 220 South 17th Street, Philadelphia, PA (215) 735-6000

MEETING OVERVIEW

Shad & River Herring Management Board Meeting
October 22, 2012
3:15 – 5:15 p.m.
Philadelphia, Pennsylvania

Chair: Michelle Duval (NC) Assumed Chairmanship: 02/12	Technical Committee Chair: Larry Miller (USFWS)	Law Enforcement Committee Representative: Bridi/Thumm
Vice Chair: Terry Stockwell (ME)	Advisory Panel Chair: Pam Lyons Gromen	Previous Board Meeting: August 7, 2012
Voting Members: ME, NH, MA, RI, CT, NY, NJ, PA, DE, MD, DC, PRFC, VA, NC, SC, GA, FL, NMFS, USFWS (19 votes)		

2. Board Consent

- Approval of Agenda
- Approval of Proceedings from August 7, 2012

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. Review of NOAA Fisheries Possible Endangered Species Act Listing of River Herring (3:30 – 4:10 p.m.)

Background

- In August 2011 the National Resources Defense Council petitioned NOAA Fisheries to list alewife and blueback herring (river herring) as threatened under the Endangered Species Act throughout all or a significant portion of its range. Alternatively, the petition requests designation of distinct population segments (DPSs) of alewives and blueback herring and list each DPS as a threatened species.
- In November, NOAA Fisheries released a positive 90-day finding on the petition to list river herring under the ESA based on the fact that the petition presents substantial scientific information indicating the petitioned action may be warranted.
- In June and July 2012 NOAA Fisheries conducted a series of workshops to gather more information on the status and threats to river herring. The workshops focused on stock structure, extinction risk, and the potential impact of climate change.

Presentations

- Update on timeline for ESA status review of river herring by K. Taylor

5. Update on NEFMC Amendment 4/5 and MAFMC Amendment 14 (4:10 – 4:20 p.m.)

Background

- NEFMC Amendment 5 included management alternatives to mitigate and monitor shad and river herring bycatch in the Atlantic herring fishery. The Amendment has been submitted for final approval by NMFS. The management measures could be in place by early 2013.
- MAFMC Amendment 14 included management alternatives to mitigate and monitor shad and river herring bycatch in the squid, mackerel, and butterfish (SMB) fishery. The Amendment has been submitted for final approval by NMFS.
- In August the U.S. District Court issued a remedial order to address deficiencies in Amendment 4 to the Atlantic Herring FMP. In response NOAA Fisheries sent a letter to the NEFMC for their consideration of adding shad and river herring as a stock in the Atlantic herring fishery **(Briefing CD).**

Presentations

- Update on Council Amendments by K. Taylor

6. Review of MAFMC Amendment 15 Scoping Document (4:20 – 4:45 p.m.) Action

Background

- MAFMC has initiated the development of Amendment 15 to the SMB FMP to consider adding shad and river herring as a stock in the fishery.

Presentations

- Review of Scoping Document by K. Taylor

Board actions for consideration

- Discuss and develop comments on the Scoping Document

7. Review and consider approval of American shad and River Herring Sustainable Fishing Plans (4:45 – 5:05 p.m.)

Background

- Massachusetts, Connecticut, and Virginia have submitted sustainable fishing plans for American shad and Rhode Island has submitted a SFMP for river herring.
- The Technical Committee met in October to review the plans.

Presentations

- Overview of SFMPs by K. Taylor
- Technical Committee report by L. Miller

8. Fishery Management Plan Review (5:05 – 5:15 p.m.)

Background

- State Compliance Reports are due on July 1, 2010
- The Plan Review Team reviewed each state report and compiled the annual FMP Review

Presentations

- Overview of the FMP Review Report by K. Taylor
- Technical Committee report by L. Miller

Board actions for consideration

- Approve 2012 FMP Review and State Compliance Reports

8. Other Business/Adjourn

DRAFT PROCEEDINGS OF THE

ATLANTIC STATES MARINE FISHERIES COMMISSION

SHAD AND RIVER HERRING MANAGEMENT BOARD

Crowne Plaza Hotel - Old Town
Alexandria, Virginia
August 7, 2012

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ATTENDANCE

Board Members

Terry Stockwell, ME, proxy for P. Keliher (AA)
Steve Train, ME (GA)
Doug Grout, NH (AA)
Rep. David Watters, NH (LA)
G. Ritchie White, NH (GA)
Mike Armstrong, MA, proxy for P. Diodati (AA)
Bill Adler, MA (GA)
Jocelyn Cary, MA, proxy for Rep. Peake (LA)
Bob Ballou, RI (AA)
Rep. Peter Martin, RI (LA)
Bill McElroy, RI (GA)
David Simpson, CT (AA)
Lance Stewart, CT (GA)
James Gilmore, NY (AA)
Brian Culhane, NY, proxy for Sen. Johnson (LA)
Pat Augustine, NY (GA)
Russ Allen, NJ, proxy for D. Chanda (AA)
Adam Nowalsky, NJ, proxy for Asm. Albano (LA)
Loren Lustig, PA (GA)
Mitch Feigenbaum, PA, proxy for Rep. Schroder (LA)
Leroy Young, PA, proxy for J. Arway (AA)
John Clark, DE, proxy for D. Saveikis (AA)
Bernie Pankowski, DE, proxy for Sen. Venables (LA)
Roy Miller, DE (GA)
Tom O'Connell, MD (AA)
Russell Dize, MD, proxy for Sen. Colburn (LA)
Bill Goldsborough, MD (GA)
Jack Travelstead, VA (AA)
Kyle Schick, VA, proxy for Sen. Stuart (LA)
Cathy Davenport, VA (GA)
Michelle Duval, NC, proxy for L. Daniel (AA)
Mike Johnson, NC, proxy for Rep. Wainwright (LA)
Bill Cole, NC (GA)
Ross Self, SC, proxy for R. Boyles (LA)
Spud Woodward, GA (AA)
Aaron Podey, FL (AA)
Daniel Ryan, D.C.
Jaime Geiger, USFWS
A.C. Carpenter, PRFC
Steve Meyers, NMFS

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

Ex-Officio Members

Pam Lyons Gromen, Advisory Panel Chair

Staff

Bob Beal
Kate Taylor
Danielle Chesky
Toni Kerns

Guests

Jeff Kaelin, Lund's Fisheries
Raymond Kane, CHOIR
Amy Roe, Sierra Club
Lindsey Fullencamp, NOAA
Theresa Labriola, Pew Environ. Group
Jud Crawford, Pew Charitable Trusts
Fred Akers, Great Egg Harbor River Council
Kristin Cevoli, Herring Alliance/PEG
Patrick Paquette, Hyannis, MA

The Shad and River Herring Management Board of the Atlantic States Marine Fisheries Commission convened in the Presidential Ballroom of the Crowne Plaza Hotel, Alexandria, Virginia, August 7, 2012, and was called to order at 4:30 o'clock p.m. by Chairman Michelle Duval.

CALL TO ORDER

CHAIRMAN MICHELLE DUVAL: All right, if members of the Shad and River Herring Board could please take their seats, the first item is approval of the agenda.

APPROVAL OF AGENDA

CHAIRMAN DUVAL: I am not aware of any additions to the agenda at this point. Are there any additions to the agenda from board members? Seeing none, the agenda stands approved.

APPROVAL OF PROCEEDINGS

CHAIRMAN DUVAL: The next item is approval of our proceedings from May 1, 2012. Are there any changes to the proceedings? Seeing none, those proceedings stand approved.

PUBLIC COMMENT

CHAIRMAN DUVAL: This is the point in our agenda where we accept public comment for items that are not on the agenda. I think Kate checked the public comment and there was nobody signed up speak, but at this time are there any members of the public who wish to address the board with regard to items that are not on the agenda? Seeing none, we will continue moving forward.

UPDATE ON NEFMC AMENDMENT 5 AND MAFMC AMENDMENT 14

CHAIRMAN DUVAL: The first thing we're going to do is have Kate give us an update on both the New England and Mid-Atlantic Council amendments that we had previously submitted comments on.

MS. KATE TAYLOR: The Herring Section was briefed this morning on the New England Council update. For the remainder of the board members, in June the New England Council met to determine the final recommendations in Amendment 5. In the category of FMP adjustments, the council recommended expanded possession limits so that all vessels working cooperatively are subject to the most restricted possession limit.

There were requirements for pre-trip and pre-landing notifications and a requirement for federal dealers to accurately weigh all fish and document how composition of mixed catches are estimated. Under the catch monitoring program in Amendment 5, 100 percent at-sea observer coverage for Category A and B vessels was required, and this would be supported by funding from federal and industry and also with the use of state service providers.

There were also recommendations for approval of the trip termination after ten slippage events for all limited access vessels. When considering river herring bycatch, the recommendations were for the two-phased bycatch avoidance approach as recommended by the SMAST, DMF, Sustainable Fisheries Coalition Project; and also that bycatch limits or catch caps could be approved for consideration in future actions. With regard to the midwater access to the groundfish closed areas, there is 100 percent observer coverage on all trips in the groundfish year round closed areas.

The New England Council staff is currently working with NMFS and the final EIS is expect to be submitted in mid-September for consideration for approval by the National Marine Fisheries Service.

With regards to the Mid-Atlantic Fishery Management Council's Amendment 14 to the Squid, Mackerel and Butterfish FMP, the council recommended – this amendment dealt specifically with really shad and river herring bycatch and minimizing and monitoring bycatch in the fishery. They recommended approval of a catch cap for river herring and shad beginning in 2014.

There are also recommendations for increased vessel and dealer reporting requirements; to require 100 percent coverage on midwater trawlers; and then additional reporting and monitoring requirements. Also at the council meeting they initiated the development of Amendment 15, which would consider adding shad and river herring as a stock in the fishery.

The final EIS is expected to be submitted to NMFS in September. Just for the board's information, the timeline for Amendment 15 which would consider adding shad and river herring as a stock in the fishery has been included with the Mid-Atlantic Council's August briefing material. They are expecting a scoping document to occur some time in November 2012 with the FMAT developing alternatives and council and AP input during 2013; a public comment

period in early 2014; and potentially a final rule effective for 2015.

Also discussed this morning and along the lines of a council update was the lawsuit decision that just came down. For those board members that weren't here this morning, there was a lawsuit filed in April 2011. The claim by the defendants was that Amendment 4 to the Atlantic Herring Plan was in violation of the MSA and the EPA by failing to include shad and river herring as a stock in the fishery and to create catch limits for them.

It also failed to set adequate ACLs and AMs for Atlantic herring. The ruling came down and declared Amendment 4 as null effective one year from now. The court found that the disruptive consequences of replacing a vacated Amendment 4 with its predecessor could be profound, so it decided to make the effective date one year from now.

The court will retain oversight of the agency's action in this matter until NMFS fully complies with the order. The ruling will require NMFS and the New England Council to review the most recent science and consider a full suite of protections for shad and herring. It gives NMFS one year to take action to minimize the bycatch of shad and river herring.

It orders NMFS to consider new approaches for setting the allowable catch for sea herring that accounts for its role as a forage species. Specifically it gives NMFS one month to provide the court with an explanation of whether the Amendment 4 definition of stock in the fishery complies with the MSA with regard to shad and river herring.

NMFS will send a letter to the New England Council recommending the council consider shad and river herring as a stock in the fishery based upon the results of the river herring and shad stock assessments and the recent petition to list river herring as threatened on the ESA. In six months the Service shall file a report with the court describing the progress on the actions that they've had underneath the ruling, and in one year NMFS will provide the court with an explanation setting forth its consideration of whether the Atlantic Herring FMP minimizes the bycatch to the extent practicable of shad and river herring.

It will describe all actions taken, including a NEPA analysis for the 2013/2015 specifications and management of the Atlantic herring fishery. In talking with the Mid-Atlantic Council staff they have commented that this ruling may push the development of Amendment 15 along a little faster and hopefully there will be increased coordination between the New England Council and the Mid-Atlantic Council and ASMFC with respect to the stock in the fishery question as this moves forward. Thank you, Madam Chair.

CHAIRMAN DUVAL: Thanks for the update, Kate. Are there any questions for Kate with regard to either the New England or Mid-Atlantic Council actions regarding Amendments 5 and 14 or the recent federal court ruling? Doug.

MR. DOUGLAS GROUT: I don't know if you can answer this because you weren't the judge that wrote it down and maybe I just save this for the council when we get this. It suddenly struck me that it said – the line that said in a year it is going to declare Amendment 4 null and void, which is the amendment that we put in ACLs and AMs.

I would think that a full new amendment would have to be in place by that time. That is what you're reading, that it would include ACLs, AMs and potentially additional measures to address river herring.

CHAIRMAN DUVAL: Well, I'm not an attorney, but I would think that would be the homework assignment which is not an inconsiderable homework assignment for the New England Council given that you did have ACLs and AMs in that amendment. Anyone else? Okay, we will move on to the next exciting topic, which is an update on the Proposed Endangered Species Listing for river herring. Kate.

REVIEW OF NOAA FISHERIES PROPOSED ENDANGERED SPECIES LISTING FOR RIVER HERRING

MS. TAYLOR: As the board is aware, the initial petition to list river herring as threatened under the ESA was submitted by the NRDC August 1st of last year. NMFS came out with their 90-day finding on November 1st. We were expecting the proposed rule to come down on August 1st. However, NMFS has delayed in doing that because they're currently – in June and July they held three workshops to collect information.

The first was on stock structure. There was an extinction risk workshop and a workshop on climate change. Many of the state technical committee and stock assessment members along with ASMFC staff were involved in these workshops. The workshop reports are still being finalized. They have been sent

to the workshop participants for comments. These reports will be peer reviewed. These reports, in addition to what NMFS already has, will help inform the proposed listing determination. The best available information I have is that this proposed listing determination will be available as soon as possible. Thank you, Madam Chair.

CHAIRMAN DUVAL: Are there any questions for Kate? Mr. Meyers.

MR. STEVE MEYERS: Madam Chair, not a question, just some information. The workshops were audio taped and also the presentations are available at a website which I will share with staff for distribution to the board.

CHAIRMAN DUVAL: Thanks, Steve. Is there anyone else with any comments or questions with regard to the proposed ESA listing? Presumably, we would hear something prior to the annual meeting in October; maybe not.

DISCUSSION OF RHODE ISLAND REQUEST FOR RIVER HERRING BYCATCH FISHERY

CHAIRMAN DUVAL: The next item on our agenda is a request by Rhode Island or really I think this is more of a heads up, and I'm going to turn things over to Bob Ballou to discuss this with regard to some information that the state of Rhode Island is going to be submitting to the technical committee I believe with regard to a bycatch fishery.

MR. ROBERT BALLOU: Yes, the intent of this agenda item is just to give the board a heads up as to the state's intent to submit a plan for technical committee review with the hope and expectation that review would be conducted between now and the annual meeting; and that at the annual meeting this board would be able to take up the matter and vote on it.

The context is that Rhode Island has a very brief and at least the past year quite intense Atlantic herring fishery that runs from around Christmastime through January. It is usually about a four-week fishery. It is in state waters, Rhode Island's state waters. We had to come to terms with the issue that there is some minimal amount of river herring bycatch associated with that fishery.

We know that because of the monitoring reports from last year. The point is obviously that we've got a conundrum. We've got a moratorium on river herring in Rhode Island waters as other states do, and we have this sea herring fishery that we would like to support and maintain. The Rhode Island plan is to essentially look to the Amendment 5 protocols that have been considered by the New England Council and are now in the process of being reviewed by the National Marine Fisheries Service and look to essentially adopt those as part of our state waters program.

So that has to do with the SMAST Avoidance Protocols, the monitoring requirements, observer coverage, that sort of thing. Ultimately what we would be looking for is a program whereby we would be ensuring that river herring bycatch is avoided; certainly minimized, avoided and perhaps zeroed out if at all possible via these protocols that we would be implementing.

That is really the essence of it. Now, the Chair and I have exchanged e-mails and I am reminded that this board has already wrestled with this issue as to what is considered bycatch, what rises to the level of the need for a sustainable fishery plan, and I'm harking back to some discussions over the past couple of years.

It is my understanding, having reviewed those documents, that while first our thought was we did not need to follow the sustainable fishery management route because we weren't looking to target – we're not looking to target river herring; we're looking to avoid them, so we're really looking to just see if we could get a bycatch avoidance plan approved, but now that I read the minutes and reviewed the record – David Simpson among others was very active on this issue.

I don't mean to single out David; I just happened to see the maker of the motion calling it what it is, and that is if a state water fishery has any river herring bycatch, the state needs to submit a sustainable fishery plan in order to uphold that or continue that. At first that brought on a lot of fear on our part, thinking that is a huge undertaking, and I'm now led to believe that it might not necessarily be that heavy a lift. We're going to do whatever we need to do because we want to make sure that this program is appropriate and defensible. Right now we're in a bind because we've got a very good run of sea herring that occurs every year.

Luckily it occurs at a time of the year when there are very few river herring around, so the timing is awesome. We think almost without doing anything we could probably get away with it. Come to think

of it, that's exactly what we have been doing, but I don't think that is appropriate and I think we need to come to terms with the fact that there is some modest amount of bycatch.

I think what we can do is actually if we could put forward for technical committee review and subsequent board consideration a program that by no means suggests that we're targeting river herring – in fact a program that is showing how we are going to avoid that bycatch, consistent with the Amendment 5 protocols that the New England Council is adopting and working with SMAST.

We're envisioning a letter of authorization for anyone who wishes to fish; and pursuant thereto they would have to adopt the SMAST protocols, get the Yahoo account, understand that if there is any river herring hotspots, those are going to have to be avoided, and we would certainly be in the position of being able to shut the fishery down if that occurred.

So, I'll end there unless there is any feedback that the board wishes to provide us. As we embark on our journey here, we again thought it was best to just give the board a heads up as to where we are and obviously see if there are any insights that you want to provide at this early stage and then look to take up this issue more definitively at the meeting. Madam Chair, that is I think my best summary of where we are and I'll be happy to just leave it there or entertain any questions or comments anyone may have. Thank you.

CHAIRMAN DUVAL: Thank you very much for that, Bob, and I think everybody around the board appreciates the heads up in that regard and it is in your characterization of what is actually happening in your state waters, and I think it is a question that the board has wrestled with before.

Just to kind of bring everybody up to speed, it was two years ago at the annual meeting in 2010 that we had this discussion and deliberation. There had been a discussion with regard to what is a bycatch fishery non-targeted versus a directed fishery and when do you need to submit a sustainable fishery management plan. We asked the policy board for some clarification on that.

The policy board made a motion and unfortunately there was still some confusion around the table after the policy board told the technical committee to direct states that had directed fisheries to submit sustainable fishery plans.

Bob Beal had put together a memo to try to clarify this, which we addressed at the November annual meeting in 2010, and that was where Mr. Simpson had made a motion that any state or jurisdiction that wishes to retain river herring from state waters submit a sustainable fisheries management plan. This sounds like it is really more a bycatch characterization as opposed to retention, but I appreciate what Bob has had to say. I know Dave had his hand up wanting to ask Bob a question, so, Dave, I'll turn it over to you.

MR. DAVID SIMPSON: I appreciate all the effort and thought that Rhode Island is giving to this. Frankly, the type of fishery that they're talking about wasn't what any of us – certainly, I'll speak for myself – I envisioned when we were discussing this. I was thinking about existing small-mesh fisheries for this or that.

This is actually a large pair trawl vessel operation occurring in state waters. I would just ask Rhode Island, as they go forward in their planning, to give consideration to the potential impacts for runs in neighboring states, sort of the intercept concept of where the river herring that are taken as bycatch may have been headed. Since Block Island Sound is part of the migratory route to Connecticut, we would just want to follow this work that Rhode Island plans to do.

MR. PATRICK AUGUSTINE: Excellent report, Bob. The concern was how different is this pair trawling effort in your state waters than the intercept fishery that we literally eliminated I think some folks in North Carolina or someone experienced years ago. Is it completely different or am I misconstruing in comparing one versus the other?

There used to be an intercept fishery for herring. Whether it was Atlantic herring or river herring only; can you clarify that for me? I'm getting old and decrepit and can't keep all these compartments squared in my head. What is the difference other than one is now occurring in state waters versus the other was occurring in federal waters, and we eliminated that several years ago.

CHAIRMAN DUVAL: Pat, I think you may be referring to the ocean intercept fishery for shad, actually for American shad.

MR. AUGUSTINE: It was only shad; it didn't include any river herring that happened to be as a bycatch?

CHAIRMAN DUVAL: No, and I believe all states and jurisdictions were required to eliminate that by 2005, if I'm correct.

MR. AUGUSTINE: Well, shad and river herring, they all run together and they're all in trouble, so I am concerned with the pair trawling effort as Mr. Simpson mentioned. I hope we keep a close handle on that. Again, some of the rivers are showing some improvement in that stock but only a limited amount. If this thing continues to – let's hope it doesn't get larger and that the harvest is controlled more and more as time goes on so we can see the resurgence of these animals. Thank you.

MR. TERRY STOCKWELL: Bob, as part of Maine's development of our sustainable harvest plan, we implemented a new pelagic license and a fairly rigorous monitoring program. One of the questions I'm going to have for you when this comes back before the board is going to be the nature of your monitoring program.

MR. BALLOU: Thank you for that.

CHAIRMAN DUVAL: Are there any other questions for Bob or questions around the table in regard to this matter? Tom Fote.

MR. THOMAS FOTE: When we were discussing this about shad and river herring and we talked about the recreational fisheries and the amount that we closed down – certain fisheries like we closed down almost all of New Jersey, except I'm not sure if the Delaware River is completely closed now or not. River herring is closed.

So if we're not allowing any recreational, which is small numbers of fish, I find it very difficult to allow even this amount of fish because that amount of fish would cover a whole bunch of recreational anglers. It is a tough call and I am going to have to justify that before I can vote for it. It's going to put me in a very difficult situation and it will put New Jersey in a difficult situation, and I would imagine it would put other states that have completely closed down their fisheries to allow for a bycatch in those numbers.

CHAIRMAN DUVAL: I very appreciate those remarks, Tom, and I think we should give Rhode Island the opportunity to put together all the information that it has and go through the technical committee review before we make any remarks about the level of river herring bycatch in state waters. Based on what Bob has said, I think it is Rhode Island's intent to try to avoid as much as possible interaction with river herring.

MR. FOTE: I'll go back to the history of there was allowed a bycatch of striped bass in New Jersey in the net fishery, and we brought it to a head in the fifties because of what went on, and they basically brought all these shad and river herring that is in Tom's River to catch. They wound up catching tons of striped bass.

I asked the commercial fishermen that had done it, and I said how many river herring and shad did you catch in the two years that you basically took out tractor/trailer loads of striped bass. He said we tried like hell, but we never landed one. It is always my concern when we talk about bycatch.

I know this is not the situation, but it raises such a red flag in my head when we talk about this because bycatch fisheries wind up sometimes being direct fisheries. I can basically mention two or three that started out striped bass as a bycatch in this fishery and now it is striped bass and the other fishery is the bycatch in that fishery. I always have those concerns.

ADJOURNMENT

CHAIRMAN DUVAL: Duly noted and thanks for that. Anybody else? Are there any other items or any other business to come before the board before we adjourn? Seeing none and if there is no objection, we stand adjourned.

(Whereupon, the meeting was adjourned at 4:55 o'clock p.m., August 7, 2012.)

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

AUG 31 2012

C.M. "Rip" Cunningham, Jr., Chairman
New England Fishery Management Council
50 Water Street
Newburyport, MA 01950

Dear Rip:

On August 2, 2012, the United States District Court for the District of Columbia issued a remedial order in the civil action Flaherty, et al. v. Blank, et al., Case No. 11-660. The Court ordered remedial action to address deficiencies identified by the Court with respect to Amendment 4 to the Atlantic Herring Fishery Management Plan (FMP), including the Court's findings that:

- NOAA Fisheries Service (NMFS) did not satisfy its obligation to independently determine whether Amendment 4's definition of "stocks in the fishery" complied with the Magnuson-Stevens Fishery Conservation and Management Act (MSA);
- NMFS did not adequately consider whether Amendment 4 complied with National Standard 9's requirement to minimize bycatch to the extent practicable; and
- NMFS violated the National Environmental Policy Act (NEPA) by failing to consider the environmental impacts of a reasonable range of alternatives for the acceptable biological catch (ABC) control rule, accountability measures (AMs), and measures for minimizing bycatch.

Consistent with the Court's remedial order, I recommend the New England Fishery Management Council (NEFMC) consider, in an amendment to the Atlantic Herring FMP, whether river herring (alewife and blueback) and shad (American and hickory) should be designated as stocks in the Atlantic herring fishery. The NEFMC's consideration should be based on, at a minimum, the following:

- The MSA requirements, described below, related to including a stock in an FMP;
- The 2012 Atlantic States Marine Fisheries Commission (ASMFC) river herring stock assessment report and peer review report;
- NMFS's 2011 finding that listing river herring as a threatened species under the Endangered Species Act may be warranted;
- The 2007 shad stock assessment report and its peer review report;
- Alternative Set 9 in the Mid-Atlantic Fishery Management Council's (MAFMC's) Amendment 14 to the Atlantic Mackerel, Squid, and Butterfish (MSB) FMP; and
- The Court's March 8, 2012, summary judgment opinion.

Under the MSA, each Fishery Management Council is required to develop FMPs "for each fishery under its authority that requires conservation and management." 16 U.S.C. § 1852(h)(1). A "fishery" is defined as "one or more stocks of fish that can be treated as a unit for purposes of conservation and management and that are identified on the basis of geographic, scientific, technical, recreational, and economic characteristics." Id. § 1802(13).

Section 303(a)(2) of the MSA requires each FMP contain, among other things, a description of the species of fish involved in the fishery. Id. § 1853(a)(2). The National Standard 1 Guidelines provide further guidance that in setting forth this description, Councils should determine "which specific target stocks and/or non-target stocks to include in the fishery," as well as whether it would be appropriate to designate any "ecosystem component species." 50 C.F.R § 600.310(d)(1). FMPs must include reference points (including, inter alia, status determination criteria, maximum sustainable yield, acceptable biological catch, and annual catch limits) and management measures (including accountability measures) for every stock "in the fishery." Id. § 600.310(d)(2); see also § 600.310(b)(2) (describing reference points and management measures required by the MSA).

In considering which stocks "can be treated as a unit for purposes of conservation and management," and therefore constitute a "fishery," councils should remain mindful of National Standard 3's requirement that, "[t]o the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination." 16 U.S.C. § 1851(a)(3). The National Standard 3 Guidelines further instruct that the choice of a management unit "depends on the focus of the FMP's objectives, and may be organized around biological, geographic, economic, technical, social, or ecological perspectives." 50 C.F.R. § 600.320(d)(1).

If a stock in a fishery is determined to be overfished or subject to overfishing, it must be included in an FMP. See 16 U.S.C. § 1853(a)(1)(A) (FMPs must provide measures to prevent overfishing and rebuild overfished stocks). For all other stocks, the National Standard 7 Guidelines provide that the following criteria should be considered in determining whether a fishery is in need of conservation and management through regulations implementing an FMP:

(i) The importance of the fishery to the nation and the regional economy;
(ii) The condition of the stock and whether an FMP can improve or maintain that condition;
(iii) The extent to which the fishery could be or is already adequately managed by states, by state/federal programs, by federal regulations pursuant to FMPs or by industry self-regulation, consistent with MSA policies and standards;
(iv) The need to resolve competing interests and conflicts among user groups and whether an FMP can further that resolution;
(v) The economic condition of a fishery and whether an FMP can produce more efficient utilization;
(vi) The needs of a developing fishery, and whether an FMP can foster orderly growth; and
(vii) The costs associated with an FMP, balanced against the benefits. 50 C.F.R. § 600.340(b)(2).

At its June 2012 meeting, the MAFMC adopted a motion to consider designating river herring and shad as stocks in the fishery in Amendment 15 to the MSB FMP. MAFMC staff indicated that development of Amendment 15 is scheduled to begin in September 2012. MAFMC staff's current draft timeline projects that the MAFMC will take final action on this amendment in April 2014, NMFS will publish a proposed rule in July 2014 and a final rule in December 2014, and implementation of the amendment will occur in January 2015.

I encourage the NEFMC to collaborate with the MAFMC, as well as the ASMFC, on its consideration of the need for federal conservation and management of river herring and shad. River herring and shad have unique management challenges because they are anadromous and range along the entire east coast of the United States. The consideration of federal management for river herring and shad is an opportunity to engage management partners and stakeholders to thoughtfully evaluate holistic management of these species.

Consistent with the Court's remedial order, I recommend the NEFMC consider, as part of the 2013-2015 Atlantic herring specifications, a range of alternatives for the Atlantic herring ABC control rule and AMs. The final rule for Amendment 4 (76 FR 11373, March 2, 2011), explained that, if a new ABC control rule could be developed following the 2012 Atlantic herring benchmark stock assessment, it would be developed in the 2013-2015 Atlantic herring specifications. The Court's remedial order stated that at least one of the alternatives to the ABC control rule should be based on the best available science regarding ABC control rules for forage fish. The 2012 Atlantic herring stock assessment included a thorough consideration of the role of Atlantic herring as forage and increased the estimate of Atlantic herring natural mortality to account for consumption of Atlantic herring by predators. The NEFMC's Science and Statistical Committee (SSC) is scheduled to meet on September 4, 2012, to review the 2012 Atlantic herring benchmark stock assessment and develop Atlantic herring ABC recommendations for 2013-2015. I believe it would be appropriate, and consistent with the Court's remedial order, for the SSC to consider a range of alternatives for the Atlantic herring ABC control rule at its upcoming meeting, as previously planned, and for that range of alternatives to be analyzed in the 2013-2015 specifications.

Atlantic herring regulations authorize the modification of existing Atlantic herring AMs through the specification process (50 C.F.R. § 648.200(g)). Consistent with these regulations, and the Court's remedial order, I believe it would be appropriate for the 2013-2015 Atlantic herring specifications to consider a range of alternatives to modify existing Atlantic herring AMs. If during the specification process a new Atlantic herring AM is identified, implementation of that new AM could be considered in a future framework or amendment.

NMFS is also ordered to recommend to the NEFMC that it consider a range of alternatives for minimizing bycatch in the Atlantic herring fishery, to the extent practicable. Amendment 5 to the Atlantic Herring FMP considers a range of alternatives to minimize bycatch. Therefore, Amendment 5 should explain why the range of alternatives considered in Amendment 5 was reasonable and how measures adopted by the NEFMC as part of Amendment 5 minimize bycatch, to the extent practicable, in the Atlantic herring fishery.

Additionally, NMFS is ordered to file with the Court a report describing all remedial actions by August 2, 2013. This report is to include the status of the NEFMC's consideration of designating river herring and shad as stocks in the Atlantic herring fishery and the completed NEPA analyses for the 2013-2015 herring specifications and Amendment 5. Lastly, the Court has retained jurisdiction over this case pending full compliance with its order.

For the purposes of complying with the Court's remedial order, an environmental assessment would be considered complete when the finding of no significant impact (FONSI) is signed by NMFS. Additionally, an environmental impact statement (EIS) would be considered complete when the notice of availability (NOA) for the final EIS is published in the *Federal Register*. Both of these actions typically occur prior to publishing the final rule in the *Federal Register*.

Council staff has indicated to us that Amendment 5, and its final EIS, will be submitted to NMFS for review and approval in the near future. Submitting Amendment 5 to us soon would provide NMFS with adequate time to consider amendment approval, complete a rulemaking, and allow for the NOA for the final EIS to be published prior to August 2013. The NEFMC is currently scheduled to take final action on the 2013-2015 Atlantic herring specifications at its November 2012 meeting. I recommend that the NEFMC proceed as scheduled, thereby providing adequate time to complete a NEPA analysis for the herring specifications by August 2013.

I appreciate the time and effort that the NEFMC has put into the Atlantic Herring FMP, and I look forward to working with the NEFMC to address these important issues in the Atlantic herring fishery. Please contact George Darcy if you have any questions.

Sincerely,

for John K. Bullard
Regional Administrator

Enclosure (March 2012 opinion on summary judgment; August 2012 remedial order; letter to MAFMC regarding Amendment 14 to the MSB FMP)

cc: Rick Robins

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

MICHAEL S. FLAHERTY, et al.,	:	
	:	
Plaintiffs,	:	
	:	
v.	:	**Civil Action No. 11-660 (GK)**
	:	
JOHN BRYSON,[1] in his official capacity as Secretary of the Department of Commerce, et al.,	:	
	:	
Defendants.	:	

MEMORANDUM OPINION

Plaintiffs Michael S. Flaherty, Captain Alan A. Hastbacka, and the Ocean River Institute bring this suit against Defendants Commerce Secretary Gary Locke, the National Oceanic and Atmospheric Administration ("NOAA"), and the National Marine Fisheries Service ("NMFS"). Plaintiffs allege that Amendment 4 to the Atlantic Herring Fishery Management Plan violates the Magnuson-Stevens Fishery Conservation and Management Act ("MSA"), 16 U.S.C. §§ 1801 et seq., the National Environmental Policy Act ("NEPA"), 42 U.S.C. §§ 4321 et seq., and the Administrative Procedure Act ("APA"), 5 U.S.C. §§ 702 et seq.

This matter is now before the Court on Cross-Motions for Summary Judgment [Dkt. Nos. 17, 19]. Upon consideration of the Motions, Oppositions, Replies, Oral Argument, Supplemental Briefs,

[1] Secretary Bryson is substituted for Gary Locke pursuant to Federal Rule of Civil Procedure 25(d).

the entire record herein, and for the reasons stated below, Plaintiffs' Motion for Summary Judgment is **granted in part and denied in part** and Defendants' Motion for Summary Judgment is **granted in part and denied in part**.

I. BACKGROUND

A. Statutory Background

1. The Magnuson-Stevens Act

Congress first enacted the MSA in 1976 "to take immediate action to conserve and manage the fishery resources found off the coasts of the United States." 16 U.S.C. § 1801(b)(1). The Act provides a "national program" designed "to prevent overfishing, to rebuild overfished stocks, to insure conservation, to facilitate long-term protection of essential fish habitats, and to realize the full potential of the Nation's fishery resources." Id. § 1801(a)(6).

In order to balance the need for "a cohesive national policy and the protection of state interests," the MSA establishes eight Regional Fishery Management Councils composed of federal officials, state officials, and private parties appointed by the Secretary of Commerce. C&W Fish Co. v. Fox, 931 F.2d 1556, 1557 (D.C. Cir. 1991); 16 U.S.C. § 1852. These councils are responsible for developing fishery management plans ("FMPs") for fisheries in federal waters within the United States Exclusive Economic Zone,

which includes ocean water from three to two hundred miles offshore. Id. § 1853.

Each council must prepare and submit to NMFS[2] an FMP and any amendments that may become necessary "for each fishery under its authority that requires conservation and management." Id. § 1852(h)(1). FMPs must include the "conservation and management measures" that are "necessary and appropriate for the conservation and management of the fishery, to prevent overfishing and rebuild overfished stocks, and to protect, restore, and promote the long-term health and stability of the fishery."[3] Id. § 1853(a)(1)(A).

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[2] The Secretary of the Department of Commerce has delegated the authority and stewardship duties of fisheries management under the MSA to NMFS, an agency within the Department. Compl. ¶ 13. On behalf of the Secretary, NMFS reviews FMPs and FMP amendments and issues implementing regulations. Id.

[3] The Act defines "conservation and management" as:

> all of the rules, regulations, conditions, methods, and other measures (A) which are required to rebuild, restore, or maintain, and which are useful in rebuilding, restoring, or maintaining, any fishery resource and the marine environment; and (B) which are designed to assure that–
>
> (i) a supply of food and other products may be taken, and that recreational benefits may be obtained, on a continuing basis;
>
> (ii) irreversible or long-term adverse effects on fishery resources and the marine environment are avoided; and
>
> (iii) there will be a multiplicity of options available with respect to future uses

(continued...)

FMPs must also be consistent with the ten "National Standards" provided for in the MSA, as well as all other provisions of the MSA, and "any other applicable law." Id. § 1853(a)(1)(C); see also id. § 1851 (setting forth National Standards).

Once a council has developed a plan, NMFS must review the plan to determine whether it comports with the ten National Standards and other applicable law. Id. § 1854(a)(1)(A). Next, after a period of notice and comment, NMFS must "approve, disapprove, or partially approve a plan or amendment," depending on whether the plan or amendment is consistent with the Standards and applicable law. Id. § 1854(a)(3). Even if NMFS disapproves the proposed FMP or amendment, it may not rewrite it. That responsibility remains with the council, except under specifically defined circumstances. Id. §§ 1854(a)(4), (c). If NMFS approves the plan or does not express disapproval within 30 days, the FMP becomes effective. Id. § 1854(a)(3).

At the beginning of 2007, Congress re-authorized and amended the MSA. Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 ("MSRA"), P.L. 109-479, 120 Stat. 3575 (2007). One of the goals of the MSRA was to "set[] a firm deadline to end overfishing in America." 2007 U.S.C.C.A.N. S83, S83. To

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[3](...continued)
of these resources.

16 U.S.C. § 1802(5).

accomplish this purpose, Congress added provisions to the MSA calling for science based limits on total fish caught in each fishery.

The amended MSA requires the regional councils to add to all FMPs mechanisms for setting the limits, termed Annual Catch Limits ("ACLs"), on the amount of fish caught and accountability measures ("AMs") for ensuring compliance with the ACLs. 16 U.S.C. § 1853(a)(15). These limits and accountability measures must take effect "in fishing year 2011" for most fisheries, including the Atlantic herring fishery.[4] Pub. L. No. 109-479, § 104(b), 120 Stat. 3575, 3584.

2. The National Environmental Policy Act

Congress enacted NEPA in order "to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may . . . fulfill the responsibilities of each generation as trustee of the environment for succeeding generations." 42 U.S.C. § 4331(b). To accomplish that goal, NEPA requires all federal agencies to prepare an

[4] The MSRA sets an earlier deadline of "fishing year 2010 for fisheries determined by [NMFS] to be subject to overfishing." Pub. L. No. 109-479, § 104(b), 120 Stat. 3575, 3584. The statute defines "overfishing" or "overfished" as "a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis." 16 U.S.C. § 1802(34). NMFS has not determined the Atlantic herring fishery to be overfished.

Environmental Impact Statement ("EIS") whenever they propose "major Federal actions significantly affecting the quality of the human environment." Id. § 4332(2)(C).

To determine whether an EIS must be prepared, the agency must first prepare an environmental assessment ("EA"). 40 C.F.R. § 1501.4(b). An EA must "[b]riefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact." Id. § 1508.9(a). Even if the agency performs only an EA, it must still briefly discuss the need for the proposal, the alternatives, and the environmental impacts of the proposed action and the alternatives. Id. § 1508.9(b). If the agency determines, after preparing an EA, that a full EIS is not necessary, it must prepare a Finding of No Significant Impact ("FONSI") setting forth the reasons why the action will not have a significant impact on the environment. Id. §§ 1501.4(e), 1508.13.

B. Factual Background

Plaintiffs challenge Amendment 4 to the Atlantic Herring Fishery Management Plan, developed by the New England Fishery Management Council (the "Council"). 76 Fed. Reg. 11373 (Mar. 2, 2011). Atlantic herring (Clupea harengus) have been managed through the Atlantic Herring FMP since January 10, 2001. Administrative Record ("AR") 5578.

Atlantic herring inhabit the Atlantic Ocean off of the East coast of the United States and Canada, ranging from North Carolina to the Canadian Maritime Provinces. Id. at 6091. Atlantic herring can grow to about 15.6 inches in length and live 15-18 years. Id. at 6092. Atlantic herring play a vital role in the Northwest Atlantic ecosystem, serving as a "forage species," i.e. food, for a number of other fish, marine mammals, and seabirds. Id. at 6111.

Human beings also hunt Atlantic herring. Fishermen and women predominantly catch Atlantic herring using midwater trawl gear, paired midwater trawls, and purse seines. AR 6146. To do this, boats working alone or in tandem drag nets through the water scooping up fish as they go. Not surprisingly, these nets snare large numbers of other fish and marine wildlife at the same time. Id. at 6146-48, 6170-80.

Of particular concern to Plaintiffs are four species, often caught incidentally with Atlantic herring, collectively referred to as "river herring": (1) blueback herring (Alosa aestivalis), (2) alewive (Alosa pseudoharengus), (3) American shad (Alosa sapidissima), and (4) hickory shad (Alosa mediocris). See Pls.' Mot. 1. River herring are apparently so-called because they are anadromous--that is, they spawn in rivers but otherwise spend most of their lives at sea, whereas Atlantic herring spend their entire lives at sea. Id. It is undisputed that river herring play a similar role to Atlantic herring, providing forage for large fish

and mammals, including cod, striped bass, bluefin tuna, sharks, marine mammals, and seabirds. Id. at 1, 8; see also AR 763-64. The Atlantic Herring Fishery Management Plan, as updated by Amendment 4, provides ACLS and AMs for Atlantic herring but not for river herring.

C. Procedural Background

On May 8, 2008, NMFS published a Notice of Intent, announcing that the Council would be preparing Amendment 4 to the Atlantic Herring FMP as well as an Environmental Impact Statement. AR 5577. The Notice explained that the MSRA required that ACLs and AMs be established by 2011 for all fisheries not subject to overfishing. Id. at 5578. Because the Atlantic herring fishery had not been determined to be subject to overfishing, Amendment 4 was "necessary to update the Herring FMP in a manner . . . consistent with the new requirements of the MSRA" and was required to be in place by 2011. Id.

The Notice also indicated measures under consideration by the Council. Specifically, the Notice stated that Amendment 4 might address as many as five objectives:

1. To implement measures to improve the long-term monitoring of catch (landings and bycatch) in the herring fishery;

2. To implement ACLs and AMs consistent with the MSRA;

3. To implement other management measures as necessary to ensure compliance with the new provisions of the MSRA;

> 4. To develop a sector allocation process or other LAPP ["Limited Access Privilege Program"] for the herring fishery; and
>
> 5. In the context of objectives 1–4 (above), to consider the health of the herring resource and the important role of herring as a forage fish and a predator fish throughout its range.

Id.

However, on December 28, 2009, NMFS and the Council changed course. At that time, NMFS issued a second Notice of Intent explaining that "only the ACL/AM components will move forward as Amendment 4, and that the Council intends to prepare EA for the action." Id. at 5640-41. In addition, "[a]ll other proposed measures formerly included in Amendment 4, including the catch monitoring program for the herring fishery, measures to address river herring bycatch, criteria for midwater trawl access to groundfish closed areas, and measures to address interactions with the mackerel fishery, will now be considered in Amendment 5." Id. at 5641. The Notice also promised that those "measures will be analyzed in an EIS" to be issued with Amendment 5. Id.

In short, the Government dropped from Amendment 4 any attempt to add protections for fish other than the Atlantic herring, such as the river herring of concern to Plaintiffs in this litigation, electing only to address Atlantic herring ACLs and AMs.

On March 2, 2011, NMFS published Amendment 4 as a Final Rule in the Federal Register. Id. at 6325. In keeping with the December

28, 2009 Notice of Intent, Amendment 4 designated Atlantic herring as the only "stock in the fishery" and did not provide for any measures specifically targeted at protecting river herring. Id. at 6326. The Final Rule implemented an Interim Acceptable Biological Catch ("ABC") Control Rule for Atlantic herring, from which ACLs could then be determined. Id. at 6327. The Final Rule also established three AMs: (1) when a threshold amount of Atlantic herring is caught, NMFS is to close relevant management areas; (2) if a certain amount of haddock is incidentally caught, vessels are to face restrictions; and (3) if the total amount of Atlantic herring caught in a year exceeds any ACL or sub-ACL, the ACL or sub-ACL is to be reduced by a corresponding amount in the year after the calculation is made. Id.

On April 1, 2011, Plaintiffs filed their Complaint [Dkt. No. 1]. Plaintiffs allege that: (1) Defendants violated the MSA and APA by failing to include catch limits for river herring in Amendment 4; (2) Defendants violated the MSA and APA by failing to set adequate ACLs for Atlantic herring in Amendment 4; (3) Defendants violated the MSA and APA by failing to set adequate AMs for Atlantic herring in Amendment 4; and (4) Defendants violated NEPA by failing to develop an EIS for Amendment 4. Compl. ¶¶ 70-113.

On September 9, 2011, Plaintiffs filed their Motion for Summary Judgment ("Pls.' Mot.") [Dkt. No. 17]. On October 7, 2011, Defendants filed their Opposition to Plaintiffs' Motion and Cross-

Motion for Summary Judgment ("Defs.' Mot.") [Dkt. No. 19]. On October 28, 2011, Plaintiffs filed their Reply to Defendants' Opposition and Opposition to Defendants' Motion ("Pls.' Reply") [Dkt. No. 20]. On November 18, 2011, Defendants filed their Reply to Plaintiffs' Opposition ("Defs.' Reply") [Dkt. 22]. On January 4, 2012, oral argument on the cross-motions was heard by this Court. On January 11, 2012, with the Court's permission, Defendants and Plaintiffs filed respective Supplemental Memoranda ("Defs.' Supp. Mem." and "Pls.' Supp. Mem.") [Dkt. Nos. 27 and 28].

II. STANDARD OF REVIEW

Summary judgment will be granted when there is no genuine issue as to any material fact. See Fed. R. Civ. P. 56(c). Because this case involves a challenge to a final administrative decision, the Court's review on summary judgment is limited to the Administrative Record. Holy Land Found. for Relief and Dev. v. Ashcroft, 333 F.3d 156, 160 (D.C. Cir. 2003) (citing Camp v. Pitts, 411 U.S. 138, 142 (1973)); Richards v. INS, 554 F.2d 1173, 1177 (D.C. Cir. 1977) ("Summary judgment is an appropriate procedure for resolving a challenge to a federal agency's administrative decision when review is based upon the administrative record.").

Agency decisions under the Magnuson-Stevens Act and NEPA are reviewed pursuant to Section 706(2) of the APA. 16 U.S.C. § 1855(f)(1)(B) ("the appropriate court shall only set aside" actions under the MSA "on a ground specified in [5 U.S.C. §§] 706(2)(A),

(B), (C), or (D).”); Oceana, Inc. v. Locke, ___F.3d___, No. 10-5299, 2011 WL 2802989, at *2 (D.C. Cir. July 19, 2011); C&W Fish, 931 F.2d at 1562; Oceana v. Locke, ___F. Supp. 2d___, No. 10-744 (JEB), 2011 WL 6357795, at *8 (D.D.C. Dec. 20, 2011). In relevant part, 5 U.S.C. § 706(2) requires a court to hold agency action unlawful if it is “arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law.”

The arbitrary and capricious standard of the APA is a narrow standard of review. Citizens to Preserve Overton Park, Inc. v. Volpe, 401 U.S. 402, 416 (1971). It is well established in our Circuit that the “court’s review is . . . highly deferential” and “we are ‘not to substitute [our] judgment for that of the agency’ but must ‘consider whether the decision was based on a consideration of the relevant factors and whether there has been a clear error of judgment.’” Bloch v. Powell, 348 F.3d 1060, 1070 (D.C. Cir. 2003) (quoting S. Co. Servs., Inc. v. FCC, 313 F.3d 574, 579-80 (D.C. Cir. 2002)); see also United States v. Paddack, 825 F.2d 504, 514 (D.C. Cir. 1987). However, this deferential standard cannot permit courts “merely to rubber stamp agency actions,” NRDC v. Daley, 209 F.3d 747, 755 (D.C. Cir. 2000), nor be used to shield the agency’s decision from undergoing a “thorough, probing, in-depth review.” Midtec Paper Corp. v. United States, 857 F.2d 1487, 1499 (D.C. Cir. 1988) (internal citations and quotations omitted).

An agency satisfies the arbitrary and capricious standard if it "examine[s] the relevant data and articulate[s] a satisfactory explanation for its action including a 'rational connection between the facts found and the choice made.'" Motor Vehicle Mfrs. Ass'n v. State Farm Mut. Auto. Ins. Co., 463 U.S. 29, 43 (1983) (quoting Burlington Truck Lines v. United States, 371 U.S. 156, 168 (1962)); Lichoulas v. FERC, 606 F.3d 769, 775 (D.C. Cir. 2010). Finally, courts "do not defer to the agency's conclusory or unsupported suppositions." McDonnell Douglas Corp. v. U.S. Dep't of the Air Force, 375 F.3d 1182, 1186-87 (D.C. Cir. 2004).

III. ANALYSIS

A. Standing

Defendants argue that Plaintiffs' suit must be dismissed because they lack Article III standing. Defs.' Mot. 13-15. The doctrine of standing reflects Article III's "fundamental limitation" of federal jurisdiction to actual cases and controversies. Summers v. Earth Island Inst., 555 U.S. 488, 493 (2009). The doctrine "requires federal courts to satisfy themselves that 'the plaintiff has alleged such a personal stake in the outcome of the controversy as to warrant his [or her] invocation of federal-court jurisdiction.'" Id. (quoting Warth v. Seldin, 422 U.S. 490, 498-99 (1975)) (emphasis on "his" in original).

To obtain the injunctive relief they seek, Plaintiffs must show that (1) they have "suffered an 'injury in fact' that is (a)

concrete and particularized and (b) actual or imminent, not conjectural or hypothetical; (2) the injury is fairly traceable to the challenged action of the defendant; and (3) it is likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision." Friends of the Earth, Inc. v. Laidlaw Envtl. Servs., 528 U.S. 167, 180-81 (2000); see also Summers, 555 U.S. at 493; Lujan v. Defenders of Wildlife, 504 U.S. 555, 560 (1992); Shays v. FEC, 414 F.3d 76, 83 (D.C. Cir. 2005). Defendants contend that Plaintiffs have failed to demonstrate that their alleged injury is "imminent" or "traceable." Defs.' Mot. 13. They have not challenged any of the other requirements for standing.

1. Injury in Fact--Imminence

Plaintiffs claim that they are harmed (1) because they are unable to fish for or observe river herring and (2) because, due to the decline of river and Atlantic herring as forage, they are less able to fish for or observe striped bass. Flaherty Decl. ¶¶ 2, 4-5, 12-13; Hastbacka Decl. ¶¶ 6-9, 14-16; Moir Decl. ¶¶ 14, 16-17 [Dkt. No. 17-2]. Defendants argue that the injury associated with striped bass is not actual or imminent because Plaintiffs have failed to assert that they are "actually unable to fish for striped bass as a result of NMFS' actions." Defs.' Mot. 13 (emphasis in original).

Defendants are incorrect. Captain Alan Hastbacka has asserted that the fish his clients target, which include striped bass, are "more abundant, bigger, and healthier" when "there are adequate

forage fish" and that he can "sell more tackle . . . when the fishing is good." Hastbacka Decl. ¶ 6. During at least one fishing season, the fish targeted by Captain Hastbacka and his clients, including striped bass, disappeared when the Atlantic herring stock in the area was depleted. Id. ¶ 9. Michael Flaherty similarly states that "Defendants' failures challenged in this case . . . negatively impact the health and population levels of the striped bass I fish for." Flaherty Decl. ¶ 12.

In other words, Plaintiffs claim that their ability to fish striped bass for sport or business has been, and will continue to be, harmed by the state of the Atlantic herring fishery because adequate conservation measures to protect the herring upon which striped bass feed have not been adopted. See, e.g., N.C. Fisheries Ass'n, Inc. v. Gutierrez, 518 F. Supp. 2d 62, 82 (D.D.C. 2007) (economic harm "is a canonical example of injury in fact sufficient to establish standing.") (citing Nat'l Wildlife Fed'n v. Hodel, 839 F.2d 694, 704 (D.C. Cir. 1988)).

Indeed, Defendants themselves have amply made the point that Atlantic herring serve as an important forage species for striped bass and other ocean predators. AR 6111. In its analysis of Amendment 4, the Council stated that its actions "should acknowledge the role that Atlantic herring plays in the Northwest Atlantic ecosystem and address the importance of herring as a forage species for many fish stocks, marine mammals, and seabirds."

Id. According to the Council, "[o]ne of the objectives of this amendment . . . is . . . to consider the health of the herring resource and the important role of herring as a forage fish." Id. at 6111-12. Hence, there is no doubt that Plaintiffs face imminent harm to their interests in striped bass, should Defendants fail to properly manage Atlantic herring.

Defendants attempt to analogize this case to FCC v. Branton, 993 F.2d 906 (D.C. Cir. 1993). They argue that, "[a]s in Branton, where the plaintiff did not have standing because his injury was based on a possibility that he may someday be exposed to harm, Captain Hastbacka's concern that he may 'someday' be unable to fish for striped bass as a result of the actions that NMFS took in Amendment 4 is patently insufficient to satisfy the 'injury in fact' requirement." Defs.' Mot. 13-14.

Defendants' analysis is not convincing. Branton pointed out that "[i]n order to challenge official conduct one must show that one 'has sustained or is immediately in danger of sustaining some direct injury' in fact as a result of that conduct." 993 F.2d at 908 (quoting Golden v. Zwickler, 394 U.S. 103, 109 (1969)). The plaintiff in Branton alleged "that he was injured because he was subjected to indecent language over the airwaves" on one past occasion. Id. at 909. Our Court of Appeals held that "a discrete, past injury cannot establish the standing of a complainant . . . who seeks neither damages nor other relief for that harm, but

instead requests the imposition of a sanction in the hope of influencing another's future behavior." Id. The allegation of a single incident of indecent language is obviously very different from the ongoing scenario presented here, where Plaintiffs state that the striped bass which they and their clients fish and observe are now and will in the future be threatened by overfishing of the Atlantic and river herring.

Plaintiffs in this case have alleged continuous and ongoing harm to their ability to fish for species dependant on the Atlantic and river herring. The harm to striped bass stemming from improper regulation of forage fish presents a concrete explanation for how Plaintiffs will be injured by Defendants' actions. Lujan, 504 U.S. at 564; N.C. Fisheries Ass'n, 518 F. Supp. 2d at 81 (in addressing the injury in fact prong, "courts ask simply whether the plaintiff has 'asserted a present or expected injury that is legally cognizable and non-negligible.'") (quoting Huddy v. FCC, 236 F.3d 720, 822 (D.C. Cir. 2001)).

2. Traceability

Defendants next argue that Plaintiffs' injuries are not traceable to Amendment 4 because they "occurred long before NMFS issued the final rule implementing Amendment 4" and "because they concern species beyond the scope of the Amendment." Defs.' Mot. 14.

The first argument is easily disposed of. As explained above, Plaintiffs have stated that they continue to suffer from the

depletion of river herring stocks and from the negative impact that depletion of river and Atlantic herring has on striped bass. See supra Part III.A.1; Hastbacka ¶¶ 6, 9; Flaherty Decl. ¶ 12. Plaintiffs need demonstrate neither proximate causation nor but-for causation to establish traceability; they must only show that "'the agency's actions materially increase[d] the probability of injury.'" N.C. Fisheries Ass'n, 518 F. Supp. 2d at 83 (quoting Huddy, 236 F.3d at 722); see also Nat'l Audubon Soc'y v. Davis, 307 F.3d 835, 849 (9th Cir. 2002) (to be "fairly traceable," chain of causation must be plausible). Again, Defendants themselves have acknowledged the chain of causation between under-regulation of herring fishing and the abundance and health of predator fish. AR 6111-12. Plaintiffs' contention that Defendants' choices in Amendment 4 will materially increase the probability of their injury is far more than merely plausible.

Further, taken to its logical conclusion, Defendants' argument would preclude anyone from challenging FMPs, since the decline of the nation's fisheries began before the MSA was enacted with the purpose of stopping that deterioration. See 16 U.S.C. § 1801(b)(1). Therefore, the fact that the injuries may have begun before issuance of Amendment 4 is no obstacle to Plaintiffs' standing.

Defendants' next argument is no more persuasive. As to river herring, the claim that Plaintiffs' injury cannot be traced to Amendment 4 because Amendment 4 does not address management of

river herring is plainly circular when the essence of Plaintiffs' challenge is to Defendants' substantive decision not to include that species. Plaintiffs claim that Defendants' decision not to manage river herring violated the MSA and APA. The harm caused by depletion of river herring by commercial fishing is clearly traceable to Defendants' decision not to restrict river herring catch. Moreover, there is no doubt that increased regulation of river herring catch would contribute to the rebuilding of that stock. Branton, 993 F.2d at 910 (traceability and redressability "tend to merge . . . in a case such as this where the requested relief consists solely of the reversal or discontinuation of the challenged action.") (citing Allen v. Wright, 468 U.S. 737, 759 n.24 (1984)).

As to striped bass, the fact that Amendment 4 does not specifically regulate striped bass is of no moment. As previously explained, Plaintiffs have articulated a perfectly plausible explanation for how harm to their ability to fish or observe striped bass is traceable to Defendants' claimed deficiencies in regulating herring. N.C. Fisheries Ass'n, 518 F. Supp. 2d at 83.

In short, Plaintiffs have shown a causal connection between Defendants' regulatory choices in Amendment 4 and the health of river herring and striped bass stocks. Further, Plaintiffs have demonstrated that (1) they have "suffered an 'injury in fact' that is (a) concrete and particularized and (b) actual or imminent, not

conjectural or hypothetical; (2) the injury is fairly traceable to the challenged action of the defendant; and (3) it is likely, as opposed to merely speculative, that the injury will be redressed by a favorable decision." Friends of the Earth, 528 U.S. at 180-81. They therefore have standing to challenge Amendment 4.

B. Stocks in the Fishery

Plaintiffs challenge Defendants' decision to approve Amendment 4 because the Amendment includes only Atlantic herring, and excludes river herring, as a stock in the fishery. Once a fish is designated as a "stock in the fishery," the Council must develop conservation and management measures, including ACLs and AMs, for that stock. Pls.' Mot. 14; 16 U.S.C. § 1853(a). Hence, the Atlantic Herring FMP includes no protective measures for river herring.

As described above, the MSA requires the Council to prepare an FMP "for each fishery under its authority that requires conservation and management." 16 U.S.C. § 1852(h)(1). The Act defines a "fishery" as "one or more stocks of fish which can be treated as a unit for purposes of conservation and management and which are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics." Id. § 1802(13). A "stock of fish" is "a species, subspecies, geographical grouping, or other category of fish capable of management as a unit." Id. § 1802(42). The Council determines which "target stocks" (fish that are deliberately caught), and/or "non-target stocks"

(fish that are incidentally caught), to include in the fishery. 50 C.F.R. § 600.310(d)(1).

In other words, in developing an FMP, the Council must decide which species or other categories of fish are capable of management as a unit, and therefore should be included in the fishery and managed together in the plan. This decision entails two basic determinations. The Council must decide (1) which stocks "can be treated as a unit for purposes of conservation and management" and therefore should be considered a "fishery" and (2) which fisheries "require conservation and management." 16 U.S.C. §§ 1802(13), 1852(h)(1). The Council must then set ACLs and AMs for all stocks in the fishery. Id. § 1853(a)(15). After the Council completes its proposed plan or amendment, NMFS must review it for compliance with applicable law and standards. Id. § 1854(a)(1)(A).

Plaintiffs contend that Amendment 4 contravenes the Act's requirements by failing to include river herring as a stock in the Atlantic herring fishery. Pls.' Mot. 15. Consequently, Plaintiffs argue, Defendants have violated the MSA and APA by erroneously concluding that Amendment 4 comports with the provisions of the MSA. Pls.' Mot. 20; see also 16 U.S.C. § 1854(a)(1)(A) (NMFS must determine whether FMPs are consistent with provisions of MSA); N.C. Fisheries Ass'n, 518 F. Supp. 2d at 71-72 ("Secretarial review of a FMP or plan amendment submitted by a regional council focuses on

the proposed action's consistency with the substantive criteria set forth in, and the overall objectives of, the MSA.").

The Court must now consider whether NMFS acted arbitrarily and/or capriciously in approving Amendment 4. 16 U.S.C. § 1855(f)(1); 5 U.S.C. § 706(2). The Court's "task is not to review de novo whether the amendment complies with [the MSA's] standards but to determine whether [NMFS's] conclusion that the standards have been satisfied is rational and supported by the record." C&W Fish, 931 F.2d at 1562; see also Blue Ocean Inst. v. Gutierrez, 585 F. Supp. 2d 36, 43 (D.D.C. 2008).

Defendants argue that the Administrative Record fully supports their decision and rely on two basic rationales. First, Defendants argue that, because of the imminence of the 2011 statutory deadline for completion of Amendment 4, the decision to postpone consideration of inclusion of river herring in the fishery until development of Amendment 5 was reasonable. Second, Defendants argue that NMFS properly deferred to the Council's determination as to the makeup of the fishery.

1. Delay Due to Statutory Deadline

Defendants first point to the pressure imposed by the MRSA's deadline. Defendants state that, in June 2009, they determined that consideration of measures specifically designed to protect river herring should be delayed so that they could meet the 2011 statutory deadline for providing measures to protect Atlantic

herring. Defs.' Mot. 17, 38; see AR 6325-26 ("In June 2009, the Council determined there was not sufficient time to develop and implement all the measures originally contemplated in Amendment 4 by 2011, so it decided that Amendment 4 would only address ACLs and AMs requirements and specification issues."). Defendants' logic was that because time was limited and the MSA required ACL and AM rules for all stocks in the fisheries and Atlantic herring had already been identified as a stock in the fishery, they could best comply with the MSA by formulating only the Atlantic herring regulations and postponing consideration of regulations for the management of river herring. See Pub. L. No. 109-479, § 104(b), 120 Stat. 3575, 3584 (requiring that FMPs including processes for setting ACLs and AMs take effect "in fishing year 2011 for all . . . fisheries" not determined to be overfished, including the Atlantic herring fishery).

While it is correct that the MRSA did impose the 2011 deadline, Defendants fail to provide any explanation or analysis from which the Court can conclude that the delay in considering the composition of the fishery, which entailed exclusion of river herring, was reasonable. McDonnell Douglas Corp., 375 F.3d at 1186-87 ("we do not defer to the agency's conclusory or unsupported suppositions."). The MSRA was signed at the beginning of 2007. Defendants identify nothing in the Administrative Record that explains why, when the Council had more than four years to meet the

statutory deadline for fishing year 2011, it could not address whether river herring, in addition to Atlantic herring, were in need of ACLs and AMs and still meet its deadline.

The Administrative Record discloses only vague and conclusory statements that "there was not sufficient time to develop and implement all the measures originally contemplated in Amendment 4 by 2011." AR 6325; see also AR 5641. The closest Defendants come to providing a substantive explanation is to quote a slide from a January 26, 2011, meeting regarding proposed Amendment 5, which reads, "the Herring [Plan Development Team] cannot generate a precise enough estimate of river herring catch on which to base a cap." AR 5361. That document does not explain why an estimate could not have been generated prior to issuance of Amendment 4, nor why the Council could not at the very least have devised an interim Acceptable Biologic Catch control rule based on the best available science, as it did in Amendment 4 for Atlantic herring. Defendants point to no other evidence in the Administrative Record to explain why the Council was unable to address management of river herring in the four years of lead time that elapsed between the signing of the MSRA and the final promulgation of Amendment 4.

The reason that Defendants' failure matters is that the MRSA requires ACLs and AMs for all stocks in need of conservation and management, not just for those stocks which were part of the fishery prior to passage of the MRSA. Although the MRSA does not

explicitly require the Council to reassess the makeup of the fishery, it does require the Council and NMFS to set ACLs and AMs by 2011 "such that overfishing does not occur in the fishery." 16 U.S.C. § 1853(a)(15). The setting of ACLs and AMs necessarily entails a decision as to which stocks require conservation and management. Id. §§ 1802(13), 1853(a)(15). Hence, Defendants must provide some meaningful explanation as to why it was not possible to consider which stocks, other than Atlantic herring, should be subject to the ACLs and AMs which are so central to effective fishery management and avoidance of overfishing. NetCoalition v. SEC, 615 F.3d 525, 539 (D.C. Cir. 2010) ("an agency may not shirk a statutory responsibility simply because it may be difficult.").

Moreover, Defendants have not explained why the information in the Administrative Record cited by Plaintiffs was deemed insufficient to justify including river herring as a stock, as urged in many comments submitted on the Proposed Regulation, or to permit setting at least an interim Acceptable Biological Catch limit for the species, just as was done for Atlantic herring. See Pls.' Mot. 18-19 (citing AR 154, 157, 315, 407, 645, 665, 755, 779, 780, 795, 903, 1257, 1288, 1506, 1978, 2550, 2571, 2602, 2806, 3789, 6341).

In short, Defendants themselves cite to no evidence or facts supporting the Council's excuse that "there was not sufficient time" to consider the fishery's composition. AR 6325; Kristin

Brooks Hope Ctr. v. FCC, 626 F.3d 586, 588 (D.C. Cir. 2010) ("The agency's explanation cannot 'run [] counter to the evidence,' . . . and it must 'enable us to conclude that the [agency's action] was the product of reasoned decisionmaking.'") (quoting Motor Vehicle Mfrs. Ass'n, 463 U.S. at 43, 52).

While a looming statutory deadline may in some instances provide justification for an agency's delay in decision-making, it does not relieve Defendants of the duty to "articulate a satisfactory explanation for its action including a rational connection between the facts found and the choice made"--especially when the agency was given a four-year lead time to meet that deadline and failure to meet it could have serious consequences for the species to be protected. Motor Vehicle Mfrs. Ass'n, 463 U.S. at 43 (internal quotation omitted). Defendants' conclusory statement that river herring would simply have to wait until a future amendment does not suffice. Kristin Brooks Hope Ctr., 626 F.3d at 588; McDonnell Douglas Corp., 375 F.3d at 1186-87.

2. Deference to the Council

Defendants also argue that river herring were not designated as a stock in the fishery because the Council decided to include only target stocks in the fishery, and river herring is a non-target stock. Defs.' Mot. 17 (citing AR 6067). According to Defendants, NMFS deferred to the Council's decision not to include any non-target stocks in the fishery, and needed to do no more. AR

6256, 6330. The crux of Defendants' argument is that under both the structure of the MSA and the agency's own regulations, unless a species is determined by NMFS to be "overfished" or the Council's decision is in clear violation of the MSA,[5] NMFS should simply defer to the Council's determination of what stocks are in the fishery rather than conduct an independent review of whether that determination complies with the MSA's provisions and standards. Defs.' Mot. 15-16; Defs.' Reply 4-9.

a. Statutory Provisions

Defendants argue that the "Magnuson-Stevens Act entrusts the Councils with the responsibility to prepare FMPs for those fisheries requiring conservation and management" and that the "inclusion of a species . . . in a fishery management unit is based on a variety of judgment calls left to the Council." Defs.' Mot. 15. Defendants rely on 16 U.S.C. § 1852(h), giving the Council the responsibility to prepare and submit FMPs and amendments, and on 16 U.S.C. § 1854(e), requiring an FMP only where NMFS has determined that a fishery is "overfished." Therefore, Defendants contend, in

[5] Defendants have not been consistent in explaining what sort of review NMFS must apply to the Council's determination of the composition of a fishery. In their Motion, Defendants concede that NMFS must review FMPs and amendments for consistency with the National Standards and applicable law, but argue that "[t]he inclusion of a species not determined to be overfished in a fishery management unit is based on a variety of judgment calls left to the Council." Defs.' Mot. 15-16. Hence, Defendants appear to be arguing that the Council's decision to exclude a species from a fishery is unreviewable. Later, at oral argument, however, Defendants agreed that the Council's decision must not be arbitrary or capricious.

the absence of a finding of overfishing, council decisions about the make-up of a fishery are unreviewable by NMFS and are entitled to deference.

Plaintiffs view Defendants' argument as "threaten[ing] to unravel the entire fabric of the Act." Pls.' Mot. 17. They caution that, under the Defendants' interpretation of the MSA, "councils would be left with the sole discretion to include any, or no, stocks in their FMPs, regardless of whether there is scientific information demonstrating the need for their conservation and management." Id.

Defendants are correct that "it is the Council that has the responsibility to prepare the FMP in the first instance for those fisheries requiring conservation and management," which includes describing the species to be managed. Defs.' Reply 4-5 (citing 16 U.S.C. §§ 1852(h)(1), 1853(a)(2)) (emphasis in original). As explained above, except in special circumstances,[6] the council prepares and submits proposed FMPs and amendments to NMFS. 16 U.S.C. § 1852(h)(1).

What Defendants fail to fully appreciate, however, is that once the council completes its work, the MSA requires NMFS to review its plan to determine whether it comports "with the ten

[6] For example, NMFS may develop its own FMP if a council fails to do so within a reasonable time for a fishery in need of conservation and management, or NMFS may order a council to take action to end overfishing and rebuild stocks if it finds that a fishery is overfished or approaching a condition of being overfished. 16 U.S.C. §§ 1854(c)(1), (e).

national standards, the other provisions of [the Act], and any other applicable law." Id. § 1854(a)(1)(A). Thus, it is Defendants' responsibility to decide whether an FMP, including the composition of its fishery, satisfies the goals and language of the MSA. N.C. Fisheries Ass'n, 518 F. Supp. 2d at 71-72 ("Secretarial review of a FMP or plan amendment submitted by a regional council focuses on the proposed action's consistency with the substantive criteria set forth in, and the overall objectives of, the MSA."). While Defendants are correct that it is the Council's role to name the species to be managed "in the first instance," it is NMFS's role, in the second instance, to ensure that the Council has done its job properly under the MSA and any other applicable law.

It is true that the MSA requires management measures when NMFS finds overfishing. But it certainly does not follow that in the absence of overfishing NMFS may simply rubber stamp the Council's decisions. Section 1854(a) is clear: NMFS must examine whether the FMP "is consistent with the national standards, the other provisions of [the MSA], and any other applicable law." 16 U.S.C. § 1854(a)(1)(A). While NMFS may defer to the Council on policy choices, the Act plainly gives NMFS the final responsibility for ensuring that any FMP is consistent with the MSA's National Standards, and "the overall objectives" of the Act. N.C. Fisheries Ass'n, 518 F. Supp. 2d at 71-72.

Defendants' responsibilities therefore include ensuring compliance with Section 1852(h)'s requirement that the Council prepare an FMP or amendment for any stock of fish that "requires conservation and management." 16 U.S.C. § 1852(h)(1). That Section requires FMPs and necessary amendments for all "stocks of fish which can be treated as a unit for purposes of conservation and management" and which are in need of conservation and management. Id. §§ 1802(13)(a), 1852(h)(1). Thus, NMFS must make its own assessment of whether the Council's determination as to which stocks can be managed as a unit and require conservation and management is reasonable. Motor Vehicle Mfrs. Ass'n, 463 U.S. at 52 ("agency's explanation . . . [must] enable us to conclude that [its decision] was the product of reasoned decisionmaking.").

There is no basis for concluding, as Defendants do, that the structure of the MSA weakens Section 1854's command that NMFS review proposed plans and amendments for compliance with the statute. The standards to be applied in reviewing NMFS's conclusion that Amendment 4 complies with Section 1852(h) are therefore no different than review of NMFS's conclusion that an amendment complies with the National Standards. See N.C. Fisheries Ass'n, 518 F. Supp. 2d at 71-72 ("Secretarial review of a FMP or plan amendment submitted by a regional council focuses on the proposed action's consistency with the substantive criteria set forth in, and the overall objectives of, the MSA."). Merely deferring to the

Council's exclusion of non-target species like river herring without any explanation for why that exclusion complies with the MSA fails to meet APA standards. Motor Vehicle Mfrs. Ass'n, 463 U.S. at 43 (agency must "examine the relevant data and articulate a satisfactory explanation for its action"); Tourus Records, Inc. v. DEA, 259 F.3d 731, 737 (D.C. Cir. 2001) ("A fundamental requirement of administrative law is that an agency set forth its reasons for decision; an agency's failure to do so constitutes arbitrary and capricious agency action.") (internal quotations omitted).

b. Defendants' Regulation

National Standard 1 of the MSA states, "Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the U.S. fishing industry." 16 U.S.C. § 1851(a)(1). Defendants cite to 50 C.F.R. § 600.310(d)(1), which interprets that Standard, and states: "[t]he relevant Council determines which specific target stocks and/or non-target stocks to include in a fishery." According to Defendants, this provision justifies NMFS's failure to explain why the Council's decision comports with the MSA. Defs.' Mot. 15.

However, Section 1854 states in no uncertain language that NMFS must "determine whether [the plan or amendment] is consistent with the national standards, the other provisions of this chapter, and any other applicable law." 16 U.S.C. § 1854(a)(1)(A). A mere

regulation can never override a clear Congressional statutory command--i.e., that NMFS shall review FMP amendments for compliance with all provisions of the MSA. Chevron, U.S.A., Inc. v. Natural Res. Def. Council, Inc., 467 U.S. 837, 843 n.9 (1984); Nat'l Ass'n of Clean Air Agencies v. EPA, 489 F.3d 1221, 1228 (D.C. Cir. 2007). Nor, it should be noted, need 50 C.F.R. § 600.310(d)(1) be interpreted as Defendants do. It is absolutely correct that under the MSA, the councils do have the responsibility to determine what stocks to include in the fishery. But that is not the end of the process. After the councils make their determination, NMFS must still make its final compliance review.

Simply put, 50 C.F.R. § 600.310(d)(1) cannot be understood to permit NMFS to ignore its duty to ensure compliance with the MSA. The councils do not have unlimited and unreviewable discretion to determine the make-up of their fisheries.

Therefore, Defendants were required to review Amendment 4 for compliance with the MSA. Defendants need not prove that the decision to designate only target stocks as stocks in the fishery was the best decision, but they must demonstrate that they reasonably and rationally considered whether Amendment 4's definition of the fishery complied with the National Standards and with the MSA's directive that FMPs be generated for any fisheries requiring conservation and management. Mere deference to the Council, with nothing more, does not demonstrate reasoned decision-

making. Motor Vehicle Mfrs. Ass'n, 463 U.S. at 56 (agency's decision was arbitrary and capricious because it failed to analyze the issue); Am. Equity Inv. Life Ins. Co. v. SEC, 613 F.3d 166, 179 (D.C. Cir. 2010) (same); Sierra Club v. U.S. Army Corps of Eng'rs, 772 F.2d 1043, 1051 (2d Cir. 1985) ("agency's action is held to be arbitrary and capricious when it . . . utterly fails to analyze an important aspect of the problem.").

C. Bycatch

Plaintiffs also contend that Amendment 4 fails to minimize bycatch, in violation of National Standard 9. 16 U.S.C. § 1851(a)(9). "Bycatch" refers to "fish which are harvested in a fishery, but which are not sold or kept for personal use" including "economic discards and regulatory discards." Id. § 1802(2). In other words, fish incidentally caught in a trawler's net and then later thrown away are bycatch. "In simple terms, bycatch kills fish that would otherwise contribute toward the well-being of the fishery or the nation's seafood consumption needs." Conservation Law Found. v. Evans, 209 F. Supp. 2d 1, 14 (D.D.C. 2001).

The Final Rule implementing Amendment 4 addresses bycatch in one sentence: "[b]ycatch in the herring fishery will continue to be addressed and minimized to the extent possible, consistent with other requirements of the MSA." 76 Fed. Reg. 11373, 11374; AR 6326. Plaintiffs argue that this one sentence is insufficient under the MSA, because the Act "requires that all FMPs and FMP amendments

contain concrete conservation and management measures to minimize bycatch and bycatch mortality to the extent practicable." Pls.' Mot. 21. Defendants respond that (1) Plaintiffs have waived their claim under National Standard 9 by failing to raise an objection during the administrative process; and (2) the Council and NMFS have sufficiently minimized bycatch based on the best available science. Defs.' Mot. 19-21.

Defendants' first argument is, to put it mildly, hyper-technical, and without merit. Defendants concede that Plaintiffs did comment on bycatch during the administrative process, but only before Defendants issued their second Notice of Intent, limiting Amendment 4's scope to addressing ACLs and AMs for Atlantic herring. Defs.' Reply 10. Nonetheless, Defendants contend that Plaintiffs' failure to raise the issue again, after NMFS announced that Amendment 4 would proceed in its reduced form, bars them from bringing the claim. Id. That is, Defendants argue that Plaintiffs waived their bycatch claim by not raising it a second time, after Defendants had already made clear that they would not consider bycatch in Amendment 4.

This argument finds no support in caselaw--nor for that matter in fundamental fairness. Certainly it is true "that a party will normally forfeit an opportunity to challenge an agency rulemaking on a ground that was not first presented to the agency for its initial consideration." Advocates for Highway & Auto Safety v. Fed.

Motor Carrier Safety Admin., 429 F.3d 1136, 1150 (D.C. Cir. 2005). But Defendants cite no authority requiring parties to raise the ground repeatedly after the agency has rejected their suggestion or after each new version of the proposed action is issued.

Moreover, by raising the bycatch issue before Amendment 4 was reduced in scope, Plaintiffs clearly satisfied the purposes of this issue waiver rule. Plaintiffs "'alert[ed] the agency to [their] position and contentions,' in order to allow the agency to give the issue meaningful consideration." Dep't of Transp. v. Pub. Citizen, 541 U.S. 752, 764 (2004) (quoting Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 553 (1978)); see also Advocates for Highway & Auto Safety, 429 F.3d at 1150 (the two reasons for an "issue exhaustion" or "issue waiver" rule are that (1) "the role of the court is to determine whether the agency's decision is arbitrary and capricious for want of reasoned decisionmaking" and (2) "'[s]imple fairness . . . requires as a general rule that courts should not topple over administrative decisions unless the administrative body . . . has erred against objection made at the time appropriate under its practice.'") (quoting United States v. L.A. Trucker Lines, Inc., 344 U.S. 33, 37 (1952)). Consequently, the Court concludes that Plaintiffs have not waived their claim under National Standard 9.

Defendants' second argument is more substantive. They contend that, in fact, they have satisfied their responsibility to minimize bycatch to the extent practicable.

National Standard 9 requires that "[c]onservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch." 16 U.S.C. § 1851(a)(9). While each FMP must attempt to minimize bycatch to the extent practicable, it must also "balance competing environmental and economic considerations" as embodied in the ten National Standards. Ocean Conservancy v. Gutierrez, 394 F. Supp. 2d 147, 157 (D.D.C. 2005); Pacific Coast Fed'n of Fishermen's Ass'n v. Locke, No. C 10-04790 CRB, 2011 WL 3443533, at *9 (N.D. Cal. Aug. 5, 2011). Nonetheless, to meet their responsibility to ensure compliance with the National Standards, Defendants must demonstrate that they have evaluated whether the FMP or amendment minimized bycatch to the extent practicable. Conservation Law Found., 209 F. Supp. 2d at 14.

Defendants argue that they have met this burden because the FMP as a whole minimizes bycatch.[7] Defs.' Mot. 20-21. Defendants

[7] Defendants make much of the distinction that "as a legal matter, the Magnuson-Stevens Act requires that the overall fishery management plan be consistent with National Standard 9--not that each separate amendment contain measures to minimize bycatch." Defs.' Mot. 20 (citing 16 U.S.C. § 1851(a)(9)) (emphasis in original). While it may be correct that Amendment 4's compliance with National Standard 9 should be viewed in the context of the entire FMP, it is also clear, as discussed earlier, that NMFS was required to review Amendment 4 "to determine whether it is (continued...)

point to (1) Amendment 1 to the FMP, which "prohibits midwater trawling vessels from fishing in a designated area for Atlantic herring from June 1 to September 30 of each year," (2) the haddock incidental catch cap, which addresses haddock bycatch and was developed through Framework 43 of the Northeast Multispecies FMP,[8] and (3) the limits generally placed on the herring fishery by the interim ABC control rule. Id. None of these three examples demonstrate that Defendants undertook any effort to consider whether Amendment 4, or the FMP as amended by Amendment 4, minimized bycatch to the extent practicable.

The first measure identified by Defendants, Amendment 1, simply bans use of midwater trawling vessels in one of the Atlantic herring fishery's four management areas for four months of the year. 72 Fed. Reg. 11252, 11257 (Mar. 12, 2007). While this rule, issued in March of 2007, does reduce the use of a type of boat that causes substantial bycatch, it does so for only four months per year in only one management area. The second measure, the haddock

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[7](...continued)
consistent with the national standards." 16 U.S.C. § 1854(a)(1)(A). Hence, NMFS's review of Amendment 4 had to include some analysis of whether the FMP minimized bycatch "to the extent practicable." Id. § 1851(a)(9). As discussed at length below, Defendants have identified nothing in the Administrative Record demonstrating such examination.

[8] The haddock incidental catch cap specifies an "incidental haddock catch allowance" for the season for the herring fishery. AR 6153. In simple terms, when a vessel has reached the allowance for incidental haddock catch, it is prohibited from fishing for, possessing, or landing more than 2,000 pounds of herring per trip for the rest of the year. Id.

incidental catch cap, which was issued as part of the Northeast Multispecies FMP, only considers haddock bycatch, and gives no incentive for minimizing bycatch of other species, such as river herring. AR 6153. Finally, the third measure is merely the limits on Atlantic herring catch and in no way limits fishing to minimize river herring or other bycatch. Thus, this measure only has the ancillary benefit of reducing bycatch and bycatch mortality of river herring and other fish by generally limiting the amount of fishing in the Atlantic herring fishery.

The existence of an earlier rule to reduce bycatch and two measures that, at best, have only an incidental effect on bycatch does not show that NMFS ever considered the significant issue of whether the Atlantic Herring FMP minimizes bycatch or bycatch mortality to the extent practicable based on the best available science. 16 U.S.C. §§ 1851(a)(2), (9). While each of these three measures may have some impact on total bycatch in the Atlantic herring fishery, none of them indicate that Defendants have considered the issue in any substantive manner.

Defendants also quote from two sections of Amendment 4 that discuss bycatch. First, Defendants point to the section of the Council's substantive analysis of Amendment 4 that ostensibly discusses National Standard 9. Defs.' Mot. 20-21. This single paragraph explains that "the Council made the decision to include only [Atlantic] herring as a stock with the knowledge that other

mechanisms exist to deal with non-targets [sic] species caught," and "one of the objectives of Amendment 5 to the Atlantic Herring FMP, which is under development, is to develop a program which effectively and efficiently monitors bycatch and potentially acts to reduce it." AR 6087. "The amendment therefore specifies that bycatch is to be monitored and minimized accordingly."[9] Id. If

[9] The paragraph in full reads:

> National Standard 9 states that bycatch must be minimized and that mortality of such bycatch must be minimized. As such, the Council made the decision to include only herring as a stock with the knowledge that other mechanisms exist to deal with non-targets [sic] species caught by the herring fishery. The amendment therefore specifies that bycatch is to be monitored and minimized accordingly. This amendment also includes the haddock catch cap, being implemented as an AM, which is another way in which bycatch is considered and minimized without the haddock stock being defined as a part of the fishery. Furthermore, one of the objectives of Amendment 5 to the Atlantic Herring FMP, which is under development, is to develop a program which effectively and efficiently monitors bycatch and potentially acts to reduce it with collaboration from the fishing industry. The measure maximizes the flexibility provided to the Council so that it can utilize the best scientific information available at the time when the new amendment is implemented. For these reasons the Council decided that until such time that evidence is brought to the Council which indicates that another species needs to be added to the definition of a stock within the herring FMP in order to be managed acceptably, Atlantic herring will be the only defined stock in the fishery.

(continued...)

anything, this statement makes it clear that neither the Council nor NMFS made any effort to consider whether bycatch was minimized to the extent practicable. 16 U.S.C. § 1851(a)(9).

Second, Defendants point to the section of their analysis of the "Environmental Impacts of Management Alternatives" dealing with the "Impacts on Non-target Bycatch Species." AR 6193-95. Defendants quote: "Amendment 4 'limit[s] the catch of non-target/bycatch species, particularly through the limit to the fishery placed by the interim ABC control rule.'" Defs.' Mot. 20-21 (quoting AR 6193). In context, all that the document actually says is that, because of Amendment 4's interim limits on the total catch allowed for Atlantic herring, there will be less incidental catch of non-target species than under "the no action alternative." AR 6193-94. Again, this conclusion does not reflect any examination or consideration of whether the FMP, as amended, actually minimizes bycatch to the extent practicable. 16 U.S.C. § 1851(a)(9).

Finally, Defendants state that they chose to defer consideration of National Standard 9 due to the 2011 statutory deadline for Amendment 4. Defs.' Mot. 21. For the reasons discussed at length above, supra Part III.B.1., this rationale does not suffice to demonstrate reasoned analysis of the bycatch issue. In sum, there is no evidence that the agency "thoroughly reviewed the relevant scientific data on bycatch and consulted with participants

[9](...continued)
AR 6087.

in the fishery to determine whether the proposed regulations would be effective and practical," as they must do to satisfy their responsibilities to ensure compliance with the National Standards. Ocean Conservancy, 394 F. Supp. 2d at 159; Conservation Law Found., 209 F. Supp. 2d at 14. Therefore, Defendants' approval of Amendment 4, without addressing the minimization of bycatch to the extent practicable, was in violation of the MSA and APA.

D. ACLs for Atlantic Herring

Plaintiffs claim that Amendment 4's annual catch limit ("ACL")[10] for Atlantic herring violates the MSA because it fails to prevent overfishing and is not based upon the best available science. 16 U.S.C. §§ 1851(a)(1), (2). As detailed above, the MRSA significantly enlarged the Council's and NMFS's duties by requiring all FMPs to include "a mechanism for specifying annual catch limits . . . at a level such that overfishing does not occur in the fishery." Id. § 1853(a)(15). The new ACLs are to set specific limits on the total fish caught in each fishery.

The setting of an ACL entails a rather laborious process intended to generate a scientific basis for the final catch limit. First, the Council must define an overfishing limit ("OFL"), which, to simplify, is an estimate of the rate of fishing at which a

[10] Amendment 4 permits the Council to establish both an overall ACL for the Atlantic herring fishery, and sub-ACLs for specific management areas. AR 6072-73, 6090.

fishery will not be sustainable.[11] 50 C.F.R. §§ 600.310(e)(1)(i)(A)-(2)(i)(E).

Second, the Council must determine the acceptable biological catch ("ABC"), which is the amount of fish that may be caught without exceeding the overfishing limit, after taking into account scientific uncertainty. Id. § 600.310(f)(2)(ii). In order to set the ABC, the Council must first establish an "ABC control rule," which explains how the Council will account for scientific uncertainty when setting the ABC. 50 C.F.R. § 600.310(f)(4). The objective of the ABC control rule is to create a buffer between OFL and ABC so that there is a low risk that OFL will be exceeded. See id. §§ 600.310(b)(v)(3), (f)(4).

Third, and finally, the Council must set the ACL, which is the amount of fish that may be caught without exceeding the ABC, after taking into account management uncertainty, such as late reporting,

[11] Even this first step entails a number of complex and technical calculations and analyses. For example, in order to determine an OFL, one must, among other things, consider (1) the Maximum Sustainable Yield ("MSY"), defined as "the largest long-term average catch or yield that can be taken from a stock or stock complex under prevailing ecological, environmental conditions and fishery technological characteristics . . . , and the distribution of catch among fleets," (2) the MSY fishing mortality rate ("F_{msy}"), defined as "the fishing mortality rate that, if applied over the long term would result in MSY," and (3) the MSY stock size ("B_{msy}"), defined as "the long-term average size of the stock or stock complex, measured in terms of spawning biomass or other appropriate measure of the stock's reproductive potential that would be achieved by fishing at F_{msy}." 50 C.F.R. § 600.310(e)(1)(i).

misreporting, and underreporting of catch.[12] Id. § 600.310(f)(1). In mathematical terms, the entire process can be described as OFL≥ABC≥ACL. AR 6061. In plain English, the ABC must be equal to or less than OFL, to account for scientific uncertainty, and the final ACL must be equal to or less than ABC, to take into account management uncertainty. 50 C.F.R. §§ 600.310(e)-(f).

Further, each council must establish a scientific and statistical committee ("SSC"), whose members must include Federal and State employees, academicians, or independent experts with "strong scientific or technical credentials and experience." 16 U.S.C. §§ 1852(g)(1)(A), (C). The SSC provides "ongoing scientific advice" for fishery management decisions, including the setting of ABC and OFL. Id. § 1852(g)(1)(B). In particular, the Council must create its ABC control rule based on scientific advice from the SSC. 50 C.F.R. § 600.310(f)(4). Additionally, ACLs "may not exceed the fishing level recommendations" of the Council's SSC. 16 U.S.C. § 1852(h)(6). To summarize, in the process of setting the final ACL, the council must solicit scientific advice from the SSC and, based on that advice, establish a rule for acceptable biological catch to account for scientific uncertainty, and then set an ACL that permits no greater fishing levels than the SSC recommends.

[12] Again, the Court must emphasize that even this complex explanation, abridged for the purposes of comprehension, omits details of the considerably more complicated process. See 50 C.F.R. § 600.310(f).

Finally, ACLs must, of course, be consistent with the National Standards. Id. § 1853(a)(1)(C). Plaintiffs argue that the Atlantic herring ACL fails to comply with National Standards 1 and 2. National Standard 1 requires that "[c]onservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry." Id. § 1851(a)(1). Hence, they argue, NMFS's conclusion that the Atlantic herring ACL prevents overfishing while achieving optimum yield must be "rational and supported by the record." C&W Fish, 931 F.2d at 1562; Blue Ocean Inst., 585 F. Supp. 2d at 43.

National Standard 2 instructs, "[c]onservation and management measures shall be based upon the best scientific information available." Id. § 1851(a)(2). National Standard 2 "requires that rules issued by the NMFS be based on a thorough review of all the relevant information available at the time the decision was made . . . and insures that the NMFS does not 'disregard superior data' in reaching its conclusions." Ocean Conservancy, 394 F. Supp. 2d at 157 (quoting Building Indus. Ass'n v. Norton, 247 F.3d 1241, 1246-47 (D.C. Cir. 2001)).

This rule "is a practical standard requiring only that fishery regulations be diligently researched and based on sound science." Ocean Conservancy, 394 F. Supp. 2d at 157. Further, "[c]ourts give a high degree of deference to agency actions based on an evaluation

of complex scientific data within the agency's technical expertise." Am. Oceans Compaign v. Daley, 183 F. Supp. 2d 1, 4 (D.D.C. 2000) (citing Baltimore Gas & Elec. Co. v. NRDC, 462 U.S. 87, 103 (1983)). Therefore, "[l]egal challenges to the Secretary's compliance with National Standard 2 are frequent and frequently unsuccessful" and Plaintiffs face a "high hurdle." N.C. Fisheries Ass'n, 518 F. Supp. 2d at 85.

Amendment 4's ABC control rule, which is intended to account for scientific uncertainty, sets the ABC for Atlantic herring at the three-year average annual catch measured from 2006-2008, or at 106,000 metric tons ("mt"). AR 6068-69. In other words, the ACL for Atlantic herring will be equivalent to the average yearly catch from 2006 to 2008, minus a buffer for management uncertainty. Plaintiffs argue that this ABC control rule violates National Standards 1 and 2. Plaintiffs claim that using this three-year average, without any further discount to reflect scientific uncertainty, will not prevent overfishing and is not based on the best available science.[13] Pls.' Mot. 22-27.

[13] Plaintiffs also object to Defendants' adoption of an "Interim" ABC control rule. Pls.' Mot. 22. Defendants correctly point out that "nothing in the MSA . . . precludes the use of an interim rule" and, of course, all ABC control rules are interim in the sense that the agency can, and should, revise their rules as superior or more recent information becomes available. Defs.' Mot. 25 (emphasis in original). Perhaps most importantly, the decision to label the rule "interim" with the expectation that the Council can develop a new control rule in the 2013-2015 herring specifications based on a 2012 stock assessment was perfectly rational and supported by the Administrative Record. C&W Fish, 931 (continued...)

To the contrary, the Administrative Record demonstrates that the Council properly considered the advice of its SSC and, after review of the best scientific information then available, selected an ABC control rule. The Administrative Record indicates that the SSC identified "considerable scientific uncertainty" in attempting to assess the size of the Atlantic herring stock, and therefore "recommended that the ABC be set based on recent catch, and asked the Council [to] determine the desired risk tolerance in setting the ABC." AR 6068. In accordance with the SSC's advice, the Council considered three options for defining recent catch: (1) the most recent, available single-year catch figure of 90,000 mt in 2008; (2) the most recent, available three-year annual average of 106,000 mt from 2006-2008; and (3) the most recent, available five-year annual average of 108,000 mt from 2004-2008. Id.

The Council ultimately decided to use the three-year catch figure to estimate ABC, based on four rationales. First, a three-year average is commonly used to estimate "recent" trends in a fishery. Id. Second, the 2008 catch "was one of the lowest on record for many years" and using the one-year estimate may fail to account for general variability in annual catch. Id. Third, because the three-year average is lower than the five-year average, it provides a more conservative estimate, and is therefore preferable in order to account for other factors, such as "the importance of

[13](...continued)
F.2d at 1562; see 76 Fed. Reg. 11373, 13375; AR 6088-89.

herring as a forage species." Id. Fourth, and finally, the specification of the ABC at 106,000 mt provides a 27% buffer from the maximum sustainable fishing mortality rate of 145,000 mt for 2010, in order to account for scientific uncertainty. Id. at 6069.

Plaintiffs point to no evidence that the agency ignored superior or contrary data, as they must to succeed in a National Standard 2 challenge.[14] N.C. Fisheries Ass'n, 518 F. Supp. 2d at 85. Instead, Plaintiffs protest that "Defendants arbitrarily ignored at least two approaches for setting ABC that were scientifically superior." Pls.' Reply 12. First, Plaintiffs claim that Defendants did not adopt an earlier recommendation by the SSC that the ABC control rule include a 40% buffer between OFL and ABC. Second, Plaintiffs state that Defendants refused to accept the approach they identified to set the ABC at 75% of recent average catch. Pls.' Reply 12 (citing AR 3909, 5615). But, as explained above, the Council provided perfectly rational explanations, based on the best available science, for selecting its ABC control rule, which accounted for scientific uncertainty and comported with the SSC's

[14] Plaintiffs claim that Defendants failed "to account for the role of forage in the ecosystem" when setting its ABC control rule. Pls.' Mot. 25-27. However, the Council's analysis of Amendment 4 states that Atlantic herring's role as a forage species was an "Important Consideration" for the SSC and Council when considering the ABC control role and definition of ABC. AR 6051-52, 6054. Indeed, the Council selected the three-year average approach in part because it felt that it best accounted for "other factors identified by the SSC, including recruitment, biomass projections, and the importance of herring as a forage species." Id. at 6088.

recommendations. AR 6088-89. National Standard 2 demands no more. Ocean Conservancy, 394 F. Supp. 2d at 157.

Nor, finally, does National Standard 1 provide any independent reason for invalidating the ABC control rule. National Standard 1 requires that "each Council must establish an ABC control rule based on scientific advice from its SSC" and that "[t]he determination of ABC should be based, when possible, on the probability that an actual catch equal to the stock's ABC would result in overfishing." 50 C.F.R. § 600.310(f)(4). The Council considered the advice of its SSC, examined several options for setting the ABC control rule, and made a reasoned determination that using the three-year average catch offered the best approach. The Court must defer to an agency's rational decision when supported by the Administrative Record, as here, and particularly when that decision involves the type of technical expertise relied upon in this case. Bloch, 348 F.3d at 1070; C&W Fish, 931 F.2d at 1562; Am. Oceans Compaign, 183 F. Supp. 2d at 4.

Although Plaintiffs may be correct that the Council could have selected a more conservative ABC control rule, which would have resulted in a more conservative ACL, Plaintiffs must do far more than simply show that Defendants did not take their preferred course of action. See N.C. Fisheries Ass'n, 518 F. Supp. 2d at 85; Am. Oceans Campaign, 183 F. Supp. 2d at 14 ("the fact that Plaintiffs would have preferred a more detailed analysis does not

compel the conclusion that the Secretary's action was arbitrary and capricious."). Plaintiffs must show "some indication that superior or contrary data was available and that the agency ignored such information." N.C. Fisheries Ass'n, 518 F. Supp. 2d at 85. Plaintiffs have made no showing other than that the agency did not select their favored control rule. Therefore, Defendants' adoption of Amendment 4's ABC control rule and resultant ACLs was not arbitrary and/or capricious.

E. AMs for Atlantic Herring

In order to enforce the new ACLs, the amended MSA requires all FMPs to include "measures to ensure accountability." 16 U.S.C. § 1853(a)(15). "AMs are management controls to prevent ACLs . . . from being exceeded, and to correct or mitigate overages of the ACL if they occur." 50 C.F.R. § 600.310(g)(1). Therefore, whenever possible, FMPs should include AMs "to prevent catch from exceeding ACLs" and "when an ACL is exceeded . . . as soon as possible to correct the operational issue that caused the ACL overage, as well as any biological consequences to the stock or stock complex resulting from the overage." Id. §§ 600.310(g)(2), (3).

Just like ACLs, AMs must satisfy the National Standards, including National Standard 2. As explained at greater length above, National Standard 2 "is a practical standard requiring only that fishery regulations be diligently researched and based on sound science." Ocean Conservancy, 394 F. Supp. 2d at 157. And of

course, "[c]ourts give a high degree of deference to agency actions based on an evaluation of complex scientific data within the agency's technical expertise." Am. Oceans Compaign, 183 F. Supp. 2d at 4.

Plaintiffs argue that Amendment 4's AMs are deficient for two reasons. First, Plaintiffs claim that the existing monitoring system used to detect when ACLs are reached, is insufficient. Pls.' Mot. 28-31. Second, Plaintiffs contend that the actual group of AMs included in the Atlantic herring FMP "are fundamentally flawed and insufficient to minimize the frequency and magnitude of catch in excess of the ACLs for Atlantic herring." Id. at 31-33. Each claim is considered in turn.

1. Monitoring System

Currently, owners or operators of vessels with permits to fish for Atlantic herring are required to make a weekly report of herring they catch through an "Interactive Voice Response" ("IVR") system. 50 C.F.R. § 648.7(b)(2)(I). The reports are verified by comparing them to weekly dealer data. AR 6255. According to Defendants, "there is an incentive for fishermen to report catch accurately" "[b]ecause payment for catch is often tied to vessel/dealer reports." Defs.' Reply 17. Additionally, federal observers on board fishing boats monitor bycatch. Pls.' Mot. 9; Defs.' Reply 17. Between 2005 and 2007, the annual percentage of

trips observed ranged from 8% to 26%, for an annual average of 16%.[15] AR 653.

Plaintiffs argue that this monitoring system violates the MSA because "[a]ccurate catch limits are impossible at present in the Atlantic herring fishery because monitoring in the fishery is based heavily on unverified reports of catch and landings." Pls.' Mot. 30. Further, "accurate estimates cannot be accomplished because even on trips where a federal observer is on board the vessel, vessels are not required to bring all catch onboard [sic] for

[15] Plaintiffs claim that since the 1990's, "observer coverage has ranged from less than one percent of the total annual fishing trips taken in many years to roughly twenty percent in a handful of years." Pls.' Mot. 9 (citing AR 651, 653, 779). The only citation that supports this claim is a report by the Herring Alliance stating that the coverage rate "has fluctuated from 1 to 17 percent of total fishing trips since the mid-1990s, but are typically between 3 and 6 percent." AR 779. Defendants state that this report, produced by "'a coalition of environmental organizations that formed . . . to protect and restore ocean wildlife . . . by reforming the Atlantic herring fishery,'" is not peer-reviewed or approved by NMFS or the Atlantic States Marine Fisheries Commission. Defs.' Mot. 8 n.6 (quoting www.herringalliance.org/about-our-work).

More importantly, the Herring Alliance's estimate is contradicted by the data presented by the Maine Department of Marine Resources and Massachusetts Division of Marine Fisheries. That data demonstrates that 26% of trips were covered in 2005, 14% of trips in 2006, and 8% of trips in 2007, thus supporting Defendants' claim of 16% annual coverage over the three-year period. AR 653.

Plaintiffs also claim that "NMFS has never provided observer coverage levels sufficient to derive accurate catch and bycatch estimates." Pls.' Mot. 9 (citing AR 651, 653). Although one of the slides cited contains a line reading "Low samples [sic] sizes means power to detect low," it is unclear how Plaintiffs concluded that NMFS has never been able to derive accurate catch and bycatch estimates. AR 651.

sampling and inspection" and "the ability to extrapolate catch and bycatch up to fleetwide estimates is impossible because there are insufficient observer coverage levels and at-sea dumping of unsampled catch occurs, even on otherwise observed trips." Id.

However, Plaintiffs offer no evidence to demonstrate "some indication that superior or contrary data was available and that the agency ignored such information." N.C. Fisheries Ass'n, 518 F. Supp. 2d at 85; Ocean Conservancy, 394 F. Supp. 2d at 157 (National Standard 2 requires "only that fishery regulations be diligently researched and based on sound science."). Indeed, Plaintiffs again cite no evidence in the Administrative Record to support their claims that "accurate catch limits are impossible," that "accurate estimates cannot be accomplished," or that "the ability to extrapolate catch and bycatch up to fleetwide estimates is impossible." Pls.' Mot. 30.

Rather than cite to evidence that the Council or NMFS disregarded the best available science, Plaintiffs advance two legal arguments. First, Plaintiffs claim that Defendants have admitted that the current monitoring system is inadequate. Pls.' Mot. 17. But the Administrative Record citations provided by Plaintiffs say no such thing. All that they do say is that the Council was considering measures "to improve catch monitoring." AR 5587; see also AR 380-83, 2883, 2886. The statement that monitoring could, potentially, be improved, certainly does not amount to a

concession that the current system is legally insufficient. Nor, it should be pointed out, would it benefit the notice and comment process if an agency were unable to consider possible policy improvements for fear that even soliciting comments would be considered an admission that current policies are legally inadequate.

Second, Plaintiffs claim that "vessel catch reports have been found time and again to be unreliable," citing a decision by this Court. Pls.' Reply 17. However, Conservation Law Foundation, the case cited by Plaintiffs, merely observed that the defendants in that case conceded that there were problems with their bycatch monitoring and that the New England Council's Multispecies Monitoring Committee concluded that commercial fishers unlawfully underreport bycatch. 209 F. Supp. 2d at 13, 13 n.25. Certainly, the conclusion of a different council committee, based on a separate factual record in a separate fishery, does not preclude this Council from concluding that observer coverage constitutes one of several sufficient monitoring mechanisms.

The Administrative Record contains evidence that Defendants did in fact consider Plaintiffs' comments and determined that the current monitoring system is sufficient. AR 6255, 6328. Specifically, in her "Decision Memorandum," NMFS's Regional Administrator Patricia A. Kurkul stated that, after considering comments expressing concerns regarding the monitoring, she

"conclude[d] that current reporting and monitoring is sufficient to monitor catch against ACLs/sub-ACLs." Id. at 6255. She explained that herring quotas can be monitored by weekly reports with verification by comparison to dealer reports, and stated that the agency would continue to develop improvements to the reporting system in Amendment 5. Id. While NMFS may not have performed an in-depth analysis, it reasonably relied on a policy that has been in place since 2004 and which underwent its own notice and comment process before being adopted. See 69 Fed. Reg. 13482 (Mar. 23, 2004).

Most importantly, though, Plaintiffs provide no evidence--in this case--that this longstanding monitoring system, while far from perfect, was not "diligently researched and based on sound science." Ocean Conservancy, 394 F. Supp. 2d at 157; N.C. Fisheries Ass'n, 518 F. Supp. 2d at 85. While there are serious concerns about the efficacy of the current monitoring system, see AR 651, the Court must nonetheless afford "a high degree of deference to agency actions based on an evaluation of complex scientific data." Am. Oceans Compaign v. Daley, 183 F. Supp. 2d at 4. Therefore, Plaintiffs have not demonstrated that Defendants' approval of Amendment 4's monitoring system was arbitrary and/or capricious.

2. Specific Accountability Measures

Amendment 4 designates three management measures--two measures which were previously in place and one new policy--as AMs for the

Atlantic herring fishery. AR 6327; 50 C.F.R. § 648.201(a). The first AM is a management area closure device intended to prevent ACL overages. This AM prohibits vessels from catching more than 2000 lbs of Atlantic herring per day once NMFS has determined that catch will reach 95% of the annual catch allocated to the given management area. 50 C.F.R. § 648.201(a)(1). The second AM, known as the haddock incidental catch cap, attempts to prevent ACL overages by limiting Atlantic herring catch to 2000 lbs per day once NMFS has determined that the limit on incidental haddock catch has been reached. Id. § 648.201(a)(2). The third, and final, AM aims to mitigate ACL overages by deducting the amount of any overage from the relevant ACL or sub-ACL for the fishing year following NMFS's determination of the overage. Id. § 648.201(a)(3). Plaintiffs argue that each of these AMs is fundamentally flawed. Pls.' Mot. 31-33.

a. Management Area Closure

Plaintiffs criticize the management area closure measure because it has not always prevented ACL overages in the past. Id. at 31. Plaintiffs claim that the measure "has already proven to be ineffective," id., and that "Defendants acknowledge that [it] has already failed to work." Pls.' Reply 18. Plaintiffs erroneously characterize a more nuanced response from Defendants as a significant concession. What the Administrative Record actually demonstrates is that NMFS recognized that in 2010, a particular management area experienced an overage of 138% of its quota, but

that "[w]hen there is a pulse of fishing effort on a relatively small amount of unharvested quota . . . the chance of quota overage exists, regardless of reporting or monitoring tools."[16] AR 6328; Defs.' Mot. 28. Indeed, the Council considered this issue and concluded that, "[w]hile some overages have been experienced, the frequency and degree of overage has not been significant enough to compromise the health of the resource complex as a whole." AR 6077.

Plaintiffs nonetheless argue that the management area closure measure violates the MSA because it permits some overages despite MSA's requirements (1) that ACLs be set at levels to prevent overfishing and (2) that AMs prevent catch from exceeding ACLs. Pls.' Reply 18-19 (citing 16 U.S.C. § 1853(a)(15); 50 C.F.R. § 600.310(g)(2)).[17] This argument is unconvincing.

First, the existence of an ACL overage does not mean that overfishing is occurring. See 16 U.S.C. § 1802(34) (defining overfishing as "a rate or level of fishing mortality that jeopardizes the capacity of a fishery to produce the maximum sustainable yield on a continuing basis."). In other words, an overage does not necessarily establish that the capacity of a

[16] According to Defendants, there were a total of three management area overages in the four Atlantic herring management areas between 2007 and 2010. Defs.' Reply. 18, 18 n.20. In addition to the 38% overage Plaintiffs focus on, one management area experienced only a 1% overage in 2009 and another management area experienced only a 5% overage in 2010. Defs.' Reply, Ex. 2.

[17] Plaintiffs actually cite to 50 C.F.R. § 600.310(g)(3), but both the language quoted and the relevant substance is contained in § 600.310(g)(2).

fishery to produce the maximum sustainable yield on a continuing basis is being jeopardized. Indeed, the entire purpose of the process by which ACLs are generated is to create an effective buffer between ACLs and overfishing limits. See supra Part III.D.

Second, the National Standard 1 guidelines cited by Plaintiffs do not, as Plaintiffs claim, state that "NMFS must 'prevent catch from exceeding ACLs.'" Pls.' Reply 19 (quoting 50 C.F.R. § 600.310(g)(2)). The full text of that provision reads, "[w]henever possible, FMPs should include inseason monitoring and management measures to prevent catch from exceeding ACLs." 50 C.F.R. § 600.310(g)(2) (emphasis added). Indeed, these guidelines specifically require AMs that can correct ACL overages when they occur. Id. § 600.310(g)(3). Such AMs would hardly be necessary if NMFS was under an obligation to guarantee that overages never occur. In sum, Plaintiffs have not demonstrated that the one example of an admittedly very high overage in 2010 demonstrates that the use of the management area closure AM is fundamentally flawed.

b. Haddock Incidental Catch Cap

Plaintiffs argue that because the haddock incidental catch cap "is an accountability measure for haddock, which is managed in the Northeast Multispecies FMP," it "is irrelevant as an accountability measure for the Atlantic herring ACL." Pls.' Mot. 31. Defendants respond that, even though the cap only covers incidental catch of

haddock, it "is likely to have real benefits to the herring stock" and that "[a]ccountability measures are management tools that work together to help prevent a fishery from exceeding its ACL." Defs.' Mot. 28-29. Simply put, Plaintiffs argue that only measures designed to enforce ACLs or mitigate ACL overage can be considered AMs, while Defendants claim that any measure that might have the effect of reducing catch, and thereby helping to keep it at a level within an ACL, can constitute an AM.

Plaintiffs have the better of this argument. The statute requires, in unambiguous language, that FMPs include "measures to ensure accountability" with "annual catch limits." 16 U.S.C. § 1853(a)(15). "Accountability" means "the quality or state of being accountable, liable, or responsible." Webster's Third New International Dictionary 13 (1993). The management area closure measure discussed above clearly fits this definition: it holds fishermen and women accountable for abiding by Atlantic herring ACLs by restricting the amount of fish they catch when they get close to the limit on Atlantic herring. The haddock catch cap has no such effect. It merely holds fishermen and women accountable for incidentally catching too much haddock by limiting their ability to fish when the cap is reached. Fishermen and women may far exceed any Atlantic herring ACL and still happily fish for herring so far as the incidental haddock catch cap is concerned, as long as they have not accidentally caught too much haddock.

Hence, standing alone, the haddock incidental catch cap does not fulfill the MSA's demand that FMPs include measures to ensure accountability for ACLs. 16 U.S.C. § 1853(a)(15). Nonetheless, it should be noted that nothing prevents NMFS or the Council from considering the effect of the haddock incidental catch cap when determining whether the FMP's AMs satisfy the MSA by, inter alia, ensuring accountability with ACLs and preventing overfishing. Id. §§ 1851(a), 1853(a)(15); see also 50 C.F.R. § 600.310(g).

c. Overage Deduction

The overage deduction AM is intended to satisfy Defendants' responsiblity, when an ACL is exceeded, "as soon as possible to correct the operational issue that caused the ACL overage, as well as any biological consequences to the stock or stock complex resulting from the overage when it is known." 50 C.F.R. § 600.310(g)(3). The overage deduction AM provides that any overage in a given year is subtracted from a subsequent year's ACL or sub-ACL, so that violating catch limits in one year lowers the permissible catch in a future year. 50 C.F.R. § 648.201(a)(3). The logic of this AM is simple: the effects of catching too much fish will be corrected by reducing the amount of fish caught in the future.

Plaintiffs argue that this AM violates the mandate to correct ACL overages "as soon as possible" because the overage deduction is taken not in the fishing year immediately following the overage,

but rather in the year after. Pls.' Mot. 32; AR 6327. Defendants contend that "[i]t is not possible to require payback of overages in the next year because the final data is not available immediately." Defs.' Mot. 29.

The issue presented is whether the decision that a year-long delay is necessary was "rational and supported by the record," C&W Fish, 931 F.2d at 1562, and was "diligently researched and based on sound science." Ocean Conservancy, 394 F. Supp. 2d at 157. In response to concerns over the delay, NMFS explained that "[t]he herring fishing year extends from January to December." AR 6328. Because the "fishery can be active in December," "information on bycatch of herring in other fisheries is not finalized until the spring of the following year," and NMFS must "provide sufficient notice to the industry," the overage deduction cannot be taken in the year immediately following the year of the overage. Id. That is, Defendants just do not have all the necessary information nor the necessary time to calculate overages when one fishing year ends in December and the next begins in January.[18]

In addressing the issue, the Council and NMFS did consider the impact of the delay on the fishery. The Final Rule explains that "[h]erring is a relatively long-lived species (over 10 years) and multiple year classes are harvested by the fishery." Id. "These

[18] Defendants also point out in their briefing that "Federal dealer data is not finalized until the spring of the following year and state dealer data is finalized even later," and this data is used in confirming overage calculations. Defs.' Reply 21.

characteristics suggest that the herring stock may be robust to a single year delay in overage deductions." Id. More importantly, "[t]here is no evidence that a single year delay is more likely to affect the reproductive potential of the stock than an overage deduction in the year immediately following the overage." Id.

Plaintiffs do not offer any evidence that the necessary calculations for the Herring fishery can be completed in time to avoid the delay in overage deduction, nor do they offer "some indication that superior or contrary data was available and that the agency ignored such information." N.C. Fisheries Ass'n, 518 F. Supp. 2d at 85. Instead, Plaintiffs assert that "corrective measures in the fishery are not routinely delayed," Pls.' Mot. 32, and that Defendants "have implemented next-year overage deductions in other fisheries." Pls.' Reply 20. These claims are not enough to show that Defendants' analysis of the needs of this fishery, as outlined above, were unreasonable or based on unreliable information. Bloch, 348 F.3d at 1070; C&W Fish, 931 F.2d at 1562; Ocean Conservancy, 394 F. Supp. 2d at 157.

In sum, Amendment 4 includes two AMs, supplemented by the haddock incidental catch cap, designed to prevent ACL overages and to correct overages when they occur. 50 C.F.R. § 600.310(g). While Plaintiffs have identified what they perceive to be weaknesses with the AMs, they have failed to offer evidence that undermines Defendants' own showing of a reasonable decisionmaking process or

that demonstrates Defendants' rejection of superior information. Particularly in light of the need for deference in this technical and complex area, the Court must defer to Defendants' conclusion that Amendment 4's AMs satisfy the requirements of the MSA. Am. Oceans Campaign, 183 F. Supp. 2d at 14.

F. Compliance with NEPA

Finally, Plaintiffs argue that Defendants' Environmental Assessment ("EA") and Finding of No Significant Impact ("FONSI") violate NEPA. NEPA's requirements are "procedural," calling upon "agencies to imbue their decisionmaking, through the use of certain procedures, with our country's commitment to environmental salubrity." Citizens Against Burlington, Inc. v. Busey, 938 F.2d 190, 193-94 (D.C. Cir. 1991). "NEPA does not mandate particular consequences." Id. at 194.

Under NEPA, agencies must prepare an EIS for "major Federal actions significantly affecting the quality of the human environment." 42 U.S.C. § 4332(2)(C). In an EIS, the agency must "take a 'hard look' at the environmental consequences before taking a major action." Baltimore Gas & Elec. Co., 462 U.S. at 97 (1983) (citations omitted).

However, NEPA provides agencies with a less burdensome alternative--in certain situations, an EA, which is a less thorough report, may suffice. Monsanto Co. v. Geerston Seed Farms, 130 S. Ct. 2743, 2750 (2010) (citing 40 C.F.R. §§ 1508.9(a), 1508.13). An

EA is a "concise public document" that "[b]riefly provide[s] sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact." 40 C.F.R. § 1508.9(a).[19] After completion of an EA, an agency may conclude that no EIS is necessary. If so, it must issue a FONSI, stating the reasons why the proposed action will not have a significant impact on the environment. Id. § 1501.4(e).

In reviewing an EA or FONSI, courts consider four factors. Courts must determine whether the agency:

> "(1) has accurately identified the relevant environmental concern, (2) has taken a hard look at the problem in preparing its [FONSI or Environmental Assessment], (3) is able to make a convincing case for its finding of no significant impact, and (4) has shown that even if there is an impact of true significance, an EIS is unnecessary because changes or safeguards in the project sufficiently reduce the impact to a minimum."

Sierra Club v. Van Antwerp, 661 F.3d 1147, 1154 (D.C. Cir. 2011) (quoting TOMAC v. Norton, 433 F.3d 852, 861 (D.C. Cir. 2006)) (alterations in Van Antwerp).

Courts review EAs and FONSIs under the familiar arbitrary or capricious standard of the APA. Van Antwerp, 661 F.3d at 1154; see

[19] Regulations interpreting NEPA's EIS and EA requirements have been promulgated by the Council of Environmental Quality ("CEQ"). See 40 C.F.R. § 1500.1 et seq. Although "the binding effect of CEQ regulations is far from clear," TOMAC v. Norton, 433 F.3d at 861 (D.C. Cir. 2006), both agencies and courts have consistently looked to them for guidance. See, e.g., Sierra Club v. Van Antwerp, 661 F.3d 1147, 1154-55 (D.C. Cir. 2011); Town of Cave Creek, Ariz. v. FAA, 325 F.3d 320, 327-332 (D.C. Cir. 2003); Grand Canyon Trust v. FAA, 290 F.3d 339, 341-42 (D.C. Cir. 2002).

also Pub. Citizen, 541 U.S. at 763 ("An agency's decision not to prepare an EIS can be set aside only upon a showing that it was arbitrary, capricious, an abuse of discretion, or otherwise not in accordance with law."); Town of Cave Creek, Ariz. v. FAA, 325 F.3d 320, 327 (D.C. Cir. 2003).

Plaintiffs allege a host of deficiencies with Defendants' EA and FONSI. Their claims fall into two categories: (1) Defendants unlawfully segmented their decisionmaking and prejudged the environmental impacts of Amendment 4 to avoid preparing an EIS; and (2) Defendants failed to take a hard look at Amendment 4's environmental consequences.[20] Pls. Mot. 34-44.

1. Segmented Decisionmaking & Prejudgment

Plaintiffs advance two arguments that Defendants' EA was procedurally improper. First, Plaintiffs claim that Defendants unlawfully divided certain actions between Amendments 4 and 5 in order to cast Amendment 4 as insignificant and escape the EIS

[20] Because the Court concludes, for the reasons given below, that Defendants' failed to take a "hard look at the problem," Van Antwerp, 661 F.3d at 1154, it will not reach the third set of Plaintiffs' NEPA claims, namely that Defendants erroneously concluded that Amendment 4 will not have a significant environmental impact. Plaintiffs argue that Defendants failed to evaluate the cumulative impacts of Amendment 4, as they must when determining significance, and that Defendants' determination that the action had insignificant effects was in error. Pls.' Mot. 34-38, 41-42. Defendants' main response is that Amendment 4's adoption of an ABC control rule and AMs was procedural only, and did not substantively affect the fishery. Defs.' Mot. 39-40. In any case, Defendants will have to reassess this conclusion after taking a 'hard look' at Amendment 4's impacts.

requirement. Pls.' Mot. 38-39. Plaintiffs are correct that "'[a]gencies may not evade their responsibilities under NEPA by artificially dividing a major federal action into smaller components, each without significant impact.'" Jackson Cnty., N.C. v. FERC, 589 F.3d 1284, 1290 (D.C. Cir. 2009) (quoting Coal. on Sensible Transp., Inc. v. Dole, 826 F.2d 60, 68 (D.C. Cir. 1987)); see also 40 C.F.R. § 1508.25(a)(1) ("Connected actions" are actions that are "closely related and therefore should be discussed in the same impact statement."). However,

> "The rule against segmentation . . . is not required to be applied in every situation. To determine the appropriate scope for an EIS, courts have considered such factors as whether the proposed segment (1) has logical termini; (2) has substantial independent utility; (3) does not foreclose the opportunity to consider alternatives, and (4) does not irretrievably commit federal funds for closely related projects."

Jackson Cnty., 589 F.3d at 1290 (quoting Taxpayers Watchdog, Inc. v. Stanley, 819 F.2d 294, 298 (D.C. Cir. 1987)).

There is no evidence whatsoever in the Administrative Record that Defendants sought to escape their responsibilities under NEPA "by disingenuously describing [the Atlantic herring FMP] as only an amalgamation of unrelated smaller projects." Nat'l Wildlife Fed'n v. Appalachian Reg'l Comm'n, 677 F.2d 883, 890 (D.C. Cir. 1981). Although the Court has rejected the basis for NMFS's decision not to consider certain issues before the 2011 statutory deadline, supra Part III.B.1., there is no suggestion that NMFS reduced the

scope of Amendment 4 to avoid preparing an EIS. Amendment 4 sets out ACLs and AMs for Atlantic herring. Amendment 5 has been proposed to consider, inter alia, the composition of the fishery and updated monitoring systems. There is no doubt that Amendment 4 has logical termini, has substantial independent utility, does not foreclose future alternatives, and does not irretrievably commit federal funds for closely related projects. Jackson Cnty., 589 F.3d at 1290.

Second, Plaintiffs argue that Defendants "unlawfully pre-determined that only an EA would be necessary for Amendment 4." Pls.' Mot. 40. In this context, "predetermination occurs only when an agency irreversibly and irretrievably commits itself to a plan of action that is dependent upon the NEPA environmental analysis producing a certain outcome." Forest Guardians v. U.S. Fish and Wildlife Serv., 611 F.3d 692, 714 (10th Cir. 2010) (emphasis in original); see also Air Transp. Ass'n of Am., Inc. v. Nat'l Mediation Bd., 663 F.3d 476, 488 (D.C. Cir. 2011) ("'strong' evidence of 'unalterably closed minds' [is] necessary to justify discovery into the Board's decisionmaking process" on the basis of prejudgment); C&W Fish, 931 F.2d at 1565 ("an individual should be disqualified from rulemaking 'only when there has been a clear and convincing showing that the Department member has an unalterably closed mind on matters critical to the disposition of the

proceeding.'") (quoting Ass'n of Nat'l Advertisers, Inc. v. FTC, 627 F.2d 1151, 1170 (D.C. Cir. 1979)).

Plaintiffs have not met the "high standard to prove predetermination." Forest Guardians, 611 F.3d at 714. Plaintiffs' only evidence that Defendants had unalterably closed minds is (1) the statement in the December 17, 2009 memorandum by NMFS's Assistant Regional Administrator for Sustainable Fisheries that "I have determined that, based on our initial review of the proposed subject project and the criteria provided in Sections 5.04 and 6.03 d.2 of NAO 216-6, an environmental assessment is the appropriate level of NEPA review for that project," AR 5639, and (2) the line in the December 28, 2009 Notice of Intent, announcing the narrowed scope of Amendment 4, that "the Council intends to prepare an EA for the action." AR 5641. Neither of these statements rises to the level of irreversibly or irretrievably committing NMFS to a certain course of action. Forest Guardians, 611 F.3d at 714. An administrator's statement of an opinion, based upon review of the action's subject matter and relevant regulatory guidance, suggests conscious thought rather than prejudgment, and does not lead to the conclusion that the administrator would not change his or her mind upon review of the full EA.

In sum, Plaintiffs have failed to demonstrate that Defendants unlawfully avoided the responsibility of preparing an EIS by either

improperly segmenting their actions or predetermining the outcome of the EA.

2. Hard Look

In order to pass muster under NEPA, Defendants' EA and FONSI must have "taken a hard look at the problem." Van Antwerp, 661 F.3d at 1154. Defendants argue that NMFS took a "hard look" at the environmental impact of its action, including the effects on relevant ecosystem components, the Atlantic herring stock, the essential fish habitat, protected species, and non-target/bycatch species, as well as economic and social impacts. Defs.' Mot. 34-35 (citing AR 6032, 6185-201). Plaintiffs do not challenge these arguments. Rather, the thrust of Plaintiffs' argument is that Defendants failed to consider the potential impact of reasonable alternatives. Pls.' Mot. 36, 42-44.

Environmental Assessments must include a "brief discussion . . . of alternatives . . . [and] of the environmental impacts of the proposed action and alternatives." 40 C.F.R. § 1508.9(b). In considering the analogous requirement for an EIS, our Court of Appeals explained that "the agency's choice of alternatives are . . . evaluated in light of [its reasonably identified and defined] objectives; an alternative is properly excluded from consideration in an environmental impact statement only if it would be reasonable for the agency to conclude that the alternative does not 'bring about the ends of the federal action.'" City of Alexandria, Va. v.

Slater, 198 F.3d 862, 867 (D.C. Cir. 1999) (quoting Citizens Against Burlington, 938 F.2d at 195). Although an EA generally imposes less stringent requirements on an agency than an EIS, it is clear that an EA's "hard look" must include consideration of reasonable alternatives. Am. Oceans Campaign, 183 F. Supp. 2d at 19-20; Citizens Exposing Truth About Casinos v. Norton, No. CIV A 02-1754 TPJ, 2004 WL 5238116, at *9 (D.D.C. Apr. 23, 2004); Fund for Animals v. Norton, 281 F. Supp. 2d 209, 225 (D.D.C. 2003).

Plaintiffs argue that Defendants should have, but failed to consider the impacts of (1) ACLs and AMs for river herring, (2) potential alternative ABC control rules, (3) potential improvements to the current monitoring system, and (4) alternatives for addressing bycatch. Pls.' Mot. 35-36, 43-44. As to the failure to consider ACLs or AMs for river herring[21] or alternatives for

[21] Defendants have directed the Court's attention to the decision in Oceana, 2011 WL 6357795. Defs.' Notice of Supp. Authority [Dkt. No. 25]. In that case, the court held that NEPA did not require NMFS to consider the composition of the fishery in its EIS. Id. at *28-30. However, in Oceana, the court focused on the challenged amendment's purpose to implement "'a broad range of measures designed to achieve mortality targets, provide opportunities to target healthy stocks, mitigate (to the extent possible) the economic impacts of the measures, and improve administration of the fishery,'" and concluded that the defendants acted within the scope of the amendment's objectives. Id. at *29 (quoting the final amendment) (emphasis in Oceana).

In contrast, in this case, Amendment 4's purpose is "to bring the FMP into compliance with new [MSA] requirements" by setting ACLs and AMs. AR 6325; see also AR 5640 (purpose of Amendment 4 is "to bring the FMP in compliance with [MSA] requirements to specify annual catch limits (ACLs) and accountability measures (AMs)."). For the reasons spelled out above, supra part III.B, Defendants (continued...)

addressing bycatch, the Court concludes that, for the reasons stated supra Parts III.B-C, Defendants have failed to include a discussion of reasonable alternatives. 40 C.F.R. § 1508.9(b). Defendants have not provided a reasoned explanation for why they could not and did not consider these alternatives, which clearly would "bring about the ends of the federal action," City of Alexandria, 198 F.3d at 867 (internal quotation omitted), which were "to bring the FMP into compliance with new [MSA] requirements" by setting ACLs and AMs. AR 6325.

As to alternatives to the ABC control rule and monitoring, Defendants argue that it was reasonable to delay further consideration until Amendment 5.[22] Defs.' Mot. 40-41. This response is unsatisfactory. A central function of NEPA's requirements is for the agency to consider environmental impacts "[b]efore approving a project." City of Alexandria, 198 F.3d at 866. Therefore, delaying consideration of relevant and reasonable alternatives until a future date violates the "hard look" requirement. 40 C.F.R. § 1508.9(b); Am. Oceans Campaign, 183 F. Supp. 2d at 19-20;

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[21](...continued)
could not fulfill the purpose of their proposed Amendment 4 to comply with the strict new MSA requirements without giving some reason for their decision to name only Atlantic herring as a stock in the fishery.

[22] Defendants also claim that it was proper to delay consideration of a permanent ABC control rule until obtaining "a proper scientific basis." Defs.' Mot. 41. This argument misses the point. Even if setting an "interim" ABC control rule, Defendants could have considered alternative interim ABC control rules. See Pls.' Mot. 43.

see also Found. on Econ. Trends v. Heckler, 756 F.2d 143, 158 (D.C. Cir. 1985) ("agency determinations about EIS requirements are supposed to be forward-looking"); Nat'l Wildlife Fed'n, 677 F.2d at 889 ("'the basic function of an EIS is to serve as a forward-looking instrument to assist in evaluating proposals for major federal action'") (quoting Aersten v. Landrieu, 637 F.2d 12, 19 (1st Cir. 1980)).

More importantly, Defendants' EA demonstrates a total failure to consider the environmental impacts of alternatives to the proposed ABC control rule or AMs. The EA does contain a section entitled "Environmental Impacts of Management Alternatives," but this section only compares the effects of the proposed ACL and AM rules to "no action" alternatives. AR 6037, 6185-95. As the EA itself admits, the "no action" alternative is in fact no alternative at all--taking no action would result in a plain violation of the MSA's ACL and AM requirements.[23] 16 U.S.C. § 1853(a)(15); AR 6185. Obviously, actions that would violate the MSA cannot be reasonable alternatives to consider. Am. Oceans Campaign,

[23] This is another reason that Oceana is not applicable to this case. In Oceana, the so-called "'no-action' alternative" actually entailed using the MSY Control Rule as the ABC control, thereby fulfilling the MSA's mandate to set in place a process for establishing ACLs. 2011 WL 6357795, at *31-35. By contrast, in this case, in Defendants' own words, "[u]nder the no action alternative no process for setting ACLs would be established" and therefore "the alternative fails to comply with the MSA or NS1 Guidelines." AR 6185. Hence, in Oceana, the no action alternative was legally permissible, whereas for Amendment 4 the no action alternative is not a legally viable option.

183 F. Supp. 2d at 20 (finding failure to consider reasonable alternatives where EAs did "not even consider any alternatives besides the status quo (which would violate the FCMA).").

Equally conspicuous is the fact that while Amendment 4 does contain analysis of rejected alternatives in its substantive sections, there is no related consideration of environmental impacts in its Environmental Assessment. For example, the Council considered alternate ABC control rules, such as use of a one-year or five-year average for defining recent catch, and AMs, such as closure of management areas at a lower percentage of ACL, establishment of a threshold/trigger for an in-season adjustment to ACL, and establishment of a lower trigger for closing the fishery in the following year, to name a few. AR 6083-84, 6088. Tellingly, none of these alternatives receive any treatment in the Environmental Assessment.

In the absence of consideration of alternatives, the Court cannot say that Defendants took a "hard look" at Amendment 4's environmental impacts. 40 C.F.R. § 1508.9(b); Van Antwerp, 661 F.3d at 1154; Am. Oceans Campaign, 183 F. Supp. 2d at 20. Therefore, Defendants' reliance on Amendment 4's EA and resulting FONSI was arbitrary and capricious. Van Antwerp, 661 F.3d at 1154; Pub. Citizen, 541 U.S. at 763.

G. Remedy

The question of the appropriate remedy in this case presents substantial complexities. Plaintiffs argue that the Court "has the power to design a remedy that both establishes a deadline and directs the Defendants to take specific actions to comply with the law" and that the Court ought to vacate Amendment 4. Pls.' Supp. Mem. 4-5. Defendants argue that Plaintiffs' requests "conflict[] with the law of this Circuit" and urge the Court to remand to the agency for further consideration. Defs.' Mot. 42. The question of remedy is further complicated by the fact that many of Amendment 4's deficiencies may be remedied by Amendment 5, which is already under consideration, with a targeted implementation date of January 1, 2013. Defs.' Mot., Ex. 2. At oral argument, the parties requested an opportunity to further brief the remedy issue, should Plaintiffs' prevail in any of their claims. Therefore, the Court will withhold judgment on the question of remedy. The accompanying Order contains a briefing schedule to resolve this issue.

IV. CONCLUSION

For the reasons set forth above, Plaintiffs' Motion for Summary Judgment is **granted in part and denied in part** and Defendants' Motion for Summary Judgment is **granted in part and denied in part**.

An Order will issue with this opinion.

/s/
March 8, 2012 Gladys Kessler
United States District Judge

Copies to: counsel of record via ECF

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

MICHAEL S. FLAHERTY, et al.,	:	
	:	
Plaintiffs,	:	
	:	
v.	:	**Civil Action No. 11-660 (GK)**
	:	
JOHN BRYSON,[1] in his official capacity as Secretary of the Department of Commerce, et al.,	:	
	:	
Defendants.	:	

ORDER

Plaintiffs Michael S. Flaherty, Captain Alan A. Hastbacka, and the Ocean River Institute bring this suit against Defendants Commerce Secretary Gary Locke, the National Oceanic and Atmospheric Administration, and the National Marine Fisheries Service. Plaintiffs allege that Amendment 4 to the Atlantic Herring Fishery Management Plan violates the Magnuson-Stevens Fishery Conservation and Management Act ("MSA"), 16 U.S.C. §§ 1801 et seq., the National Environmental Policy Act ("NEPA"), 42 U.S.C. §§ 4321 et seq., and the Administrative Procedure Act ("APA"), 5 U.S.C. §§ 702 et seq.

This matter is now before the Court on Cross-Motions for Summary Judgment [Dkt. Nos. 17, 19]. Upon consideration of the Motions, Opposition, Replies, Oral Argument, Supplemental Briefs, the entire record herein, and for the reasons set forth in the accompanying Memorandum Opinion, it is hereby

[1] Secretary Bryson is substituted for Gary Locke pursuant to Federal Rule of Civil Procedure 25(d).

ORDERED, that Plaintiffs' Motion for Summary Judgment is **granted in part and denied in part** and Defendants' Motion for Summary Judgment is **granted in part and denied in part**; and it is further

ORDERED, that the parties shall file briefs regarding the appropriate remedy for the violations discussed in the accompanying Memorandum Opinion by March 26, 2012.

March 8, 2012

/s/
Gladys Kessler
U.S. District Judge

Copies to: attorneys on record via ECF

UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

MICHAEL S. FLAHERTY, et al.,	:	
	:	
Plaintiffs,	:	
	:	
v.	:	**Civil Action No. 11-660 (GK)**
	:	
REBECCA BLANK, in her official capacity as Acting Secretary of the Department of Commerce, et al.,	:	
	:	
Defendants.	:	

MEMORANDUM ORDER

Plaintiffs Michael S. Flaherty, Captain Alan A. Hastbacka, and the Ocean River Institute bring this suit against Defendants Commerce Secretary John Bryson, the National Oceanic and Atmospheric Administration ("NOAA"), and the National Marine Fisheries Service ("NMFS"). The Court previously held that Amendment 4 to the Atlantic Herring Fishery Management Plan violates certain provisions of the Magnuson-Stevens Fishery Conservation and Management Act ("MSA"), 16 U.S.C. § 1801 et seq., the National Environmental Policy Act ("NEPA"), 42 U.S.C. § 4321 et seq., and the Administrative Procedure Act ("APA"), 5 U.S.C. § 702 et seq. Flaherty v. Bryson, —F. Supp. 2d—, Civil Action No. 11-660 (GK), 2012 WL 752323 (D.D.C. Mar. 8, 2012).

At the conclusion of that Memorandum Opinion, the Court ordered the parties, based upon their earlier request at oral

argument, to provide additional briefing as to the appropriate remedy. This Memorandum Order sets forth that remedy.

I. BACKGROUND[1]

On April 1, 2011, Plaintiffs filed a Complaint [Dkt. No. 1] challenging Amendment 4 to the Atlantic Herring Fishery Management Plan ("FMP"), developed by the New England Fishery Management Council (the "Council"). 76 Fed. Reg. 11373 (Mar. 2, 2011). Atlantic herring (Clupea harengus) have been managed through the Atlantic Herring FMP since January 10, 2001. Administrative Record ("AR") 5578.

Plaintiffs' principal concern was for four species, often caught incidentally with Atlantic herring but not, as of yet, actively managed by the Atlantic Herring Fishery Management Plan, collectively referred to as "river herring": (1) blueback herring (Alosa aestivalis), (2) alewive (Alosa pseudoharengus), (3) American shad (Alosa sapidissima), and (4) hickory shad (Alosa mediocris). Flaherty, 2012 WL 752323, at *3. Like Atlantic herring, river herring provide forage for large fish and mammals, including cod, striped bass, bluefin tuna, sharks, marine mammals, and seabirds. Id.; see also AR 763-64. The Atlantic Herring Fishery Management Plan, as updated by Amendment 4, provides Annual Catch

[1] A complete statutory, factual, and procedural background may be found at Flaherty, 2012 WL 752323, at *1-5.

Limits ("ACLs") and accountability measures ("AMs") for Atlantic herring but not for river herring.

In their Complaint, Plaintiffs alleged that: (1) Defendants violated the MSA and APA by failing to include river herring as stock in the fishery and to create catch limits for them in Amendment 4; (2) Defendants violated the MSA and APA by failing to set adequate ACLs for Atlantic herring in Amendment 4; (3) Defendants violated the MSA and APA by failing to set adequate AMs for Atlantic herring in Amendment 4; and (4) Defendants violated NEPA by failing to develop an EIS for Amendment 4. Compl. ¶¶ 70-113.

On March 8, 2012, the Court issued an Order and Memorandum Opinion granting in part and denying in part Plaintiffs' Motion for Summary Judgment and granting in part and denying in part Defendants' Motion for Summary Judgment [Dkt. Nos. 30, 32]. Specifically, the Court held that Defendants violated (1) the MSA and APA by failing to "reasonably and rationally consider[] whether Amendment 4's definition of the fishery [to exclude river herring] complied with the National Standards and with the MSA's directive that FMPs be generated for any fisheries requiring conservation and management"; (2) the MSA and APA by approving Amendment 4 "without addressing the minimization of bycatch to the extent practicable"; and (3) NEPA by failing to take "a 'hard look' at Amendment 4's environmental impacts." Flaherty, 2012 WL 752323, at *14, 17, 29.

Because the parties requested, at oral argument, an opportunity to provide further briefing on the proper remedy depending on how the Court decided the pending Motions, the Court deferred ruling on that issue. Id. at *30. Thereafter, the parties attempted, ultimately unsuccessfully, to reach an agreement as to the remedial action to be undertaken by Defendants. Accordingly, on May 4, 2012, both parties submitted briefs on this issue ("Defs.' Remedy Br." [Dkt. No. 34]; "Pls.' Remedy Br." [Dkt. No. 35]). In response to these briefs, the Court ordered a separate hearing on the remedy issue, which took place on July 26, 2012. On July 31, 2012, at the direction of the Court, the parties submitted supplemental briefs on remedy ("Defs.' Supp. Br." [Dkt. No. 39]; "Pls.' Supp. Br." [Dkt. No. 40]).

II. ANALYSIS

As explained above, a remedy in this case must address three violations: (1) Defendants' failure to evaluate the Council's determination not to include river herring as a stock in the fishery; (2) Defendants' failure to consider whether Amendment 4 minimized bycatch to the extent practicable; and (3) Defendants' failure to properly consider alternatives in its Environmental Assessment. Additionally, the Court must determine the status of Amendment 4 pending Defendants' remedial action. Each issue will be addressed in turn.

A. Vacatur

The first issue to be addressed is whether Amendment 4 should be vacated while Defendants take steps to comply with this Order. Defendants contend that Amendment 4 should not be vacated because the legal deficiencies are not serious and the disruptive consequences of replacing a vacated Amendment4 with its predecessor could be profound. See Defs.' Remedy Br. at 17 (quoting Milk Train, Inc. v. Veneman, 310 F.3d 747, 755-56 (D.C. Cir. 2002)). Plaintiffs propose that Amendment 4 be vacated, but that the vacatur be suspended for one year, which should, by both parties' estimations, provide ample time for all three remedies to be adopted. Pls.' Remedy Br. at 9.

"Both the Supreme Court and the D.C. Circuit have held that vacatur is the presumptive remedy for this type of violation." In re Polar Bear Endangered Species Act Listing and § 4(d) Rule Litig., 818 F. Supp. 2d. 214, 238 (D.D.C. 2011) (citing Fed. Election Comm'n v. Akins, 524 U.S. 11, 25 (1998) ("If a reviewing court agrees that the agency misinterpreted the law, it will set aside the agency's action and remand the case.") and Am. Bioscience, Inc. v. Thompson, 269 F.3d 1077, 1084 (D.C. Cir. 2001) ("[A plaintiff who] prevails on its APA claim . . . is entitled to relief under that statute, which normally will be a vacatur of the agency's order."). Plaintiffs' proposal both abides by this rule and avoids potential disruption to the regulation of the Atlantic

Herring Fishery by providing Defendants a window of time within which to remedy their violations without interrupting the operation of Amendment 4.

B. Stocks in the Fishery

The parties disagree as to the proper remedy for Defendants' failure to properly evaluate the composition of the Atlantic herring fishery and, specifically, to address whether river herring should be deemed a stock in the fishery. Plaintiffs argue that NMFS should be ordered to consider using its emergency rulemaking power to add river herring as a stock in the fishery and to recommend to the Council "that, in order to bring the FMP into compliance with the Court's Memorandum Opinion, the Council in Amendment 4 must include River Herring as non-target stocks in the Atlantic Herring FMP." Pls.' Remedy Br. at 13. In substance, Plaintiffs would like the Court to use NMFS's influence to instruct the Council to deem river herring a stock in the fishery and to implement accompanying management measures.

By contrast, Defendants argue that Amendment 4 should be remanded to the Agency for further explanation. They propose that NMFS both file a supplemental explanation to the Court within a month and also, within a month, "send a letter to the Council recommending that the Council consider, in an amendment to the Atlantic Herring FMP, whether river herring and shad should be designated as non-target stocks . . . ." Defs.' Remedy Br. at 2-9.

The law regarding this Court's remedial power is perfectly clear. "If the record before the agency does not support the agency action, if the agency has not considered all relevant factors, or if the reviewing court simply cannot evaluate the challenged agency action on the basis of the record before it, the proper course, except in rare circumstances, is to remand to the agency for additional investigation or explanation." Florida Power & Light Co. v. Lorion, 470 U.S. 729, 744 (1985). Indeed, our Court of Appeals has repeatedly stated that "[u]nder settled principles of administrative law, when a court reviewing agency action determines that an agency made an error of law, the court's inquiry is at an end: the case must be remanded to the agency for further action consistent with the corrected legal standards." PPG Indus., Inc. v. U.S., 52 F.3d 363, 365 (D.C. Cir. 1995); see also N. Carolina Fisheries Ass'n, Inc., 550 F.3d at 20; Palisades Gen. Hosp. Inc. v. Leavitt, 426 F.3d 400, 403 ("the district court had jurisdiction only to vacate the Secretary's decision . . . and to remand for further action consistent with its opinion.").

This rule is particularly apt in this case, which involves especially complex decisions based on various areas of scientific expertise. Congress has created a detailed federal-state-local structure to investigate, study, and eventually make those decisions. It is not for "an 'appellate court ... [to] intrude upon the domain which Congress has exclusively entrusted to an

administrative agency.'" INS v. Ventura, 537 U.S. 12, 16 (2002) (quoting SEC v. Chenery Corp., 318 U.S. 80, 88 (1943)). Further, the relief requested by Plaintiffs would require the Court to conduct its own inquiry into whether river herring should be deemed a non-target stock -- a task the Court is neither equipped nor permitted to perform. Florida Power & Light Co., 470 U.S. at 744 ("The reviewing court is not generally empowered to conduct a de novo inquiry into the matter being reviewed and to reach its own conclusions based on such an inquiry."). Finally, Plaintiffs have provided no authority which would support the extraordinary relief requested here.

In sum, the appropriate remedy is for Defendants to do what they failed to do before: to consider whether Amendment 4's definition of the fishery complies with the MSA. Therefore, Amendment 4 will be remanded to the agency for reconsideration and action consistent with the Court's March 8, 2012, Memorandum Opinion.

C. Bycatch

Defendants contend that "the Court should withhold its power to grant equitable relief for the violation of National Standard 9 because the Council and NMFS are already considering management measures to address river herring and shad bycatch in Amendment 5 to the Atlantic herring FMP." Defs.' Remedy Br. at 12. Alternatively, Defendants argue that "any remedy for the National

Standard 9 violation should be limited to an order requiring NMFS to consider, within one year, whether the Atlantic herring FMP complies with National Standard 9." Defs.' Supp. Br. at 4. This time period would permit NMFS to determine whether Amendment 5, which has been approved by the Council, minimizes bycatch to the extent practicable. Id. at 4-5. Plaintiffs propose that NMFS be ordered to recommend that the Council minimize bycatch to the extent practicable as part of the 2013-2015 herring specifications. Pls.' Proposed Order at 3 [Dkt. No. 40-5].

As already noted, the typical relief for a successful challenge to agency decisionmaking is a remand rather than an injunction. See N. Carolina Fisheries Ass'n, Inc. v. Gutierrez, 550 F.3d 16, 20 (D.C. Cir. 2008) ("the district court, sitting as a court in review of agency action under the Act and APA, should have done what a court of appeals normally does when it identifies an agency error: remand to the agency for further proceedings."). Further, the National Standard 9 violation identified in this case was Defendants' approval of Amendment 4 without "evaluating whether the FMP or amendment minimized bycatch to the extent practicable," Flaherty, 2012 WL 752323, at *16-17, not the Council's failure to do so to the extent practicable. Therefore, Amendment 4 must be remanded to the agency to consider whether bycatch has been minimized to the extent practicable.

D. Environmental Impact of Reasonable Alternatives

As to Defendants' failure to analyze the impacts of alternative measures, including alternatives to the Atlantic herring allowable biological catch control rule, annual catch limits, accountability measures, and measures for minimizing bycatch, Plaintiffs and Defendants agree that Defendants should recommend that the Council address these issues in its NEPA analysis for the 2013-2015 specifications and management measures for the Atlantic herring fishery. Pls.' Proposed Order at 3; Defs.' Proposed Order at 2 [Dkt. No. 39-1]. Therefore, consonant with the representations of both parties, Defendants shall be ordered to recommend that the Council address reasonable alternatives under NEPA, consistent with the Court's March 8, 2012, Memorandum Opinion, in the 2013-2015 specifications and management measures for the Atlantic herring fishery.

III. CONCLUSION

For the reasons set forth above, it is hereby

ORDERED, that Amendment 4 is remanded to NMFS for reconsideration and action consistent with the Court's March 8, 2012, Opinion and this Memorandum Order; and it is further

ORDERED, that Amendment 4 is vacated, with vacatur stayed for one year from the date of this Memorandum Order; and it is further

ORDERED, that Defendants shall, consistent with this Court's March 8, 2012, Memorandum Opinion, consider whether Amendment 4's

determination of the stocks in the fishery complies with the MSA and shall, within one month from the date of this Memorandum Order, file with the Court a supplemental explanation setting forth its consideration of whether Amendment 4's definition of the fishery complies with the MSA; and it is further

ORDERED, that, within one month from the date of this Memorandum Order, Defendants shall send a letter to the New England Fishery Management Council explaining the applicable law and National Standard 1 Guidelines relating to determining the stocks to be included in a fishery, consistent with this Court's March 8, 2012, Memorandum Opinion, and recommending that the Council consider, in an amendment to the Atlantic Herring FMP, whether "river herring"[2] should be designated as a stock in the fishery based upon, at a minimum, consideration of the following materials:

a. the 2012 ASMFC river herring stock assessment report and peer review report;

b. NMFS's 2011 finding that listing river herring as a threatened species under the Endangered Species Act may be warranted;

c. the 2007 shad stock assessment report and its peer review report; and

[2] River herring include alewife and blueback herring, and hickory and American shad.

d. Alternative Set 9 in the MAFMC's Amendment 14 DEIS (April 2012) to the Mackerel Squid, Butterfish FMP; and

e. a copy of the Court's Opinion of March 8, 2012; and it is further

ORDERED, that Defendants shall, consistent with this Court's March 8, 2012, Memorandum Opinion, consider whether the Atlantic herring FMP minimizes bycatch to the extent practicable under National Standard 9 and shall, within one year from the date of this Memorandum Order, file with the Court a supplemental explanation setting forth its consideration of whether the Atlantic herring FMP minimizes bycatch to the extent practicable in compliance with the MSA; and it further

ORDERED, that, in the letter to the New England Fishery Management Council described above, Defendants shall also, consistent with this Court's March 8, 2012, Memorandum Opinion, describe Amendment 4's other inconsistencies with applicable law and recommend that the New England Council, as part of the 2013-2015 herring specifications (or another appropriate action to be completed within one year of the date of this Memorandum Order), consider a range of alternatives:

a. for minimizing bycatch to the extent practicable in the Atlantic herring fishery;

b. to the current AMs for the fishery, including monitoring alternatives; and

c. to the interim ABC control rule for the Atlantic herring fishery, at least one of which shall be based on the most recent best available science for setting ABC control rules for herring and other forage fish; and it is further

ORDERED, that no later than six months from the date of this Memorandum Order, Defendants shall file with the Court a status report describing their progress on the remedial actions ordered herein. No later than one year from the date of this Memorandum Order, Defendants shall also file with the Court a report describing all remedial actions taken in response to this Memorandum Order, including a completed NEPA analysis for the 2013-15 specifications and management measure for the Atlantic herring fishery demonstrating that Defendants took a "hard look" at the environmental impacts of the remedial actions, including an appropriate range of alternatives and examination of cumulative impacts;[3] and it is further

[3] The Court expects Defendants to complete the remedial actions taken in response to this Order within one year from the date of this Memorandum Order.

ORDERED, that this Court shall retain jurisdiction over this action pending full compliance by the Defendants with this Memorandum Order.

August 2, 2012

/s/
Gladys Kessler
United States District Judge

Copies to: counsel of record via ECF

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

JUN - 5 2012

Richard B. Robins, Jr., Chairman
Mid-Atlantic Fishery Management Council
Suite 201
800 State Street
Dover, DE 19901

Dear Rick:

We have reviewed the Draft Environmental Impact Statement (DEIS) for Amendment 14 to the Atlantic Mackerel, Squid, and Butterfish (MSB) Fishery Management Plan (FMP) and have evaluated the potential effectiveness and feasibility of alternatives under consideration. The Mid-Atlantic Fishery Management Council (Council) has spent a substantial amount of time developing this amendment, and there are many alternatives that offer clear improvements to the MSB FMP and can be implemented by the NOAA Fisheries Service.

We support the consideration of the following alternatives in Amendment 14:

- Expanding the requirement for weekly vessel trip reports (VTRs) to all MSB permits (Alternative 1c), consistent with reporting requirements for other Northeast Region permits;
- Expanding vessel requirements related to at-sea sampling (Alternatives 3b and 3c) to help ensure safe sampling and improve data quality;
- Establishing a river herring catch cap (Alternative 6b) to directly control river herring fishing mortality;
- Requiring 48-hour pre-trip notifications for directed mackerel trips (Alternative 1d48) and vessel monitoring systems (VMS) (Alternative 1eMack) to help facilitate monitoring and compliance for a river herring catch cap;
- Requiring daily VMS catch reports (Alternative 1fMack), which are currently required for the Atlantic herring fishery, should the New England Fishery Management Council choose to implement a companion river herring catch cap for the Atlantic herring fishery;
- Allowing the joint Sustainable Fisheries Coalition/University of Massachusetts School for Marine Science and Technology/Massachusetts Department of Marine Fisheries bycatch avoidance program to investigate providing real-time, cost-effective information on river herring distribution and fishery encounters (Alternative 4f).

Several issues that are considered in Amendment 14 have been the subject of much debate and public comment. These issues include: Increasing observer coverage; addressing net slippage; improving dealer data; and addressing river herring bycatch. NOAA Fisheries Service supports improvements to fishery dependent data collections, be it through expansion of monitoring at sea, or greater quality assurance of the dealer data. We also share the Council's concern for reducing bycatch and unnecessary discards, and appreciate the Council's work on addressing these issues.

However, some specific alternatives in Amendment 14, if adopted, would require still more thought, more robust rationale, and further justification by the Council. As we have commented previously,

we share the Council's desire/need to have better data about these fisheries, and we support the motive and concept of the alternatives that aim to do this. However, we must be mindful of the burden and technical details of implementing the alternatives. Additionally, we cannot give our full support for alternatives for which the agency is not likely to have sufficient resources to execute.

The following sections detail our concerns with the specified alternatives. I have noted in this section which alternatives we believe require further justification by the Council, and those that we believe have serious implementation issues that we cannot overcome.

Vessel Reporting Measures (Alternative Set 1)
We are generally supportive of the vessel reporting alternatives that are necessary to ensure the effectiveness and feasibility of the programs the Council selects in this Amendment. We urge the Council to weigh each program proposed in Amendment 14 in its entirety and consider how the program will be administered and monitored moving forward.

Dealer Reporting Measures (Alternative Set 2)
Dealers are currently required to report the weight of purchased fish. A variety of methods are used by dealers to determine the weight of fish, including weighing fish on scales and estimating weight based on volumetric measures. Without verification of scale accuracy and readouts, alternatives that require dealers to weigh all fishing using a scale (Alternatives 2c-2f) may not provide substantial enough improvements to data to justify the cost. Because Alternative 2g allows dealers to continue using scales and/or volumetric estimates to determine the weight of fish, there is no appreciable difference between Alternative 2g and status quo.

Alternatives 2c-2f require dealers to document how they estimate the relative composition of mixed catch in order to facilitate quota monitoring. However, this qualitative information cannot be incorporated into quota monitoring because we use the weights provided by the dealers, regardless of the methods used to determine weights. Additionally, we are unable to evaluate, either annually or for individual transactions, the sufficiency of the information submitted.

Alternative 2b requires vessel owners/operators to review and validate catch data for their vessels in Fish-On-Line. This alternative has the potential to improve quota monitoring and year-end catch determinations by highlighting data reporting issues. However, vessels are currently able to review both vessel and dealer reported data via Fish-On-Line and discover data issues. The Council should consider whether the utility of Alternative 2b outweighs the additional reporting and administrative burden associated with the requirement.

The Council should also be aware that, if these any of these alternatives are made mandatory, they would become compliance measures that would affect future vessel permit issuance (similar to VTR and VMS compliance).

At-Sea Observation Optimization Measures (Alternative Set 3)
I am concerned about the effectiveness and legal justification for the alternatives designed to reduce slippage events in the mackerel and longfin squid fisheries. Alternatives that require trip termination lack a well explained basis for the threshold to trigger trip termination (i.e., Alternatives 3k-3n, either 5 or 10 slippage events per season or trimester). The trip termination triggers require a clear and supportable rationale and justification. Once the threshold to trigger trip termination has been reached, all vessels that slip catch, regardless of the reason for slipping (including safety or

mechanical failure), would be required to return to port. The Council must provide sufficient rationale for requiring vessels to terminate a trip after the trigger while allowing the specified number of slippage events prior to the trigger without consequence. Further, trip termination alternatives may create the situation of the vessel operator having to choose between trip termination or bringing catch aboard the vessel despite a safety concern or mechanical failure. Such a provision must be consistent with National Standard 10 of the Magnuson-Stevens Fishery Conservation and Management Act and requires additional detailed explanation from the Council. For NOAA Fisheries Service to approve a measure like this, the Council must provide a rational basis that we can support in relation to requirements of the Magnuson-Stevens Act, the Administrative Procedure Act, and other applicable law.

Additionally, we are concerned that slippage requirements are triggered when an observer is aboard the vessel. Requirements for a vessel to terminate a trip should not depend on the presence of an observer. NOAA Fisheries Service acknowledges that observes are helpful when evaluating compliance with slippage requirements, but implementing requirements contingent on the presence of an observer unduly places the observer in a compliance/enforcement role and creates the potential for conflict between the vessel's crew and the observer.

We also do not believe there is utility in requiring released catch affidavits for slippage events, as the affidavit will not provide any new information that is not currently reported by the observer program. We recently implemented protocols for observers to collect detailed information on discards, including slippage, in the herring and mackerel fisheries, such as why catch was discarded, the estimated amount of discarded catch, and estimated composition of discarded catch. Given this new data collection, requiring vessel operators to complete a slipped catch affidavit whenever catch is slipped and an observer is aboard is an unnecessary reporting burden for the industry. As we strive to improve management of the mackerel fishery, observer data, both on discards and slipped catch, are the best information to understand and account for discarding.

Port-side and Other Sampling/Monitoring Measures (Alternative Set 4)
NMFS agrees that while at-sea observers are essential for monitoring river herring and shad discards, port-side sampling is an efficient, cost-effective way to enhance the characterization of retained river herring and shad catch. Though Amendment 14 proposes industry funding to cover the port-side sampling, we estimate the cost to implement the infrastructure component of a port-side sampling program to be significant. Unfortunately, we do not have the available resources to administer the infrastructure components of this new program, given our budgetary constraints.

At-Sea Observer Coverage Requirements (Alternative Set 5)
Amendment 14 includes alternatives that increase the level of observer coverage in the mackerel and longfin squid fisheries using NOAA Fisheries Service or industry funds to support the additional coverage. While we share the Council's interested in improving fishery dependent data quality, our current and anticipated budgets do not provide support for expanded levels of observer coverage. The available funds must be distributed for observers in all of our Northeast fisheries, and we are under pressure to increase coverage levels in all fisheries. We simply cannot afford to support any alternatives that increase the observer coverage level in the mackerel or longfin squid fisheries under agency funding. We acknowledge that the analysis in the Amendment 14 document demonstrates that an industry-funded observer program would put substantial financial burden on the mackerel and longfin squid industries. If the Council proceeds with an industry funded option, it must carefully weigh the benefits of such a program with the costs to the industry.

Alternatives to Address River Herring/Shad Bycatch and Catch (Alternative Sets 6-8)
Analyses in the DEISs for MSB Amendment 14 and the New England Fishery Management Council's Amendment 5 to the Atlantic Herring Fishery Management Plan (Herring FMP) suggest that time/area management alternatives considered in Amendment 14 are unlikely to effectively minimize the bycatch of river herring due to the variable distribution of river herring. Analyses in Amendment 14 suggest that time/area management for river herring would require the use of large areas to ensure that time/area management was not just redistributing fishing effort, possibly in a way that increased river herring catch. Maps of Northeast Fisheries Science Center spring and fall survey catches indicate that the seasonal and inter-annual distribution of river herring is highly variable in time and space. River herring distribution is highly variable because they undergo extensive coast-wide migrations, largely influenced by water temperature. In addition, the incidental catch of river herring/shad and effort pattern of fleets encountering river herring/shad (i.e., midwater trawl, small-mesh bottom trawl) are also highly variable in time and space because those fleets target species that are highly migratory (e.g., herring, mackerel, squid, whiting).

To address our concerns about time/area closures, a river herring catch cap would be the most effective alternative in Amendment 14 at controlling the catch of river herring. Further, due to the mixed nature of the Atlantic herring and mackerel fisheries, especially during January through April in Atlantic Herring Management Area 2, the potential for the greatest river herring catch reduction would come from the implementation of a joint river herring catch cap for both the Atlantic herring and mackerel fisheries. A catch cap has the potential to directly control river herring fishing mortality with less compliance and administrative burden than time/area management.

In addition, the Council should carefully consider whether the benefits of river herring catch cap for the longfin squid fishery, or a shad cap for the mackerel or longfin squid fishery, outweigh the costs, especially given the scale of shad catch (125,000 lb per year, 2006-2010) compared to river herring catch (1,000,000 lb per year, 2006-2010), and the relative contribution of Mid-Atlantic small-mesh bottom trawl fisheries to total river herring and shad mortality (5% and 11.5% of total mortality, respectively).

Addition of River Herring/Shad as "Stocks in the Fishery" in the MSB FMP (Alternative Set 9)

The DEIS for Amendment 14 includes alternatives that would initiate Council action to consider adding, in a future action, alewife, blueback, American shad, and/or hickory shad as stocks in the MSB FMP (Alternative Set 9). These alternatives are not true alternatives under NEPA because they do not result in any NOAA Fisheries Service action. Rather, they would initiate a future Council amendment that would consider and analyze various management reference points, to describe and delineate EFH, and to prescribe appropriate conservation management objectives and measures. If the Council determines that it should consider adding alewife, blueback, American shad, and/or hickory shad as stocks in the MSB FMP, consistent with Alternative Set 9, we advise that the Council should initiate an amendment in a motion at the June Council meeting. My staff can communicate with your staff regarding any necessary adjustments to the final environmental impact statement (FEIS) to reflect this course of action.

Should the Council choose to initiate an amendment to consider adding river herring/shad as stocks in the MSB FMP, we urge you to work collaboratively with the New England Fishery Management

Council to develop options for potential management programs. Both the herring and MSB species interact with river herring and shad, and a management program would need to include consideration of interactions across both FMPs. In addition, there can only be one lead Council for the river herring/shad species. The recommendation as to which Council will take the lead on a river herring/shad FMP should be included in your joint deliberations.

In summary, I urge the Council to select alternatives that effectively monitor and minimize bycatch in the mackerel and longfin squid fisheries, and do not significantly expand the compliance and administrative burden of these fisheries, without a commensurate benefit to data quality. Alternatives in Amendment 14 have complimentary alternatives in the Amendment 5 to the Atlantic Herring FMP. Given the significant overlap between the Atlantic herring and mackerel fisheries, we urge both Councils to select similar alternatives regarding monitoring and addressing river herring/shad bycatch.

Finally, various reviewers noted technical issues with the draft environmental impact statement that will need to be addressed in the FEIS. My staff will provide those comments directly to Council staff. I appreciate the time and effort that the Council and Council staff have put into this amendment and I look forward to working with the Council to complete this action.

Sincerely,

Daniel S. Morris
Acting Regional Administrator

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

AUG 14 2012

Richard B. Robins, Jr., Chairman
Mid-Atlantic Fishery Management Council
Suite 201
800 State Street
Dover, DE 19901

Dear Rick:

The Mid-Atlantic Fishery Management Council (MAFMC) adopted Amendment 14 to the Atlantic Mackerel, Squid, and Butterfish Fishery Management Plan (FMP) at its June 2012 meeting. As part of Amendment 14, the MAFMC passed motions to increase observer coverage up to 100 percent on limited access mackerel vessels using mid-water trawl gear, and to increase observer coverage to 100 percent, 50 percent, and 25 percent for small mesh bottom trawl trips on Tier 1, Tier 2, and Tier 3 mackerel vessels, respectively. The MAFMC also adopted a motion specifying that NOAA Fisheries Service and the Atlantic mackerel industry would share the cost of increased coverage, with the industry contributing up to $325 per sea day. At its June 2012 meeting, the New England Fishery Management Council (NEFMC) passed a similar motion, as part of Amendment 5 to the Atlantic herring FMP, to increase observer coverage on vessels with Atlantic herring permits. The motion also requires the cost of increased coverage to be shared between NOAA Fisheries Service and the Atlantic herring industry, with the industry contributing $325 per sea day.

As we have noted, the development of an observer cost sharing program will be challenging since laws pertaining to funding and contracting are complex. I believe that the MAFMC, NEFMC, and NOAA Fisheries Service should work together through the Council process to develop a cost sharing program. Since a cost sharing program would require the industry to pay for observer coverage, industry representatives must be included in the development of the cost sharing program. In order to engage industry representatives, while still complying with regulations regarding public participation, I recommend that the MAFMC and NEFMC form a joint plan development team (PDT)/fishery management action team (FMAT) to develop an observer coverage cost sharing program and bring it to the MAFMC and NEFMC for consideration.

NOAA Fisheries Service staff will serve on the joint PDT/FMAT and will provide information and guidance on funding and contracting requirements. We have already discussed the concept with General Counsel, NOAA Fisheries Service's contract attorneys, and other regions, and my staff will continue to investigate ways to develop an observer cost sharing program. If you choose to form a joint PDT/FMAT, I will provide a list of NOAA Fisheries Service staff to serve on the joint PDT/FMAT.

Finally, the MAFMC's selected alternative regarding industry funding suggests that the final funding mechanism will be enacted through the specifications process, presumably the process

cc: LS, CBK (8/16)

that will develop specifications for the 2014 fishing year. While we hope to develop a funding solution in a timely manner, we encourage the Council to build flexibility into the potential regulatory mechanisms that can be used to implement these solutions (i.e., framework adjustments are not held to the same strict timing constraints as the specifications process).

I appreciate the time and effort that the MAFMC and MAFMC staff have put into Amendment 14, and I look forward to working with the MAFMC on these important issues in the Atlantic mackerel fishery.

Sincerely,

John K. Bullard
Regional Administrator

cc: Rip Cunningham, Jr.
Bill Karp

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
NORTHEAST REGION
55 Great Republic Drive
Gloucester, MA 01930-2276

AUG 14 2012

C.M. "Rip" Cunningham, Jr., Chairman
New England Fishery Management Council
50 Water Street
Newburyport, MA 01950

Dear Rip:

The New England Fishery Management Council (NEFMC) adopted Amendment 5 to the Atlantic Herring Fishery Management Plan (FMP) at its June 2012 meeting. As part of Amendment 5, the NEFMC passed a motion to increase observer coverage up to 100 percent on vessels with Atlantic herring Category A and B limited access permits. The motion also specified that NOAA Fisheries Service and the Atlantic herring industry would share the cost of increased coverage, with the industry contributing up to $325 per sea day. At its June 2012 meeting, the Mid-Atlantic Fishery Management Council (MAFMC) passed a similar motion, as part of Amendment 14 to the Atlantic Mackerel, Squid, and Butterfish (MSB) FMP, to increase observer coverage on vessels with Atlantic mackerel permits. The motion also requires the cost of increased coverage to be shared between NOAA Fisheries Service and the Atlantic mackerel industry, with the industry contributing $325 per sea day.

As we have noted, the development of an observer coverage cost sharing program will be challenging since laws pertaining to funding and contracting are complex. The NEFMC specified that the cost sharing program is to be implemented within one year of the implementation of Amendment 5, but it did not specify the process for reviewing the cost sharing program or the vehicle to implement the cost sharing program. I believe that the NEFMC, MAFMC, and NOAA Fisheries Service should work together through the Council process to develop a cost sharing program. Since a cost sharing program would require the industry to pay for observer coverage, industry representatives must be included in the development of the cost sharing program. In order to engage industry representatives, while still complying with regulations regarding public participation, I recommend that the NEFMC and MAFMC form a joint plan development team (PDT)/fishery management action team (FMAT) to develop an observer coverage cost sharing program and bring it to the NEFMC and MAFMC for consideration.

NOAA Fisheries Service staff will serve on the joint PDT/FMAT and will provide information and guidance on funding and contracting requirements. We have already discussed the concept with General Counsel, NOAA Fisheries Service's contract attorneys, and other regions, and my staff will continue to investigate ways to develop an observer cost sharing program. If you choose to form a joint PDT/FMAT, I will provide a list of NOAA Fisheries Service staff to serve on the joint PDT/FMAT.

cc: LS, CBK (8/17)

Finally, as part of Amendment 5, the NEFMC passed a motion to consider establishing a river herring catch cap through the next appropriate action. While Amendment 1 to the Atlantic Herring FMP identified catch caps as management measures that could be implemented via a framework or the specifications process, Amendment 5 contains a specific alternative that considers implementing a river herring catch cap through a framework or the specifications process. Because of the explicit consideration of a river herring catch cap, and the accompanying analysis, in Amendment 5, it is more appropriate to consider a river herring catch cap in a framework under Amendment 5. The Council may begin development of the river herring catch cap framework immediately, but the framework cannot be implemented prior to the approval and implementation of Amendment 5.

I appreciate the time and effort that the NEFMC and NEFMC staff have put into Amendment 5, and I look forward to working with the NEFMC on these important issues in the Atlantic herring fishery.

Sincerely,

for John K. Bullard
Regional Administrator

cc: Rick Robins
Bill Karp

EARTHJUSTICE

ALASKA CALIFORNIA FLORIDA MID-PACIFIC NORTHEAST NORTHERN ROCKIES
NORTHWEST ROCKY MOUNTAIN WASHINGTON, DC INTERNATIONAL

October 8, 2012

C.M. "Rip" Cunningham, Jr., Chairman
Paul Howard, Executive Director
Members of the Executive Committee
New England Fishery Management Council
50 Water Street, Mill 2
Newburyport, MA 01950

RE: Atlantic Herring Fishery Priorities for 2013

Dear Chairman Cunningham, Director Howard, and Members of the Executive Committee:

We write on behalf of our clients Michael Flaherty, Captain Alan Hastbacka, and the Ocean River Institute,[1] the plaintiffs in *Flaherty v. Bryson*, regarding the management priorities for Atlantic herring in 2013.[2] These draft priorities as revised at the most recent Council meeting include: 1) the 2013-2015 specifications package with alternatives to address the Amendment 4 court order; 2) a framework adjustment to establish the River Herring catch cap; and 3) an amendment to consider River Herring as stocks in the Atlantic herring fishery.[3]

The *Flaherty v. Bryson* Memorandum Opinion and Order[4] requires consideration of River Herring[5] as stocks in the Atlantic herring FMP and measures to minimize the bycatch of River Herring (and other species) to the extent practicable consistent with National Standard 9. The Order also requires consideration of a range of reasonable alternatives to the existing AMs and the interim ABC control rule in the specifications package (or another appropriate action to be completed within one year), including at least one alternative "based on the most recent best available science for setting ABC control rules for herring and other forage fish." None of these requirements have been met. All of the remedial actions, including the supporting NEPA analysis demonstrating Defendants took a "hard look" at the environmental impacts of these actions, must be completed by August 2, 2013.[6]

In order to comply with the Court's remedial order and August 2, 2012 deadline, we request that the Council consider the following:

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[1] *See Flaherty v. Bryson*, 850 F. Supp.2d 38 (D.D.C. 2012).
[2] *See* Draft Management Priorities for 2013 (Sep 25, 2012) at p.2 under Herring, available at: http://www.nefmc.org/press/council_discussion_docs/Publish/Sept2012.html. (The draft priorities also include development of an industry-funded observer program).
[3] *Id.*
[4] The Memorandum Opinion and Order in *Flaherty v. Bryson* are found behind Tab #1 to the NEFMC Council Meeting Materials for the Herring Committee Report for Wednesday, September 26, 2012, available at: http://www.nefmc.org/herring/index.html; *see also* August 31, 2012 Letter from John Bullard (NMFS) to Rip Cunningham (NEFMC) behind Tab #1 Herring Committee Report for Wednesday September 26, 2012.
[5] The term River Herring is defined in the Court Opinion and Order includes blueback herring, alewives, hickory shad and American shad.
[6] *See* Order at 13 fn. 3.

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1. A reasonable range of alternative ABC control rules for Atlantic herring as part of the Council's river herring catch cap framework, which also must be completed by August 2, 2012. An appropriate approach based on the most recent scientific studies on forage fish (Pikitch et al 2012; Smith et al 2011; Cury et al 2011; Tyrrell et al 2011) is briefly outlined below and two alternatives are provided in greater detail in a separate letter specifically addressing the 2013-15 specifications. These alternatives were developed in consultation with scientists familiar with this work.
2. Additional AM alternatives as part of the 2013-2015 specifications action and /or as part of the River Herring catch cap framework, as appropriate.
3. A framework adjustment that implements a River Herring catch cap.
4. An amendment that considers whether River Herring are stocks in the Atlantic herring FMP based on, at a minimum, the materials listed in the Court's Order and also found in NMFS August 31, 2012 Letter to the Council.[7]

ABC Control Rule Based On The Best Available Science On Forage Fish

Our clients and others have requested on many occasions that the Council consider an ABC control rule for Atlantic herring based on the best available science for forage fish.[8] By definition, a control rule should specify an *approach* that sets appropriate harvest levels under a wide range of stock conditions and protects the stock from overfishing by becoming increasingly conservative as stock biomass departs from a specified target biomass.[9] During the development of Amendment 4 and the last (2010-2012) specifications process, the Council declined to develop an actual control rule consistent with the revised Magnuson-Stevens Act and National Standard 1 Guidelines due to the absence of a benchmark assessment. The public was assured, however, that the "interim" control rule (average of most recent 3 years catch) would be replaced by an appropriate control rule in the next specifications package.[10]

The new benchmark assessment was completed in July 2012. As discussed at the recent Council meeting, this assessment is a significant improvement over prior assessments because it used the best available scientific information on predation to specify natural mortality (m) in the assessment model); however, more is required when determining the acceptable biological catch for forage fish like Atlantic herring. Recent scientific studies, using different models to look at forage fish within many different ecosystems, conclude that both a realistic treatment of natural mortality in the stock assessment and determination of MSY, *and* a forage-appropriate control

[7] *See* Order at 11-12 and Letter from Bullard to Cunningham referenced in FN3.
[8] *See inter alia* January 13, 2009 Letter from Marine Fish Conservation Network to NEFMC; March 19, 2009 Letter from Herring Alliance to NEFMC; June 19, 2009 Letter from Herring Alliance to NEFMC; January 13, 2010 Letter from Herring Alliance to NEFMC; January 13, 2010 Letter from National Coalition for Marine Conservation to NEFMC. These comment letters and others pointed the Council toward a large body of science indicating that herring's role as forage must be taken into account in stock assessments, as well as in ABC control rules in order to protect their forage base.
[9] 50 C.F.R. §§ 600.310(e)(3)(iv)(C), (f)(1).
[10] *See* AR 6069 Final Amendment 4 to the Herring FMP at p. 22 ("The interim control rule serves as a placeholder until a more appropriate control rule is developed. In addition to the ABC advice, the SSC also recommended that a new benchmark assessment should be scheduled as soon as possible, preferably in advance of the next management cycle. This would allow the SSC to create an ABC control rule for the next specifications process. In the future the SSC will develop the ABC control rule when further information becomes available.").

rule are needed. *See* Pikitch et al 2012; Smith et al 2011; Cury et al 2011; Tyrrell et al 2011. This is necessary to account for the special risks associated with fisheries for forage fish, including the risk of dependent predator-populations collapsing and the particular vulnerability of forage species to over-exploitation. Herring are particularly vulnerable to over-exploitation because of their schooling behavior and because they undergo substantial population shifts even without fishing, making the risk of overfishing during down cycles even higher. Forage stocks must be given special consideration, above and beyond proper treatment of natural mortality in assessments, in order to avoid collapsing the forage stock and / or dependent predator populations, and causing destructive impacts on ecosystems. *See* Pikitch et al 2012; Smith et al 2011.

The Science and Statistical Committee (SSC) met on September 12, 2012 in order to develop its ABC recommendations for catch in the 2013-2015 fishing years and to discuss ABC control rules for the fishery. The SSC concluded that the two approaches for setting ABC developed by the Herring Plan Development Team (PDT) were nearly equivalent from a biological perspective (similar spawning stock biomass in 2015), thus the SSC gave the Council the choice of the two approaches for setting catch. However, many SSC members at that meeting recognized that both of these alternatives fell short of a proper control rule. *See* SSC discussion, September 12, 2012.

When the Council in turn considered only these two approaches for the 2013-15 specifications package, the Council failed to consider an ABC control rule alternative based on the best available science for setting ABC for forage fish and failed to meet the National Standard One guidelines for setting ABC for forage fish. The first approach, the 75% F_{msy} approach, is simplistic and undifferentiated from the default control rule used for many of the non-forage stocks (such as New England groundfish): ABC is based upon a fishing mortality rate (F) of 75% F_{msy}. The second approach, the "constant catch-based approach," is similar to the interim approach used for setting ABC during the 2010-2012 specifications (average catch 2006-2008). This approach (based on the maximum catch that will still have less than a 50% chance of overfishing in any of the three years) allows for more herring to be caught (342 mt as compared to 320 mt), is not based upon the above default control rule (75% F_{msy}), and was not part of the peer-reviewed material developed for the benchmark assessment. This approach fishes at twice MSY justified in part by a single year class (the strength of which can often be overestimated in the short-term[11]), and has no buffer for scientific uncertainty in its third year.

The SSC requested guidance from the Council regarding how it would like to see this Atlantic herring stock managed in the future, as would be appropriate to develop a permanent ABC control rule, yet none was provided.[12] As the SSC noted, neither approach in the specifications

[11] *See* DRAFT Atlantic Herring Specifications 2013-2015 at § 5.2.2 at p. 19 (2008 Atlantic Herring Year Class).
[12] The SSC requested guidance in their written report and Dr. Legault reiterated this request in the oral presentation at the September 26, 2012 NEFMC Meeting. *See* September 21, 2012 Memorandum from SSC to Paul Howard entitled *Herring ABC for FY2013-2015* ("However, the SSC requests guidance from the Council as to how it would like to see this stock managed, i.e., as a typical fishery with MSY-based reference points, or a reduced fishing rate and higher stock size to account for its role in the ecosystem. This would ensure that the next time herring are assessed, a control rule could be created which meets the needs of the Council. A control rule which could be set for more than three years would need to consider a wide range of possible stock conditions and have a known objective."); *see also* September 26, 2012 Council Meeting Audio Recording #12 *Scientific and Statistical Committee Report*

package may be acceptable beyond the next three years and neither is a control rule that considers a wide range of possible stock conditions with a known objective – instead both rely on a single year class that will ultimately move out of the population.[13] Although the recommendations might meet ecosystem needs "by default if not by design," these approaches are not an ABC control rule based on the best available science for forage fish that would have "reduced fishing rate and [maintained] higher stock size to account for its role in the ecosystem."[14]

Based on the best available science, an appropriate control rule for Atlantic herring should:

- Offset ABC from the estimated OFL according to scientific uncertainty in the estimate.
- Establish a target Biomass at or greater than 75% B_0 (virgin biomass)(*see* papers Pikitch et al 2012; Smith et al 2011; National Standard 1 guidelines)
- Establish a limit cut-off biomass at or above 40% $B_{0;}$ cut-off biomass is used now for Antarctic krill, Alaska herring, U.S. West Coast sardine, and mackerel.
- Set a maximum fishing rate (F) corresponding to 50% F_{msy} or 50% of natural mortality (m), whichever is smaller; F should be low compared to m.
- Establish a declining mortality rate as Biomass declines below the target level, so that fishing ends when the limit Biomass is reached (i.e., F=0).

The New England Council is yet to consider an Atlantic herring ABC control based on the best available science for establishing an ABC control rules for forage fish, as required by the *Flaherty v. Bryson* Remedial Order. In a letter to the Council dated October 8, two ABC control rules for forage fish, and the best available science supporting their consideration, were provided to the Council. *See* October 8, 2012, Letter from Flaherty to NEFMC Re: Atlantic Herring Fishery Specifications for 2013-2015 fishing year. We request that you provide terms of reference to the SSC to consider a range of alternatives for setting an ABC control rule for this fishery, including alternatives based on those provided in our October 8, 2012 letter, as part of the river herring catch cap framework to be completed by the Council by August 2, 2013.

Alternative for Accountability Measures

NOAA General Counsel advised the Council at its September 26, 2010 meeting that it needed to consider a "reasonable range of alternatives" to the current AMs in order to comply with the Court's Order in *Flaherty v. Bryson*.[15] Although Amendment 4 initially identified three different measures in the Atlantic herring FMP as AMs for the fishery, the court found that only two of these (management closures and overage deductions) could be considered AMs for the Atlantic herring fishery. *See* Opinion at 58 (haddock incidental catch cap is not an AM for herring because it does not limit the ACL of herring). Moreover, the Court held that Amendment 4 and its environmental assessment "demonstrate[] a total failure to consider the environmental impacts of alternatives to the proposed ABC control rule or AMs."

[13] *Id.*
[14] *Id.*
[15] *See* Council Audio Wednesday September 26, 2012, #15 Herring Committee Report. *See also* Opinion at 70 (In the absence of consideration of a range of alternatives to the accountability measures chosen in Amendment 4, NMFS had failed to take a "hard look" at the environmental impacts of Amendment 4).

Therefore, the Council must at a minimum analyze a reasonable range of alternatives to the two existing AMs for the fishery listed below:

1. Management Area Closures - 50 C.F.R. § 648.201(a)(1) (prohibits vessels from catching more than 2000 lbs of Atlantic herring per day once NMFS has determined that catch will reach 95% of the annual catch allocated in a given management area).
2. Overage Deduction - 50 C.F.R. § 648.201(a)(3) (mitigates ACL overages by deducting the amount of any overage from the relevant ACL or sub-ACL for the fishing year following NMFS's determination of the overage).

Overages occur in this fishery frequently and are significant. For example, from 2003-2011, numerous overages occurred in Areas 1A or 1B in 6 out of 9 years, and likely occurred in Area 1A for the third year in a row in 2011.[16] In 2010 (the last year for which catch totals are final), the quota caught in Area 1A was 107% and the quota caught in Area 1B was a whopping 138%, despite "closure" at 95%. These facts demonstrate that the current AMs are ineffective at constraining ACLs, sub-ACLs in particular, because they allow ACLs to be exceeded and for rolling overages to occur -- both counter to the objectives of the Magnuson-Stevens Act.

The Council identified two AM alternatives for consideration in the 2013-2015 specifications package:[17]

> 1. A "proactive" AM that would close the directed fishery in a given management area when the catch is projected to reach 92% of the area annual catch limits under the following two conditions:
>
> a) the stock is overfished or overfishing is occurring and;
> b) the sub-ACL for a management area has been exceeded in either of the preceding two years.
>
> 2. A "reactive" AM providing that if overfishing is not occurring and the stock is rebuilt (spawning stock biomass exceeds the target), the accountability measure (a pound for pound payback) will not be triggered until the sub-ACL is exceeded by 5% or more.

These alternatives do not constitute a "reasonable range of alternatives" consistent with the National Environmental Policy Act.[18]

At best, the first alternative might require an earlier closure to the fishery under very limited circumstances (the fishery must be both overfished (or overfishing is occurring) *and* the area in question has suffered its second overage in three years). The second alternative is less restrictive than the current reactive AM for the fishery because it would eliminate the requirement for overage paybacks in many circumstances and makes unclear what the effective limit for the

[16] *See* Tab #2 Draft Discussion Document Atlantic Herring Fishery Specifications for the 2013-2015 Fishing Years, Tables 2, 3, and 4 and discussion on pp. 5-7.
[17] *See* September 28, 2012 NEFMC News Brief at 2, available at: http://www.nefmc.org/ (Council Meeting Brief); *see also* Council Audio # 15 Herring Committee Report.
[18] *See* 40 C.F.R. § 1502.14

fishery is – in fact, it appears to provide an incentive to fish harder as the area catch limit is approached in order to catch up to 5% more than the ACL without having to mitigate the overage. Moreover, neither alternative addresses the overall ACL for the fishery. This set of AM alternatives is inconsistent with NEPA, the Court's Order to consider a "range" of AM alternatives, and the Magnuson-Stevens Act requirements to prevent ACLs from being exceeded and mitigate overages if they occur.[19] The Magnuson-Stevens Act requires ACLs to set *specific limits* on the total fish caught in each fishery to prevent overfishing. 16 U.S.C. §§ 1851(a)(1), (15); 50 C.F.R. § 600.310(f) (1).

Given the history of recent overages in this fishery, ranging as high as 138% of the sub-ACL, a closure at even 92% of the limit is unlikely to prevent the ACL's from being exceeded. A reasonable range of alternatives to the management area closure should include options that close the fishery when the catch is projected to reach 85% and 90% of the sub-ACL. A reasonable range of alternatives to the overage deduction should include an option that would deduct overages in the next fishing year. Although NMFS has taken the position in the past that it cannot monitor catch accurately enough to implement the pound for pound overage deduction in anything less than a one-year lag, under current regulations NMFS appears to be able to monitor Canadian catch in near real time in order to return 3,000 mt to the U.S. catch within the same fishing year. It has also been argued that the industry needs certainty in order to business plan, thus estimating potential overages and adjusting the amounts if necessary once the data is final is not feasible. This argument does not stand up given the fact specification are regularly not finalized prior to the start of the fishing year, yet industry has been unaffected. Given the further improvements to the fisheries monitoring and reporting measures included in Amendment 5, next year overage paybacks is a reasonable alternative that would increase accountability in the fishery.

In sum, the identified AM alternatives in the specifications package do not represent a reasonable range of alternatives under NEPA and do not meet the requirements of the Magnuson-Stevens Act. "[A]ctions that violate the MSA cannot be reasonable alternatives to consider." Opinion at 71 (*citing American Oceans Campaign v. Daley*, 183 F. Supp. 2d 1, 20). In order to comply with the Court's Order, the Council should immediately develop new accountability measure alternatives and analyze them expeditiously for implementation with this specifications package. Alternative AMs that cannot be completed as part of the specifications should be considered in the bycatch cap framework, consistent with the Court's Remedial Order.

River Herring Catch Cap Framework Action

The Court in *Flaherty* held that Amendment 4 failed to comply with National Standard 9's requirement to minimize bycatch of River Herring and other species to the extent practicable. *See* Opinion at 40-41. NMFS (and the Council) took the position that this legal deficiency would be cured by management measures in Amendment 5. *See* Order at 8. Amendment 5 received final Council approval on June 20, 2012, however, this action contains no substantive provision that will minimize bycatch of River Herring to the extent practicable. Amendment 5 provides

[19] 16 U.S.C. § 1853(a)(15); 50 C.F.R. § 600.310(g)(1).

only "support" of a voluntary industry avoidance project (SMAST /SFC/ DMF) and an undefined promise to "consider" a River Herring catch cap in a future action.[20]

Although the development of the River Herring catch cap could have begun immediately as part of the 2013-2015 specifications process (as contemplated by Amendment 1 to the FMP), debate ensued over the proper procedural vehicle for the cap which has delayed its development and implementation. As a result, the Council and NMFS have taken no action to date that satisfies the Courts Remedial Order to demonstrate that it has minimized bycatch to the extent practicable , by August 2, 2013. The Council must promptly initiate a framework adjustment that will implement the River Herring catch cap , and begin its NEPA analysis immediately, in order to meet its August 2, 2013 deadline.

Amendment That Considers River Herring As Stocks In The Atlantic Herring Fishery

Consistent with the Remedial Order, NMFS also recommended that the Council consider in an amendment to the Atlantic Herring FMP, whether river herring (alewife and blueback) and shad (American and hickory) should be designated as stocks in the Atlantic herring fishery.[21] The Court Order and NMFS's letter provided a list of legal, scientific, s and related materials that should be considered, at a minimum, when making this determination. This list includes the requirements of the Magnuson-Stevens Act related to including a stock in an FMP, the most recent river herring and shad stock assessments and peer review reports, NMFS own finding that a listing under the Endangered Species Act for river herring "may be warranted," Alternative Set 9 in the MAFMC's Amendment 14 to the Atlantic Mackerel, Squid, and Butterfish FMP, and the Court's Memorandum Opinion in *Flaherty v. Bryson*.[22]

The Opinion, in addition to the Order, in the *Flaherty v. Bryson* case is critical to completing this work and bringing the Atlantic herring FMP into compliance with the law. When finding that NMFS failed the first time to "reasonably and rationally consider [] whether Amendment 4's definition of the fishery [to exclude river herring] complied with the National Standards and with the MSA," Opinion at 32, the Court made clear that "councils do not have unlimited and unreviewable discretion to determine the make-up of their fisheries," *id*., and they must follow the "MSA's directive that FMP's be generated for any fisheries requiring conservation and management." The determination of what stocks make up a fishery must be consistent with the applicable legal standard, 16 U.S.C. § 1852(h), based on the best available scientific information, 16 U.S.C. § 1851(a)(2), and reviewed by NMFS for compliance with the Magnuson-Stevens Act and other applicable law, 16 U.S.C. § 1854(a). The Court in *Flaherty* laid out the legal standard: **Section 1852(h) requires the Council prepare an FMP or amendment for any stock of fish that requires conservation and management.** *See* Opinion at 30.

NMFS filed a supplemental explanation on the definition of the fishery with the Court on August 31, 2012, stating that based on the information available at the time Amendment 4 was approved it had "determined that Amendment 4's definition of the stocks in the fishery complies with the

[20] *See* June 2012 Council Report at 1 (Amendment 5 Measures Receive Final Council Approval); *see also* NEFMC Motions Report for Wednesday June 20, 2012 (Management measures to address River Herring bycatch).
[21] *See* August 31, 2012 Memorandum from John Bullard (Daniel Morris) to Rip Cunningham, Chairman NEFMC
[22] *See* FN 10.

MSA." This supplemental explanation is nothing more than another carefully lawyered *post hoc* rationalization for the failure to manage these species. It does not affect the Council and NMFS's obligation to prepare an FMP or FMP amendment for stocks in need of conservation and management, i.e., river herring and shad. As pointed out to the Court by the Plaintiffs, the supplemental explanation bypasses Congress's detailed structure, specifically the Council process, for determining which stocks should be included in a fishery, fails to satisfy NEPA's mandate to take a "hard look" at the environmental impacts of agency actions, and is contradicted by NMFS's own scientific information and actions. Plaintiffs filed their response to NMFS's supplemental explanation on September 25, 2012, attached to this letter as Attachment 1. As Plaintiff's Response shows, the best available scientific information, including that since Amendment 4 was approved, demonstrates that river herring and shad are involved in the Atlantic herring fishery (caught in significant amounts), and are unquestionable in need of conservation and management. Further, contrary to NMFS's strained explanation, it would not be impracticable to manage these species as a unit with Atlantic herring or duplicative of the ASMFC's management efforts, which pertain only to state waters. We urge you to initiate an amendment to add River Herring to the Atlantic herring FMP in November in order comply with the Court's Opinion and Order.

***

The Council and NMFS are required to complete all remedial actions in response to the Court's Order by August 2, 2013, including the NEPA analysis for the 2013-2015 specifications and all other remedial actions. *See* Order at 13. We therefore urge you to prioritize and take prompt action to consider our recommendations for complying with the *Flaherty v. Bryson* Court Order. Consideration of the measures could significantly improve management of our Atlantic herring and River Herring resources.

Sincerely yours,

/s/ Roger Fleming__
Roger Fleming, Attorney
Erica Fuller, Attorney
Earthjustice

on behalf of its clients
Michael Flaherty
Captain Alan Hastbacka
Ocean River Institute

Cc: John Bullard, Northeast Regional Administrator
Gene Martin, NOAA General Counsel
Mitch McDonald, NOAA General Counsel
Carrie Nordeen, NERO Sustainable Fisheries Division
Dr. Chris Legault, Chairman of SSC
Rick Robbins, Chairman, MAFMC
Lori Steele, Fishery Analyst Herring FMP

IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF COLUMBIA

MICHAEL S. FLAHERTY, et al. Plaintiffs, v. REBECCA BLANK, in her official capacity as Secretary of the Department of Commerce, et al., Defendants.	Civil No. 1:11-cv-660-GK

PLAINTIFFS' RESPONSE TO DEFENDANTS' SUPPLEMENTAL EXPLANATION OF ITS CONSIDERATION OF AMENDMENT 4'S FISHERY DEFINITION

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Dated: September 25, 2012

Pursuant to this Court's September 14, 2012 minute order, Plaintiffs hereby submit this Response to Defendants' supplemental explanation of Amendment 4's fishery definition (August 31, 2012, Memorandum of A. Risenhoover[1], Doc. 42-1)("Supplemental Explanation").

Defendants' Supplemental Explanation is inconsistent with the Magnuson-Stevens Act, National Environmental Policy Act, Administrative Procedure Act, and this Court's Memorandum Opinion (Doc. 31)("Opinion") and Memorandum Order (Doc. 41)("Order").[2] It entirely bypasses Congress's detailed structure for determining what stocks should be included in a fishery, which was described in detail in this Court's Opinion, and is not based on the best scientific information available. It also does not satisfy NEPA's mandate to take a "hard look" at the environmental impacts of agency actions. It is contradicted by NMFS's own scientific information and actions, and is not otherwise supported by the record.

In substance Defendants' Supplemental Explanation is merely another *post hoc* rationalization for their failure to include River Herring[3] as stocks in the Atlantic herring fishery. They present three excuses for this failure, suggesting that it would have been "impracticable" to manage River Herring, that the available information was "insufficient" to do so, and that any such management would have been "duplicative." Supplemental Explanation at 1. The difficulty with these excuses is that each one is contradicted by NMFS's own scientific information and actions, and is not otherwise supported by the record. For these reasons, Defendants'

[1] *But see* the Defendants' Notice of Filing Supplemental Explanation (Doc. 42)("Notice") stating that this memorandum to the file is authored by Samuel D. Rauch III, NMFS Deputy Assistant Administrator for Regulatory Programs.

[2] Defendants' Supplemental Explanation ignores that part of this Court's Order requiring that their consideration of Amendment 4's determination of the stocks in the fishery be consistent with this Court's March 8, 2012, Memorandum Opinion. *See* Order at 10-11. In fact, Defendants never reference this Court's Opinion in their Supplemental Explanation, Notice, or letter to the New England Fishery Management Council. (Doc. 42-2)("Council Letter"). This is important because, as discussed below, the Supplemental Explanation, and Council Letter, continue to misinterpret the Magnuson-Stevens Act contrary to this Court's Opinion.

[3] "River Herring" include alewife and blueback herring, and hickory and American shad.

Supplemental Explanation is arbitrary and capricious and not in accordance with law. It should be given no weight.

I. Defendants' Supplemental Explanation Is Not Consistent With the Magnuson Stevens Act, the National Environmental Policy Act, and this Court's Memorandum Opinion and Order

As an initial matter, the Defendants' Supplemental Explanation is fatally flawed because it avoids the procedural requirements of the Magnuson-Stevens Act and other applicable law. Defendants admit that "d[]esignating river herring as a stock in the fishery was not considered by the Council in Amendment 4" and was not analyzed in the environmental assessment. 76 Fed. Reg. 11373, 11377 (Mar. 2, 2011) (AR 6329). Defendants did not review the Council's failure to include River Herring as a stock in the fishery, arguing in their summary judgment memorandum they believed Congress left such decisions entirely to the Council's discretion and thus beyond the Magnuson-Stevens Act's mandate that the Secretary review Council decisions for compliance with applicable law. Defs' Opp. and Cross-MSJ at 18-19 (Doc. 18). These arguments were rejected, Opinion at 26-33, and this Court held that Defendants violated the Magnuson-Stevens Act and the APA by failing to "reasonably and rationally consider[] whether Amendment 4's definition of the fishery [to exclude river herring] complied with the National Standards and with the MSA's directive that FMPs be generated for any fisheries requiring conservation and management." Order at 3.

This Court concluded that the law regarding its remedial power requires that in cases where "the record before the agency does not support the agency action, if the agency has not considered all relevant factors, or if the reviewing court simply cannot evaluate the challenged agency action on the basis of the record before it, the proper course, except in rare circumstances is to remand to the agency for additional investigation or explanation." Order at 7 (citation

omitted). This Court explained that "when a court reviewing agency action determines that an agency made an error of law, the court's inquiry is at an end: the case must be remanded to the agency for further action consistent with the corrected legal standards." *Id.* (citation omitted). Given this limited remedial authority, this Court concluded that the appropriate remedy was for Defendants to correct what they failed to do before by considering whether Amendment 4's definition of the fishery complied with the Magnuson-Stevens Act through a remand "for reconsideration and action consistent with the Court's March 8, 2012, Memorandum Opinion." *Id.* at 8. This Court explained that "Congress created a detailed federal-state-local structure to investigate, study, and eventually make those decisions." *Id.* at 8.

Defendants' Supplemental Explanation, however, is at odds with the detailed structure Congress established for making these important decisions, and with this Court's Opinion explaining this structure, because it entirely bypasses the Council process that is at the heart of the Magnuson-Stevens Act. This Court explained the Act's decision-making process in great detail. Opinion at 2-5, 7, 20-33. Critically here, the Court explained "that it is the Council's role to name the species to be managed 'in the first instance,' [and] it is NMFS's role in the second instance to ensure that the Council has done its job properly under the MSA and any other applicable law." *Id.* at 29.

As the Opinion and record make clear, neither the Council nor NMFS followed the law in Amendment 4 when completing their jobs under the Magnuson-Stevens Act. Defendants incorrectly explained that it was their view that the Council was only required to develop a fishery management plan for a stock of fish where "NMFS has determined that a fishery is 'overfished'" or that "overfishing" is occurring. Opinion at 27-28.[4] Otherwise, in Defendants'

[4] Defendants continue to emphasize this narrower legal standard in their carefully worded communications with this Court and the New England Council over the Magnuson-Stevens Act's broader "conservation and management"

view the decision regarding which stocks to be included in a fishery management unit was left entirely to the discretion of the Council. *Id.* at 27. The Council, apparently relying upon this incorrect legal interpretation,[5] chose early in the development of Amendment 4 not to consider adding River Herring as a stock to the fishery, and as a result the Council never evaluated whether River Herring are in need of conservation and management and never developed the Amendment 4 record with the scientific information and data that would be necessary to determine if River Herring need to be added to the fishery management plan. *See* 76 Fed. Reg. at 11377 (AR 6329); Opinion at 9; Opinion at 23-26 (pointing to lack of record evidence and analysis for Council's decision not to consider adding River Herring to the fishery).

Thus, while the proper remedy was to remand Amendment 4 to the Agency for reconsideration of whether River Herring should be added to the fishery, Defendants' Supplemental Explanation is arbitrary and capricious and contrary to the law and this Court's Memorandum Opinion because it bypassed the Council, and merely reflects NMFS's current opinion based on the undeveloped record as it existed at the time Amendment 4 was approved on November 9, 2010. Supplemental Explanation at 1. This approach fundamentally conflicts with the Magnuson-Stevens Act's structure demanding such decisions first be made by the Council, consistent with the applicable legal standard, 16 U.S.C. § 1852(h), based on the best available scientific information, 16 U.S.C. § 1851(a)(2), and that NMFS then review such decisions for compliance with the Magnuson-Stevens Act and other applicable law. 16 U.S.C. § 1854(a); Opinion at 26-33.

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standard that is at issue in this case. Supplemental Explanation at 1 ("If a stock in a fishery is determined to be overfished or subject to overfishing, it must be included in an FMP."); Council Letter at 2 ("If a stock of fish is determined to be overfished or subject to overfishing, it must be included in an FMP.").

[5] Fishery management councils do not employ their own legal counsel but rather rely upon Defendants' attorneys provided by NOAA's Office of General Council for legal advice. *See* http://www.gc.noaa.gov/sw-office.html

Moreover, Defendants admit that the Amendment 4 decision whether to include River herring and shad in the fishery was never analyzed in an Environmental Assessment. 76 Fed. Reg. at 11377 (AR 6329); Opinion at 69-70. It is inconsistent with NEPA for Defendants to now offer a *post hoc* explanation effectively approving the prior, unlawful, Council decision through a four page conclusory document that contains none of the NEPA analysis that would otherwise be required to decide what stocks must be included in the fishery in the first instance. This lack of analysis, together with the failure to develop the necessary administrative record as noted above, has substantive effects. For example, Defendants point to (their perception of) the lack of data and analysis in the Amendment 4 record as a basis for their current conclusion that river herring and shad should not be included in the fishery. Supplemental Explanation at 3-4. But this reasoning is patently circular – this is the very data and analysis that would be developed and analyzed through NEPA if the decision-making structure of the Magnuson-Stevens Act were followed.

The Supplemental Explanation fails to shed any additional light on the Council and Defendants' decision at the time Amendment 4 was approved, and fails to properly reconsider that decision consistent with the statutory scheme requiring the Council make such decisions in the first instance, based on the best scientific information available. In sum, the Supplemental Explanation is only another *post hoc* rationalization, based on an insufficient record and analysis, from the Agency and its legal counsel, and should be given no credence.[6]

[6] *See Oceana v. Evans*, 384 F. Supp. 2d 203, 225 (D.D.C. 2005) (noting that in evaluating whether an agency articulated a basis for its decision, the district court cannot rely on post-hoc rationalizations; instead, it must look to the justification provided by the agency in the record); *see also Anacostia Riverkeeper v. Jackson*, 798 F. Supp.2d 210, 241, FN 23 (D.D.C. 2011) ("Courts do not generally give credence to ... post hoc rationalizations' for agency action, but instead consider only the regulatory rationale offered by the agency' at the time of such action. *Gerber v. Norton*, 294 F.3d 173, 184 (D.C.Cir.2002)). ("The Court is therefore loathe . . . to consider new arguments in a legal brief, particularly where the Agency offers no new evidence or study in support of its late-hour conclusions.").

II. Defendants Incorrectly Assert That it is Impracticable to Manage River Herring as a Unit

Defendants have never disputed, nor could they, that River Herring school with Atlantic herring or that River Herring are caught in significant numbers in the Atlantic herring fishery. Defendants now argue, for the first time, that the best "information available at the time Amendment 4 was approved demonstrates that it was impracticable to treat shad and river herring as a 'unit' on a regional or coast-wide scale as contemplated by National Standard 3." See Supplemental Explanation at 3.[7] As justification, Defendants argue that stock assessments existing at the time Amendment 4 was approved evaluate individual river runs of fish, assert that the extent and rate of mixing in the ocean is uncertain, and claim that existing catch data does not always differentiate between river herring and shad. *See* Supplemental Explanation at 1, 3. These assertions are not supported by National Standard 3 and other applicable law, the record, or the best available science.

National Standard 3 states that "[t]o the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as unit or in close coordination." 16 U.S.C. § 1851(a)(3). The National Standard 1 guidelines, cited but ignored by Defendants, also provide guidance for classifying multiple stocks in a plan, and require that an FMP include a description of fish involved in the fishery. 50 C.F.R. § 600.310(d)(1). To facilitate this inclusive description, the guidelines include those stocks already in an FMP by default, and provide definitions for "non-target species" (such as River Herring caught incidentally and retained for sale or personal use) and "ecosystem component species," so that other stocks involved in the fishery can be added to the plan. *See id*. § 600.310(d)(1)-(5).

[7] *See infra* at III, p. 12 for an extensive list of other species that NMFS manages as a unit on a regional or coast-wide scale.

During briefing, the Defendants explicitly agreed with Plaintiffs that river herring and shad are ~~"in~~volved in the fishery" consistent with the Magnuson-Stevens Act, Defs' Opp. and Cross-MSJ at 18, but argued (instead) that the only circumstances when the Council would be required to include a stock in the fishery would be when the Secretary officially designated the stock as overfished, *id*., — a legal position rejected by this Court. *See* Opinion at 29. In search of a new justification for their failure to add these species, Defendants now claim they are not inter-related and not capable of being managed as a unit. *See* Supplemental Explanation at 3. However, nowhere in the Act, the National Standards, or the guidelines does it state that the only stocks ~~"p~~racticable" for Defendants to manage are targeted stocks. It is arbitrary and capricious for Defendants to twist the phrase ~~"to~~ the extent practicable" into an excuse for their continuing failure to manage these species when National Standard 2 requires that they rely upon the best *available* science. Managing River Herring as a unit with Atlantic herring is entirely consistent with the Act, the National Standards, their guidelines, and the objectives of Amendment 4 to implement ACLs and AMs consistent with the Magnuson-Stevens Act (Amendment 4 Objective 2) and to consider the role of herring as forage fish (Amendment 4 Objective 5). AR 236-237.

In addition to misreading the law, Defendants ignored the best *available* scientific evidence, Plaintiffs Mem. at 18-20 (Doc. 17-1), that supports a finding that River Herring could be managed as a unit with Atlantic herring. *See* AR 645-664 (herring plan development team member Cieri presentation: Estimates of River Herring Bycatch in the Directed Atlantic Herring Fishery); AR 903-919 (Cieri white paper: same); AR 665-685 (Cieri presentation: Characterization of Observer and Portside Bycatch Studies for Atlantic Herring & Preliminary Examination Overlapping Trips); AR 1506-1529 (Correia white paper using NEFOP discard data: Exploratory Figures of River Herring Bycatch in the Atlantic herring fishery (Directed

trips) for Atlantic herring PDT consideration). This body of science shows, among other things, that the amount of incidental catch of River Herring in the Atlantic herring fishery, may be equivalent to nearly *all of the commercial river landings coastwide*. AR 662.

Defendants also ignored their own data which also supports a finding that these stocks can be managed as a unit. *See* AR 5641, 6170, 6172, 6173-6176, 6178, 6179 (Catch and Discard Data for Cat. A and B permit holders (these permit holders catch 98% of the Atlantic herring) in Final Amendment 4). This scientific evidence shows that in the directed trips (targeting herring and mackerel) by Category A and B permit holders, the catch of blueback's, alewives, and other unidentified herring that was kept and sold, was significant and far exceeded any other species caught incidentally by a large margin. AR 6172.

Finally, NMFS's assertion that management of River Herring is "impracticable," *see* Supplemental Explanation at 1, 3, is contradicted by its actions in Amendment 5, where it analyzed alternatives for catch caps and bycatch avoidance plans for River Herring in federal waters using the very same data it now claims is insufficient. *Id.* According to Defendants' Supplemental Explanation, in order for it to be practicable to manage River Herring as a unit, there would first have to be coast-wide stock assessments, evidence of the extent and rate of mixing of river herring and shad in the ocean traceable to each different natal river on the East Coast, catch data that always differentiates between river herring and shad, and information that links fish caught in the ocean traceable to each from different natal rivers on the East Coast). *Id.* This is an arbitrary and capricious standard, especially in view of the fact that both the New England Council and the Mid Atlantic Councils have examined the best *available* science and determined that an Alosine catch cap (a catch limit incorporating catch of all four species of River Herring together) as an interim measure in the herring and mackerel fisheries is feasible.

See NEFMC's Selection of Final Measures Herring Amendment 5, available at: http://www.nefmc.org/herring/index.html; *see also* MAFMC's Amendment 14 DEIS available at: http://www.mafmc.org/fmp/msb_files/msbAm14current.htm.

III. Defendants Wrongly Claim that the Best Available Information Was Insufficient to Support a Finding that River Herring are in need of Conservation and Management

The Supplemental Explanation conjures up a variety of smoke screens (e.g., inadequate data, ASMFC management in state waters, and biased comment letters) designed to obscure and confuse the relevant legal standard for adding stocks to a fishery, ignore or dismiss valid scientific information, and ultimately attempt to justify their conclusion that conservation and management of River Herring in federal waters is unnecessary. As this Court explained in its Memorandum Opinion, the Magnuson-Stevens Act requires an FMP or amendment for all stocks in need of conservation and management. *See* 16 U.S.C. § 1852(h)(1); see also Opinion at 3-5.

Fishery Management Plans must include conservation and management measures to prevent overfishing, rebuild overfished stocks, and promote the long-term stability of the fishery. *Id*. § 1853(a)(1)(A). The Act defines "conservation and management" as measures that rebuild, restore, and maintain the resource, including those designed to ensure that irreversible or adverse effects on the marine environment are avoided. *See* 16 U.S.C. § 1802(5). In addition, the National Standard 7 guidelines provide guidance on federal management when a stock has not yet been designated as overfished, and criteria for when "conservation and management measures" are required for those stocks. These conditions include: importance to the nation, the condition of the stock, and the extent to which it is already *adequately* managed. *See* 50 C.F.R. § 600.340. However, once a council develops an FMP, NMFS must review it, and ultimately, approve, disapprove, or partially approve the FMP as consistent with the National Standards and applicable law. 16 U.S.C. § 1854(a)(1)(A), (a)(3).

While NMFS makes passing references to the law, citing 16 U.S.C. § 1852(h)(1) and 1853(a)(2) in its statutory background section, its analysis (Section III) never applies the statutory conservation and management standard, or even references the statutory definition and related National Standard 7 guidance, and ultimately fails to evaluate in any meaningful way whether River Herring require conservation and management. *See* Supplementary Explanation at 3-4. Instead, Defendants continue to rely heavily upon the statutory standard that requires the axiomatic addition of stocks designated as "overfished" or "subject to overfishing" by the Secretary. *See* Supplementary Explanation at 1, 3-4. Defendants' arguments that these are the only triggers for adding stocks to a fishery are not supported by the Act and were explicitly rejected by this Court: the standard is whether a stock is capable of being managed as a unit and requires conservation and management. *See* Opinion at 29.

Moreover, the information NMFS relies on for its conclusion that River Herring are not in need of conservation and management, and thus should not be added to the fishery, is also incomplete and does not reflect the best available science (even at the time of the Amendment 4 decision). Most notable among the scientific information NMFS *failed* to consider in Amendment 4 is the underlying data and materials used to justify its listing of river herring (bluebacks and alewives) as *species of concern*. *See* 71 Fed. Reg. 61022 (Oct. 17, 2006); Plaintiffs Supp. Mem. (Doc. 35-0) at 6. Similarly, the underlying data and materials that supported its finding that a listing of river herring under the Endangered Species Act "may be warranted" was not considered. 76 Fed. Reg. 67652 (Nov. 2, 2011); Plaintiffs Supp. Mem. (Doc. 35-0) at 6.

In addition, NMFS cannot rely upon ASMFC management measures designed to manage directed fisheries in in state waters to justify its own inaction in federal waters. Plaintiffs

showed, and Defendants never challenged, that River Herring are caught in significant amounts in the Atlantic herring fishery in federal waters. Plaintiffs Mem. at 14-15; *see also* AR 5641, 6170, 6172, 6173-6176, 6178, 6179 (Catch and Discard Data). While state sustainable fishery plans described in its Supplemental Explanation are potentially valuable to address catch of River Herring in state waters, they do not obviate the need for management in federal waters.

As part of its direction to the Council, NMFS also claims "unique management challenges" inherent in species like River Herring that cross jurisdictional boundaries. *See* Letter to Council Exhibit 2 (Doc 42-2 at 3). However, NMFS already manages a plethora of stocks in multiple FMPs, including FMPs that cross the jurisdictional boundaries of the New England Council (NEFMC), the Mid-Atlantic Council (MAFMC), the ASMFC, and even NMFS FMPs: Atlantic herring (NEFMC/ASMFC), Atlantic mackerel (MAFMC/ASMFC), bluefish (MAFMC/ASMFC), summer flounder (MAFMC/ASMFC), Scup (MAFMC/ASMFC), spiny dogfish (MAFMC/NEFMC/ASMFC), Gulf of Maine and SNE winter flounder (NEFMC/ASMFC), and coastal sharks (federal (NMFS) FMP/ASMFC). *See* http://www.nefmc.org/; http://www.mafmc.org./; http://www.asmfc.org/. It is irrelevant and arbitrary to rely on the fact that River Herring and Shad have separate stock assessments and different management measures as an excuse for lack of management. All 20 of the managed species in the Northeast Multispecies FMP, for example, meet these criteria; yet that fact has not precluded NMFS from managing them as a unit. *See* http://www.nefmc.org/nemulti/index.html.

NMFS further relies heavily on the assertion that the ASMFC has not previously requested NMFS to create an FMP for River Herring in federal waters. *See* Supplemental Explanation at 2-3. This statement does not tell the full story. In fact, NMFS is well aware that the ASMFC, as well as both the New England and Mid-Atlantic Councils, were concerned

enough over the catch of River Herring to request emergency action to regulate catch of River Herring in federal waters during Amendment 4. *See* Exhibit 1. In its May 27, 2009 Letter to Gary Locke, the Executive Director of the ASMFC cited concerns about coastwide depletion and significant declines in most river runs, and pointed out that "bycatch of river herring in federal fisheries has become a significant concern, as it may be having considerable impact on stock status." Exhibit 1 at 1. The ASMFC concluded its letter with a plea: "We urgently need monitoring and management programs to minimize the impacts of by catch on river herring." *Id.* NMFS refused that urgent request for emergency action. Exhibit 1 at 18.

Finally, this Court already found that any reliance on the Atlantic Herring Plan Development Team document that NMFS again cites in its Supplemental Explanation at 3-4 is arbitrary and capricious, stating, "[t]hat document does not explain why an estimate could not have been generated prior to issuance of Amendment 4, nor why the Council could not at the very least have devised an interim Acceptable Biological Catch control rule based on the best available science, as it did in Amendment 4 for Atlantic herring." Opinion at 24.

In sum, NMFS ignored best available science that River Herring are in need of conservation and management and unlawfully relied on management in state waters for its inaction in federal waters

IV. Defendants Wrongly Assert That it Would be Duplicative to Manage River Herring in Federal Waters

Defendants' last attempt to justify inaction is to claim, for the first time, that managing River Herring in federal waters would be "impracticable and unnecessarily duplicative" under National Standard 7. *See* Supplemental Explanation at 4. National Standard 7 provides that "[c]conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication." 16 U.S.C. § 1851(a)(7). As support, Defendants cite the same

insufficiencies it used for earlier justifications discussed above – that the limited stock status information was related primarily to state waters and their own catch data for federal waters is ~~"u~~ncertain." *Id.* Further, NMFS absurdly claims that it would be duplicative to manage River Herring in federal waters when they are managed in state waters. The ASMFC's management plan does not include management measures addressing the catch of River Herring in any federal fisheries, therefore the ASMFC plan is irrelevant for the purposes of regulating their catch in federal waters. *See* Amendment 2 to the Interstate Fishery Management Plan for Shad and River Herring (May 2009), § 6.8 available at: http://www.asmfc.org/.[8]

Moreover, Defendants cannot rely on a promise to gather more scientific information in the future in order to consider managing River Herring as part of the Atlantic herring fishery to satisfy its current legal obligations. *See Anacostia*, 798 F. Supp.2d at 242 (courts consider rationale offered by the agency at the time of its action). Agencies must make decisions based on the best scientific information available at the time of the decision. *Sw. Ctr. for Biological Diversity v. Babbitt*, 215 F.3d 58, 60 (D.C. Cir. 2000) (best available science requirement ~~"p~~rohibits the Secretary from disregarding available scientific evidence that is in some way better than the evidence he relies on") (citation omitted). As discussed above, there was sufficient scientific information available at the time Amendment 4 was approved, and additional supporting scientific information that has become available since, that fully support adding River Herring as a stock in the fishery. There is no rational connection between the facts found and choices made here by NMFS.

[8] Although not at issue here, the Atlantic Coastal Fisheries Conservation and Management Act includes provisions authorizing NMFS to issue regulations that are compatible with the state waters plan and consistent with the Magnuson-Stevens Act's national standards. *See* 16 U.S.C. § 5103(b)(1). No such regulations have been issued for River Herring.

Conclusion

For these reasons, Defendants' Supplemental Explanation is arbitrary and capricious and not in accordance with law. It should be given no weight.

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Rhode Island Sustainable Fishery Management Plan for River Herring

September 21, 2012

Presented by the RI Division of Fish and Wildlife to the Atlantic States Marine Fisheries Commission River Herring Technical Committee

Introduction

Given recent wintertime fisheries that have occurred in RI state waters for Atlantic herring, and a known occurrence of river herring bycatch in our area, the state of Rhode Island (RI) wishes to make some adjustments to its state management for both Atlantic herring and river herring that will be protective of recovering river herring stocks, provide some flexibility to the Atlantic herring fishery when in state waters, and will seek to provide greater insight in to the RI fisheries and their impacts to river herring stocks through data collection and progressive management. This report will outline the fishery independent information that the state of RI has at its disposal for assessing the status of our local river herring stocks. The report will then look at the recent fishery information to assess the bycatch information available in an effort to quantify the bycatch occurring in RI state waters, and finally the report will outline the proposed management and monitoring plan the state is seeking to implement.

Fishery Independent Information

Biological Background - Rhode Island river herring runs are dominated by the alewife, *Alosa pseudoharengus*, also known locally as buckeyes. Blueback herring, *Alosa aestivalis*, have occurred occasionally in small amounts at the tail end of recent spawning runs. Fishery independent trawl surveys in and around Narragansett Bay typically yield 90% or more alewives in the river herring catch. Further, there is a statistically significant (r^2=0.72, P<0.01) relationship between spawning run size and spring trawl alewife catch at lag 3 (Figure 1). Different lags and inclusion of bluebacks in the trawl index degraded the regression. Most alewives in the spring trawl survey are 7-15 cm in length and are juveniles that are not mature. Based on Division of Fish and Wildlife (DFW) scale analysis and growth back calculation, they are likely age 1 fish. The three year lag in Figure 1 from age 1 juvenile to age 4 spawning adult is consistent with our understanding of their life history.

Run Size Estimates for Index Rivers- DFW has been involved with alewife restoration and run size monitoring since the passage of the Anadromous Fish Act in 1965 and construction of the Hamilton fishway on the Annaquatuckett River in 1973. There, adult returns in excess of 300,000 fish were achieved from transplanted parental stocks of 5,000 to 10,000 fish (Guthrie 1975, Gibson 1984). Similar results were obtained at Long Pond Maine (Havey 1973). These early successes buoyed managers because they represented reproductive rates of 20-30 per generation and intrinsic rates of about 0.6-0.7 per year. Unfortunately, run status deteriorated decades after initial successes and several states implemented moratoria on river herring harvests (ASMFC 2012). Currently, DFW monitors three index rivers for alewife spawning escapement. The Gilbert Stuart run at the head of Narrow River in North Kingstown and the run into Nonquit Pond in Tiverton RI are monitored with electronic fish counters. The run in Buckeye Brook, Warwick RI is monitored by visual counts performed by a volunteer coalition using a modified Rideout et al. (1979) procedure. A consistent series of run size estimates is available for the Gilbert Stuart and Nonquit for 1999-2012. Buckeye Brook counts began in 2003 and run size has been smaller than for Gilbert Stuart and Nonquit. To extend the three-river index time series back to 1999, missing Buckeye Brook estimates were set at their mean 2003-2012 level.

Total index river spawning escapement is plotted in Figure 2. Run size peaked in 1999 and then declined to a low point in 2004. It is clear that addition of proxy mean values for Buckeye Brook for 1999-2002 has not corrupted the trend. It was this decline that triggered great concern on the part of custodial state fisheries agencies and the Commissions and Councils responsible for interstate and federal waters management. Various hypotheses have been advanced to explain the decline including low freshwater flows during juvenile outmigration, increased striped bass predation, ocean intercept fisheries, and stock redistribution from climate change (Davis and Schultz 2009, Gahagan et al. 2010, ASMFC 2012, Hall et al 2012). However, since 2004 there has been a steady increase in Rhode Island index run size excepting an anomalous Nonquit Pond escapement in 2008. Using an exponential regression model, the instantaneous rate of increase since 2004 is 0.17 (SE=0.05). This corresponds to an annual increase of 18% per year (Figure 3, Appendix 1). It should be noted that this increase took place during the period of scrutiny on expanded effort by mid-water and pair trawlers fishing for sea herring, *Clupea harengus*. All three monitored runs increased by at least 67% from 2011 to 2012 despite significant sea herring fisheries in state and federal waters of management area 2 in winter 2011-2012.

Fishery Independent Surveys- The DFW conduct several surveys in and outside Narragansett Bay to monitor winter flounder abundance. A seasonal trawl survey is conducted in spring and fall at stratified random stations in the Bay as well as in adjacent Rhode Island and Block Island Sounds. The net design includes a ¼ inch liner so both juveniles and adults are retained. Details of the survey may be found in Lynch (2000). A total of 42 stations are sampled per season and all river herring are weighed, enumerated, and measured for length. The survey has been conducted since 1979 and indices through spring 2012 are available. A monthly, fixed station cruise was added to the trawl survey program in 1990 to better assess seasonal abundance patterns of migratory species. A total of 13 stations are sampled each month in Narragansett Bay for a total of 156 tows. Because of the correlation with index run size and availability of the 2012 datum, the spring seasonal survey was used to index alewife abundance in Rhode Island state waters. Trawl surveys are also conducted by the University of Rhode Island Graduate School of Oceanography (URIGSO) and by Normandeau Associates (NA) for Dominion Power's Brayton Point Station. These data were examined for corroborating evidence of trend.

Long-term alewife abundance in the DFW spring survey is plotted in Figure 4. As with spawning escapements in the index rivers, trawl catch increased in the 1990's before declining sharply. The nadir point however was reached earlier in 2001. Since then, abundance has followed an exponential increase the rate being estimated at 0.46 (SE=0.06). This corresponds to an annual increase of 58% per year (Figure 5, Appendix). The increase from 2011 to 2012 was 50%. Both the GSO and NA trawl surveys also exhibited exponential increases since 2001 the rates being 0.12 (SE=0.03) and 0.31 (SE=0.09), respectively. The DFW spring survey is dominated (90%) by fish between 7 and 15 cm in length (Figure 6), likely age 1 since the smallest alewives observed in spawning runs are 22-23 cm males determined to be age 2 by scale analysis (DFW-unpublished data). Trawl survey catch of juvenile alewives is positively correlated

(r=0.52, P<0.01) with the Atlantic Multidecadal Oscillation or AMO (Figure 7). The AMO is a mode of climate variability primarily expressed in sea temperatures that influences both precipitation and droughts in North America (Dijkstra 2006, NMFS 2012). Stream flow is strongly synchronized across the region and has exhibited a decadal pattern similar to that of alewife abundance (NMFS 2012. Fig.3.4). Emigration of juvenile alewives is strongly pulsed and associated with precipitation and flow events (Richkus 1975, Gahagan et al. 2010). The stronger AMO correlation at lag one as opposed to lag zero or lag two suggests that events during the freshwater life history, presumably river flows during out migrations, have impacted year class strength and later adult abundance.

Fishery Dependent information

Vessel Trip Report (VTR) information – The state of RI has looked in to a number of fishery dependent data sources to try and quantify the level of bycatch that is occurring in and around state waters. The first source of data was to look in to the federal VTR information. RI queried the 2010 - 2012 VTR Atlantic herring landings and discard data for trips that landed in RI. The source for this VTR data is the ACCSP Data Warehouse. The data were sorted in to the period of continuous fishing activity for the past two fishing seasons. This period begins in late October and runs in to early March of the subsequent year. The specific cut off dates used for this analysis were October 15 – March 15 in each two year period to be inclusive of the traditional period of time when the fishery has occurred in close proximity to RI state waters.

For the 2010 – 2011 winter Atlantic herring fishery, the total pounds of Atlantic herring landed in RI as reported on the VTRs was 7,846,180 lbs. The amount of river herring bycatch as reported was 811 lbs. This constitutes 0.01% of the total, and in magnitude based on dividing the bycatch by the average weight of an adult river herring (average weight = 0.4 lbs based on an average from RI run information) would be 2,027.5 fish. In this year, all of the bycatch was attributed to the bottom trawl gear type, and their total landings as reported on their VTRs was 7,756,180 lbs, therefore the 811 lbs of bycatch still represents 0.01% of the total (Table 1).

For the 2011 – 2012 winter Atlantic herring fishery, the total pounds of Atlantic herring landed in RI as reported on the VTRs was 18,158,880 lbs. The total amount of river herring bycatch was 493 lbs. This constitutes only 0.003% of the total, and in magnitude based on dividing the bycatch by the average weight of an adult river herring would be 1,232.5 fish. In this year, the bycatch attributed to the bottom trawl gear type was 293 lbs relative to a total landings amount of 11,808,885 lbs, representing 0.02% of the total for this gear type, and the bycatch attributed to the midwater trawl gear type was 293 lbs relative to a total landings amount of 6,349,995 lbs, representing 0.03% of the total for this gear type (Table 2).

The weaknesses of this dataset are that it is self reported by the industry with no independent verification. In addition, this information only captures fishermen who fished and landed in RI, so vessels fishing in RI but landing in other states were not captured. Given these weaknesses, the state of RI looked in to an additional dataset to try

and look for alternate methods of calculating the proportion and magnitude of bycatch that is occurring in this fishery.

SMAST bycatch information

The Rhode Island Division of Fish and Wildlife (RIDFW) acquired and analyzed the bycatch information generated through the SMAST river herring bycatch monitoring and move along program. The benefit of using this data source will be that it is based on an independent observer sampling design, rather than estimates generated by industry representatives that may or may not be complete. The data collected from the SMAST program were all observed trips which occurred between December 2011 and February 2012 from NOAA fisheries designated statistical areas including and in close proximity to, RI state waters (areas 539 and 611). Because the vast majority of river herring in RI are alewives, the bycatch of alewives was the species looked at for this analysis.

For the 2011 – 2012 winter Atlantic herring fishery, the total pounds of Atlantic herring recorded by the SMAST observers in the statistical areas as noted above was 13,699,758 lbs. The total amount of alewife bycatch was 31,622.2 lbs. This constitutes 0.2% of the total, and in magnitude based on dividing the bycatch by the average weight of an adult river herring would be 79,056 fish. In this year, the bycatch attributed to the bottom trawl gear type was 13,551.1 lbs relative to a total Atlantic herring amount of 4,879,662 lbs, representing 0.3% of the total for this gear type, and the bycatch attributed to the midwater trawl gear type was 18,071.1 lbs relative to a total Atlantic herring amount of 8,820,096 lbs, representing 0.2% of the total for this gear type (Table 3).

This information shows the activity that occurred in and around state waters with regard to Atlantic herring catch and river herring (alewife) bycatch, but there are two assumptions that can not be made. The first is that there was not information to determine whether or not the Atlantic herring noted in the observer information was landed in RI, so this can only be assumed to be fishing activity that occurred in and around RI state waters but not necessarily RI landings. An important caveat to note with this assumption is that the 2011 – 2012 fishing year occurred very close in shore which is not a normal occurrence for this fishery, so it is unclear as to whether this level of activity in the statistical areas noted above is unusually high. The second assumption that can't be made is that the alewives that were caught in the fishery were fish that originated in RI. The river herring stocks occurring in this area at this time may be a mixed stock from multiple river systems in the northeast (ASMFC 2012).

Conclusion

The areas of inquiry as noted above, including fishery information, fishery independent surveys, and climate information indicate that river herring stocks, specifically alewives are increasing in RI state waters. As well, there appear to be strong climactic drivers to population fluctuations above and beyond losses created by the fishery. In addition, the Atlantic herring fisheries that are occurring in close proximity to the state have not produced a significant bycatch relative to the Atlantic herring catch in and around state waters for the past two years. The magnitude of bycatch as noted in the SMAST observer information can be considered significant when compared to a single river system in the

state, but again it is believed that these are not only RI originating fish but a mixed stock from multiple river systems in the Northeast, so only a percentage of the total may be attributed to a single run in RI. While we don't have a quantified value for the stock mixture of the bycatch, the monitored run return information and trawl data indicate that the RI component of the river herring being intercepted and removed is not large enough to inhibit recovery.

The state of RI wishes to modify its state waters management to move in to the next phase of its river herring management, including continuing to monitor bycatch in the wintertime Atlantic herring fishery, minimizing the bycatch of river herring in this fishery by encouraging "move along" strategies for those participating in the RI fishery, avoid the loss of information from vessels fishing in state waters by offloading in neighboring states that are perceived to be less risky for them, and begin to develop recreational fishery information by allowing a limited and small scale recreational fishery in the state. These new management procedures will take place during a period where indications are that RI river herring runs appear to be improving, and the state does not believe any of the proposed management changes would jeopardize this recovery.

Proposed Management Plan

Atlantic herring – In an effort to discourage the practice of vessels fishing for Atlantic herring in or around RI waters and then transporting the catch to other states for landing, thus risking a loss of data on any local river herring bycatch events, the state of RI is seeking to include a bycatch allowance in its regulatory framework similar to the one instituted in neighboring states. Specifically the state will implement a 5% bycatch allowance for federal vessels fishing in the Atlantic herring fishery in federal waters. As a prerequisite, the state will impose a mandatory permitting process that will require all vessels wishing to participate in the RI waters Atlantic herring fishery to attend a preseason meeting where they will be required to indicate that they are integrated in to the SMAST river herring bycatch monitoring program, as well as other logistical considerations such as documenting who the appropriately licensed captain will be. The state of RI believes that it will better be able to monitor the river herring bycatch that is occurring in and around state waters through this mechanism, as well as assuring that the vessels are privy to, and included in, the "move along" strategies which are an integral part of the SMAST river herring bycatch monitoring program, thus keeping the bycatch that is believed to be occurring to a minimum.

River herring – The above portion of the proposed management changes addresses river herring bycatch in the Atlantic herring fishery, but the issue of the in-stream river herring fisheries remains. RI was one of the first states to implement a complete moratorium on the harvest of river herring in state waters in both the marine and fresh waters of the state. This moratorium has been in place since 2006. As indicated in the fishery independent information in previous sections of this report, the local in-stream returning adult information is indicating a modest but positive recovery in our local monitored streams. In an effort to begin to collect data on an in-stream recreational fishery without impacting the recovery process, the state of RI wishes to open a recreational fishery on one designated run. The specific run will be determined after internal DFW discussions, but

will be on one designated run that has a current monitoring program. The opening will also be limited to one day per week (one day between Monday and Friday so that DFW staff can be present to monitor the opening), and will be at a limited bag limit (3 fish per person per day) in 2013. This will allow the state to begin to collect data on the recreational demand that exists at the freshwater interface so that as the state moves forward in the future with a desire to increase access to the recreational fishery, it will have begun a dataset from which to make projections. Data on effort and harvest in the RI recreational fishery does not exist at this point, therefore the reason for the limited recreational opening as proposed. In addition to this limited opening, the state will commit to significant monitoring of this open fishery as a way to collect as much information as possible. The DFW proposes to post a staff member at the open run on each open day to collect in person data on the fish harvested at the run. The data will be collected with a standardized form to be developed by the DFW. In addition, if the opening appears to be impacting the open run negatively, the regulation will be written to allow the DFW to close the fishery before permanent damage can be done. The state believes that this very limited opening to collect data will not significantly impact the fishery, but the data collection will be imperative if the state wishes to provide further access to its recreational river herring fishery in the future.

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Table 1 – 2010 – 2011 fishing season VTR data for vessels landing in RI

Gear Type	Kept Atlantic Herring (lbs)	Discarded River Herring (lbs)	Proportion	Number of bycatch fish
Bottom Trawl	7,756,180.00	811.00	0.01%	2,027.5
Midwater Trawl	90,000.00	-	0.00%	
Total	7,846,180.00	811.00	0.01%	2,027.5

Table 2 – 2011 – 2012 fishing season VTR data for vessels landing in RI

Gear Type	Kept Atlantic Herring (lbs)	Discarded River Herring (lbs)	Proportion	Number of bycatch fish
Bottom Trawl	11,808,885.00	293.00	0.02%	732.5
Midwater Trawl	6,349,995.00	200.00	0.03%	500
Total	18,158,880.00	493.00	0.03%	1232.5

Table 3 – 2011 – 2012 fishing season data for vessels in RI waters and close proximity (statistical areas 539, 611) as reported through the SMAST river herring monitoring program.

Gear Type	Atlantic Herring (lbs)	Alewives (lbs)	Alewife Catch/Tow (lbs)	Total Percentage	Percentage /Tow	Number of Alewives
Bottom Trawl (61 trips, 151 tows)	4,879,662	13,551.1	89.7	0.3%	0.3%	33,878
Midwater Trawl (20 trips, 29 tows)	8,820,096	18,071.1	623.1	0.2%	0.2%	45,178
Total	13,699,758	31,622.2	712.8	0.2%	0.2%	79,056

Figure 1- Relationship Between Alewife Run Size in Index Rivers and Trawl Catch of Juvenile Alewife Three Years Before

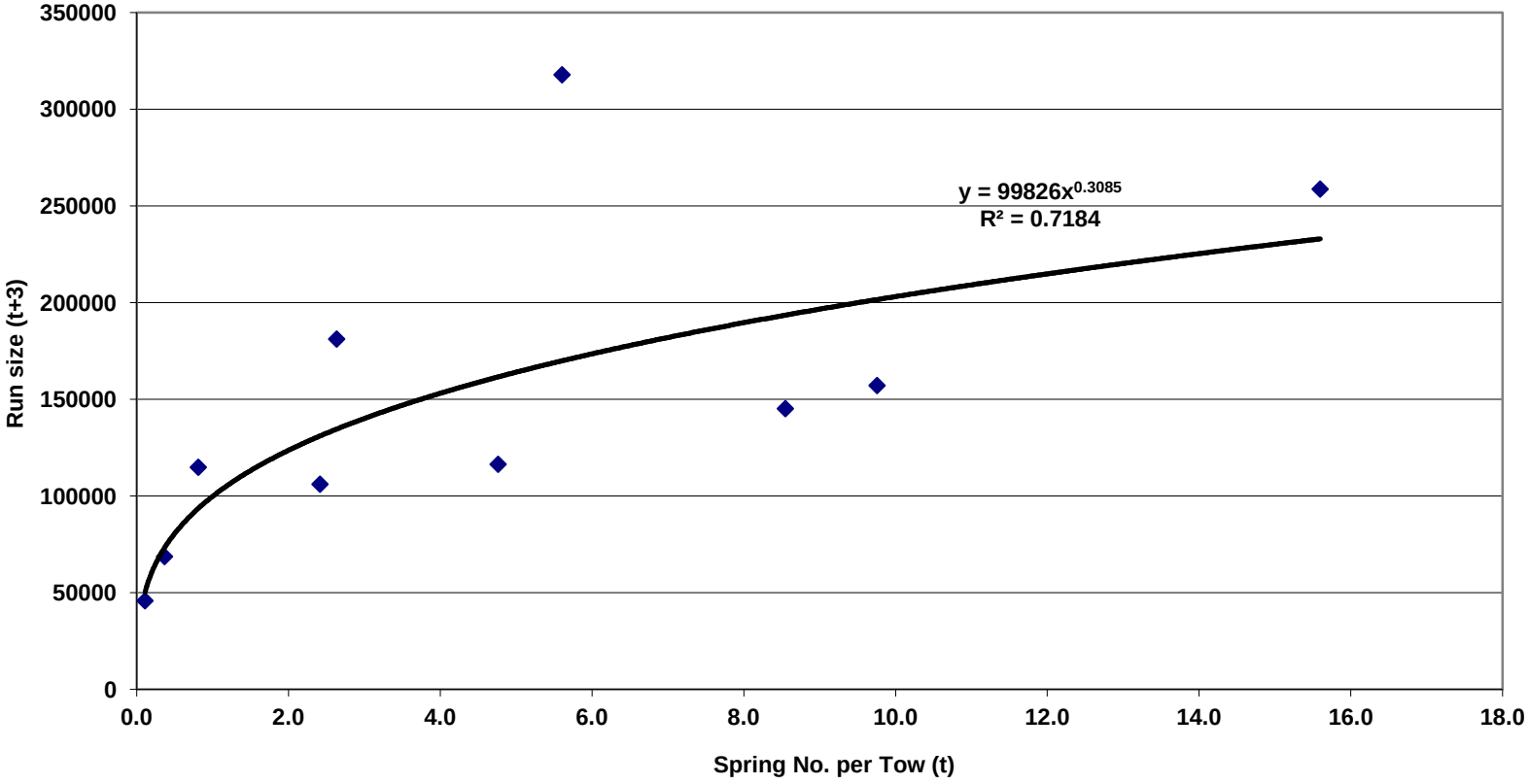


Figure 2- Rhode Island Alewife Spawning Run Size from RIDEM/DFW Fishway Monitoring

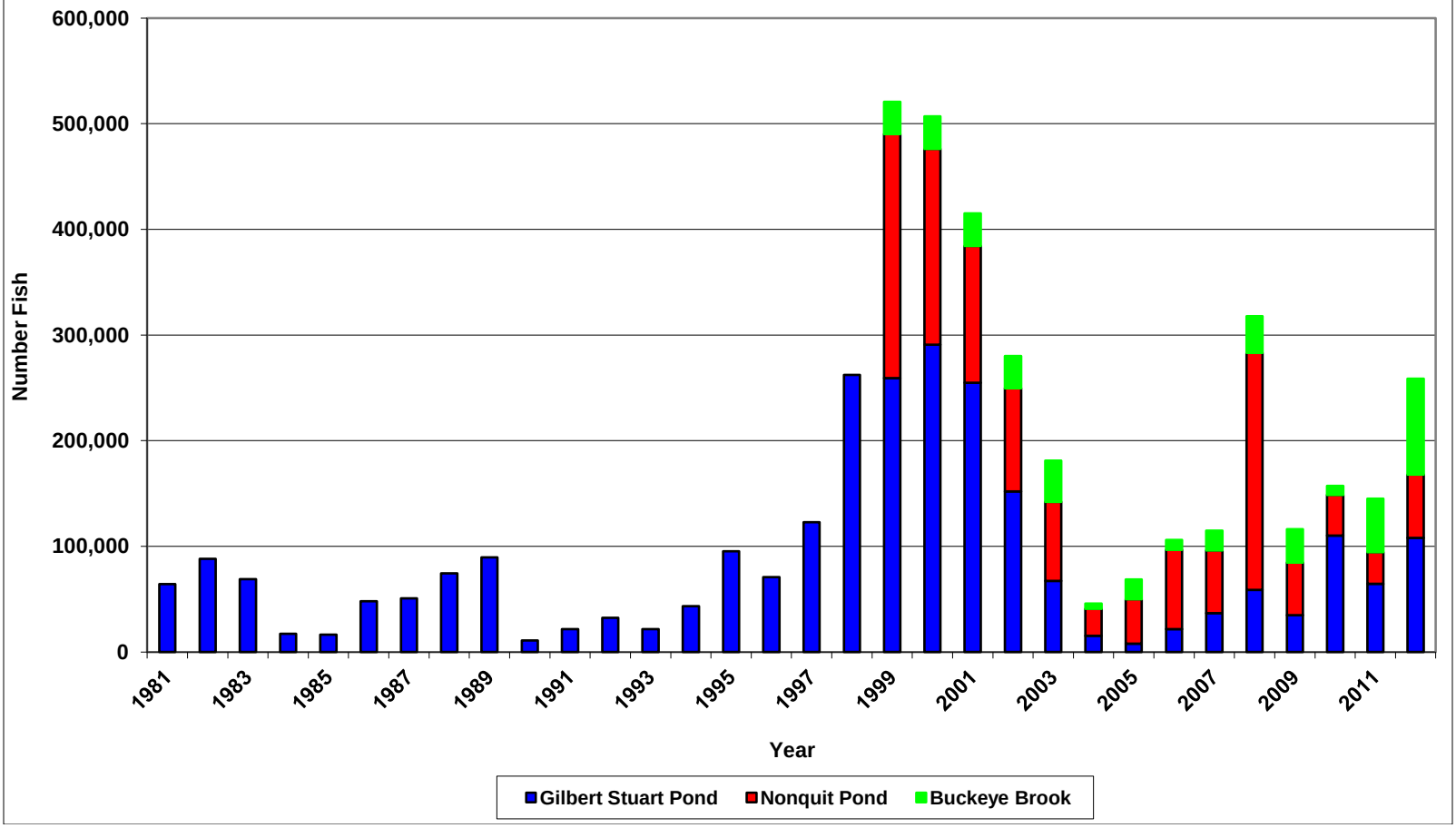


Figure 3- Rhode Island Alewife Combined Run Size at Index Rivers 2004-2012 with Exponential Growth Trend

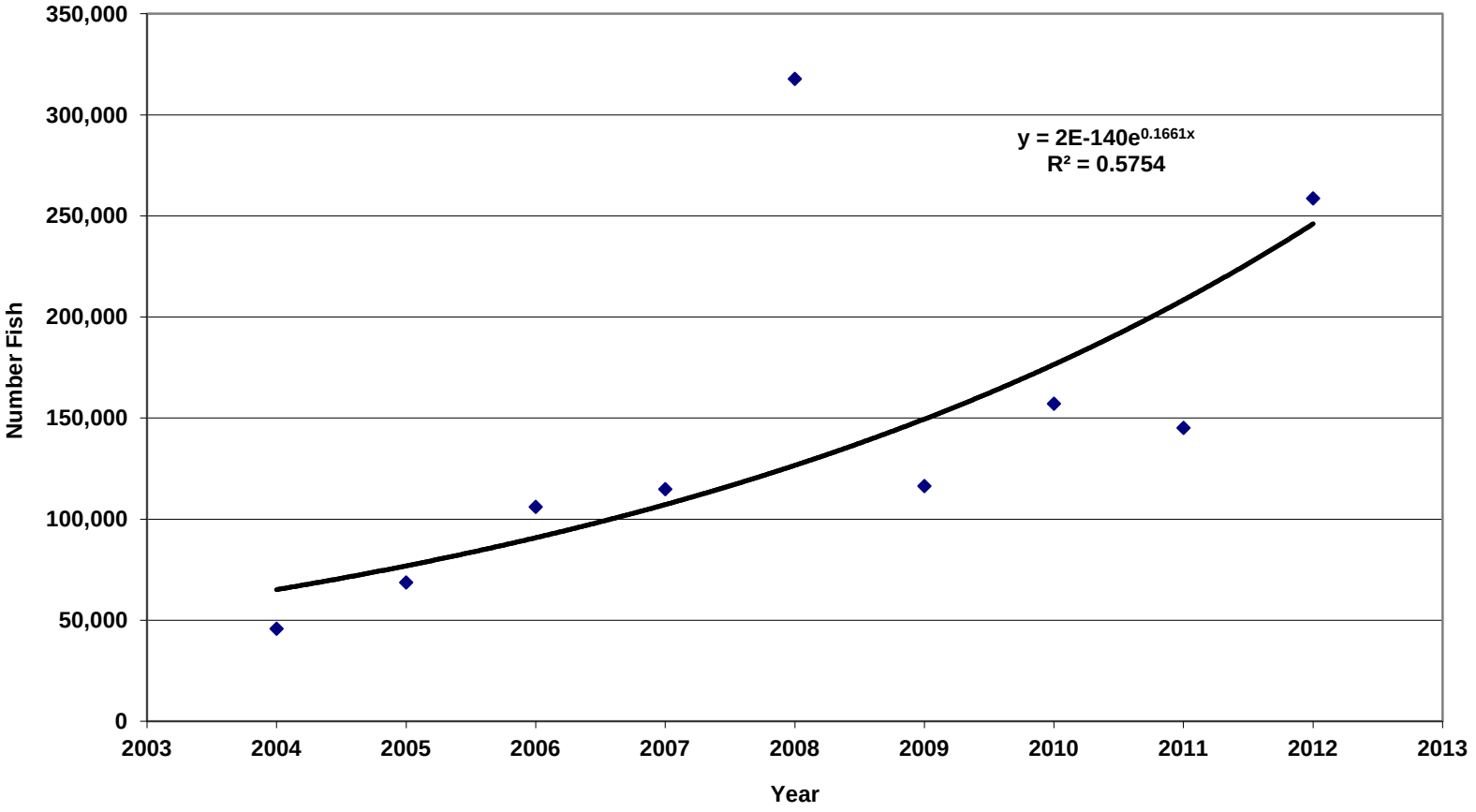


Figure 4- Alewife Abundance in the DFW Spring Trawl Survey in Narragansett Bay and Rhode Island Coastal Waters

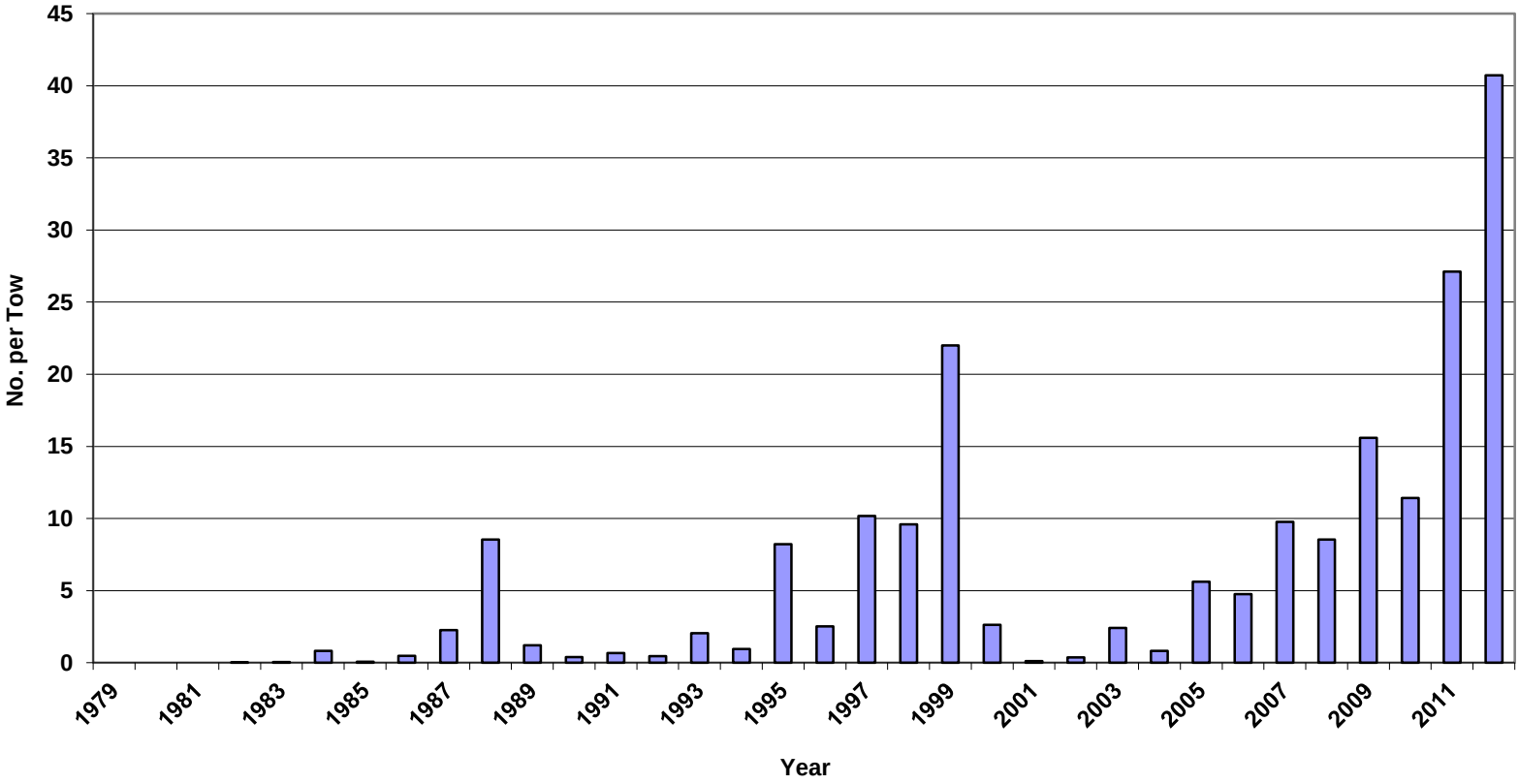


Figure 5- Exponential Growth Trend for Alewives in DFW Spring Trawl Survey, 2001-2012

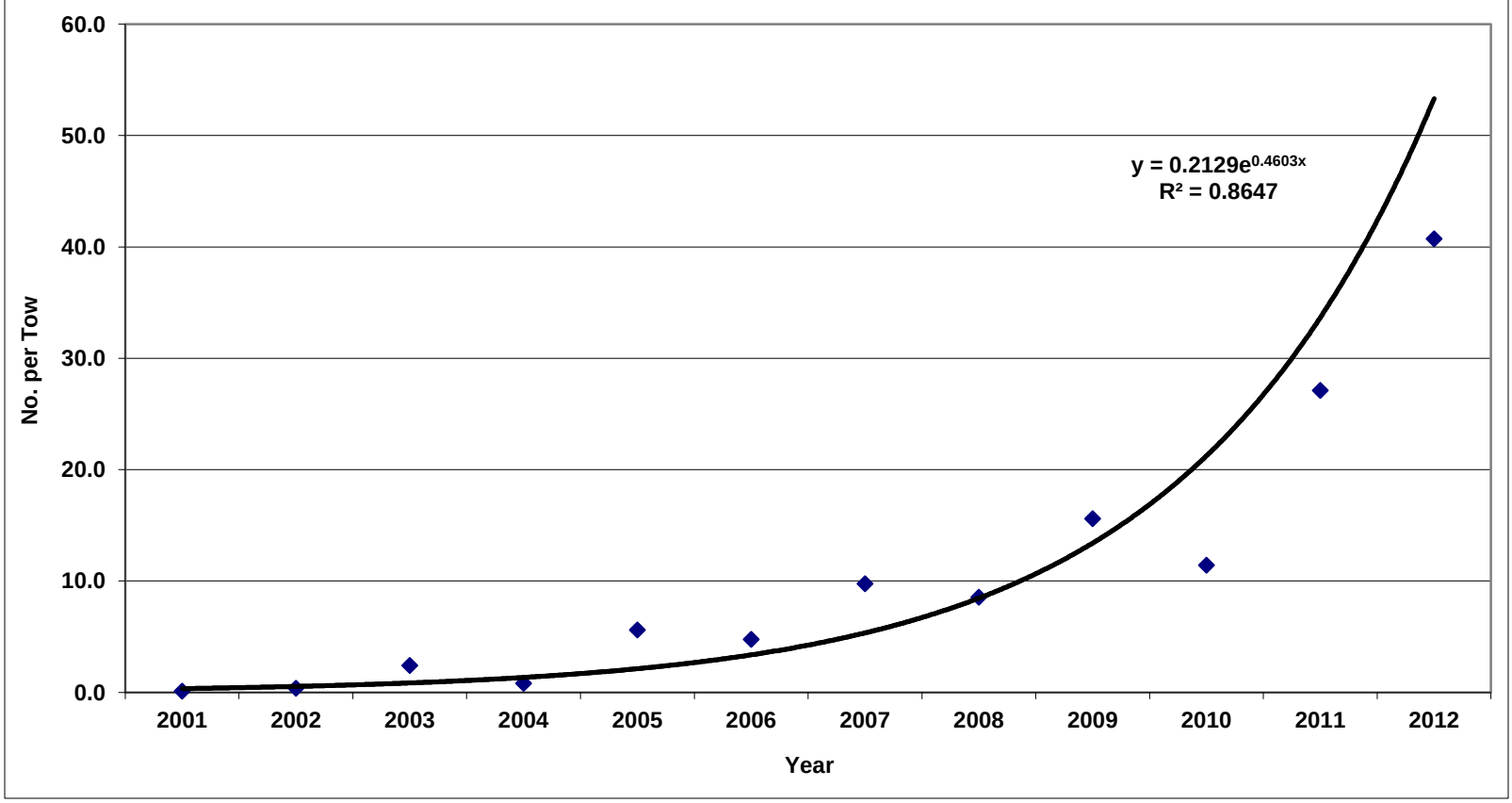


Figure 6- Length Frequency of Alewives in the DFW Spring Trawl Survey 1979-2012

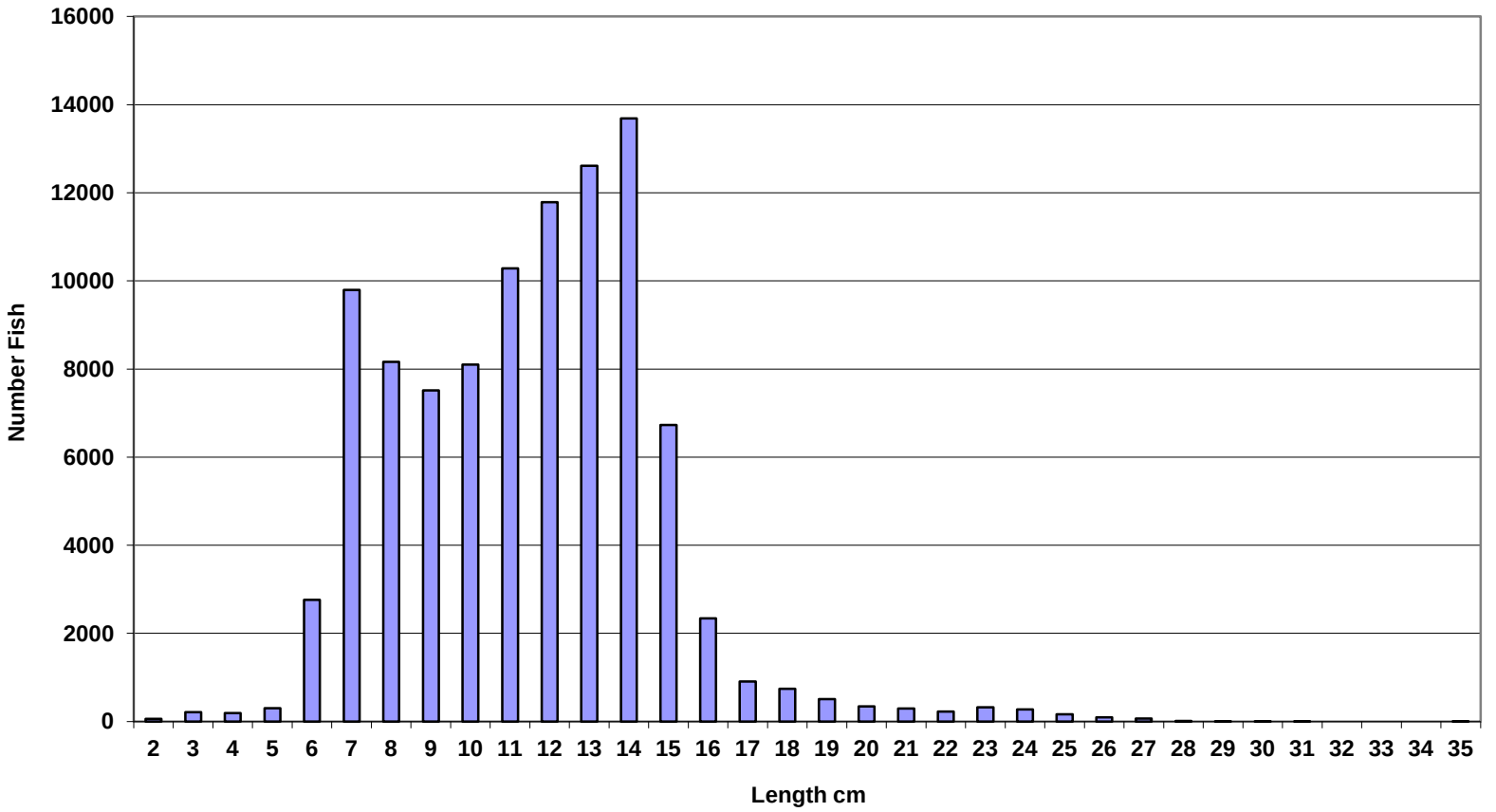
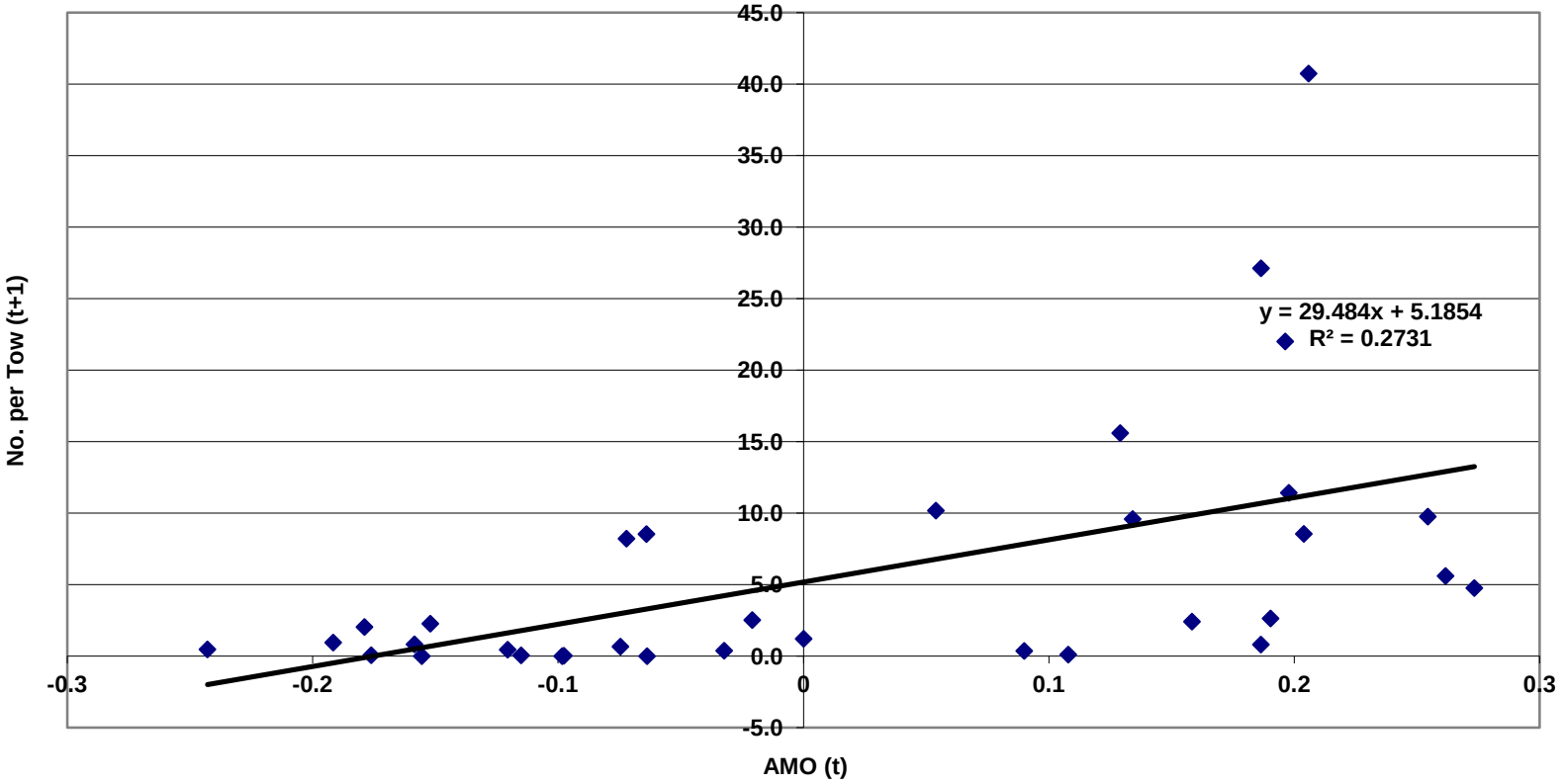


Figure 7- Alewife Abundance in the DFW Spring Trawl Survey vs. The Atlantic Multidecadal Oscillation



Appendix 1- Regression Results for Rhode Island Exponential Growth Trends in Alewife Populations

SUMMARY OUTPUT for RI Combined Spawning Escapement Index 2004-2012

Regression Statistics	
Multiple R	0.758541
R Square	0.575384
Adjusted R	0.514724
Standard E	0.417853
Observatio	9

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regressior	1	1.656179	1.656179	9.485477	0.017819
Residual	7	1.222211	0.174602		
Total	8	2.87839			

	Coefficients	*tandard Erro*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-321.8632	108.321	-2.971385	0.020767	-578.0016	-65.72485
r rate	0.166141	0.053945	3.07985	0.017819	0.038583	0.2937

SUMMARY OUTPUT for Spring Trawl Survey Index 2001-2012

Regression Statistics	
Multiple R	0.929899
R Square	0.864712
Adjusted R	0.851183
Standard E	0.688475
Observatio	12

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regressior	1	30.29612	30.29612	63.91615	1.18E-05
Residual	10	4.739978	0.473998		
Total	11	35.03609			

	Coefficients	*tandard Erro*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-922.114	115.5207	-7.982238	1.2E-05	-1179.51	-664.7178
r rate	0.460284	0.057573	7.994758	1.18E-05	0.332003	0.588565

Appendix 2- Regression Results for Alewife Abundance in the DFW Spring Trawl Survey and the Atlantic Multidecadal Oscillation. Lag is one Year.

SUMMARY OUTPUT for DFW Trawl (t+1) on AMO (t)

Regression Statistics	
Multiple R	0.522633
R Square	0.273145
Adjusted R	0.250431
Standard E	7.777352
Observatio	34

ANOVA

	df	*SS*	*MS*	*F*	*ignificance F*
Regressior	1	727.3757	727.3757	12.02528	0.001519
Residual	32	1935.591	60.48721		
Total	33	2662.966			

	Coefficients	*tandard Erı*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	5.185421	1.34927	3.843132	0.000543	2.437049	7.933793
AMO	29.48447	8.502483	3.467749	0.001519	12.16548	46.80346

Massachusetts Sustainable Fishing Plan for American Shad (*Alosa sapidissima*)

Submitted to:

Atlantic States Marine Fisheries Commission

Prepared by:

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DRAFT **---** September 2012

1. Introduction

American shad *(Alosa sapidissima)* are presently managed under Amendment 3 of the Atlantic States Marine Fisheries Commission (ASMFC) American Shad Fishery Management Plan. Amendment 3 contains the provision to close state fisheries for shad (except for catch and release only) for states without an approved sustainable fishing plan by January 2013. The purpose of this sustainable fishing plan for Massachusetts is to allow the continuation of shad fishing in the Merrimack and Connecticut rivers while planning for population restoration in those rivers and others where populations are low and limited information is available.

2. Current Regulations

American shad are managed in Massachusetts jointly by the Massachusetts Division of Marine Fisheries (*MarineFisheries*) and the Division of Fisheries and Wildlife (*MassWildlife*). *MarineFisheries* manages shad passage and harvest in marine waters up the first dam or head of tide and *MassWildlife* manages shad passage and harvest in freshwater above the first dam or head of tide. Under current regulations no commercial fishery for American shad presently operates within the Commonwealth of Massachusetts. Under Massachusetts Marine Fisheries Laws, MGL Chapter 130: and Title 322: CMR, American shad may be taken by hook and line only. Furthermore, Massachusetts's regulations state that American shad may be taken for recreational purposes only by hook and line with a six fish per day possession limit. Section 4.12 of the CMR prohibits the landing of net caught shad, even when taken outside of Massachusetts waters in the Exclusive Economic Zone or in the territorial seas of another state.

3. Current Status of Stocks

Four river systems in Massachusetts support recreational American shad fisheries that are predominantly catch and release. These are the Merrimack River, the North River and its tributaries of Pembroke and Marshfield, the Palmer River, and the Connecticut River. Three other rivers are considered to support shad runs due to recent observations of adult shad during spring (*see* Appendix, Table A1). Coastal runs of American shad in the commonwealth are relatively small compared to the Mid-Atlantic and South Atlantic regions. The Connecticut and Merrimack rivers have the most potential to support large American shad runs, both have multi-jurisdictional anadromous fish management and restoration plans in effect. Following the section on state-wide reported landings, the plan will be divided into sections on the Merrimack River and Connecticut River. Finally, brief discussion will be included on the remaining small rivers that have no present data on existing shad runs or fisheries.

A. Statewide Landings

The prohibition of catching shad by net in 1987 essentially eliminated commercial harvest in Massachusetts. Since this time some landings have been reported by the National Marine Fisheries Service (NMFS) (Table 1). Few shad landings have been identified since 2005. The origin of these harvested shad is uncertain but is expected to some degree to represent illegal landings made inadvertently within fisheries that were not targeting shad. Recreational catches estimates show low catches in recent years and the highest catches in the late 1990s with high variability in most years (Table A2).

Table 1. Massachusetts American shad landings, 1990-2010. The landings data were provided by the NMFS Fisheries Statistic and Economic Division, Northeast Regional Office.

Year	*MA Landings (No.)*	*Other Atlantic States (No.)*	*American Shad (% from MA)*
1990	5,605	3,553,473	0.16
1991	638	2,808,898	0.02
1992	308	2,435,127	0.01
1993	423	2,105,863	0.02
1994	286	1,493,906	0.02
1995	454	1,653,322	0.03
1996	134	1,583,079	0.01
1997	752	1,837,170	0.04
1998	1,765	2,174,226	0.08
1999	223	1,067,312	0.02
2000	268	890,624	0.03
2001	1,051	722,178	0.14
2002	424	1,471,850	0.03
2003	1,109	1,509,898	0.07
2004	530	1,136,527	0.05
2005	0	302,435	0.00
2006	102	193,855	0.05
2007	44	168,993	0.03
2008	31	100,901	0.03
2009	0	88,165	0.00
2010	0	105,477	0.00

Merrimack River

Merrimack River. The Merrimack River flows for 204 km from tributaries in New Hampshire to the Atlantic Ocean. The lower 78 km of the river are in Massachusetts and the first dam is the Essex Dam, located at 42º 41' 57.942" N and 71º 09' 57.086" W at 48 rkm in Lawrence, Massachusetts. The drainage area of the Merrimack River is 12,970 km^2. A US Geological Survey streamflow gauge station has been maintained since 1923 in Lowell at drainage area 12,005 km^2 (#01100000) at approximately 66 rkm. Mean monthly discharge for the time series at this station during the spring are: 19,500 cfs – April; 11,800 cfs – May; 6,650 cfs – June; and 3,670 cfs – July (http://waterdata.usgs.gov/ma/nwis/).

Historically, the shad spawned in the Merrimack River as far in the watershed as Lake Winnipesaukee in central NH and its tributaries. Prior to dam construction, the shad run in the Merrimack River supported important fisheries that landed several hundred thousand shad annually (Stolte 1981). By the late 19th century, Goode (1884) considered the Merrimack River shad run to be insignificant due to passage barriers. Anadromous fish are managed by the Merrimack River Anadromous Fish Restoration Program that is comprised of US Fish and Wildlife Service (USFWS), NMFS, US Forest Service, *MarineFisheries*, *MassWildlife*, and NH Dept. of Fish and Game representatives. Fishways are present on the first three dams in the Merrimack River. The lowermost dam, the Essex Dam, was first built in 1848 and presently has

a spillway width of 920 ft and height of 31 ft. Several fish passage facilities have been operated at the dam since construction. Since 1983 passage has been provided by a fish lift. The fish lift is operated by the dam owner, Consolidated Hydro, Incorporated Energy (FERC Project No. 2800).

The next dam upstream is the Pawtucket Dam in Lowell MA at 70 rkm. The Pawtucket Dam was built in 1830, enlarged in 1876, and presently has a spillway width of 1086 ft and height of 15 feet. A vertical-slot fishway and fish lift became operational in 1986 at the Pawtucket Dam. The fishways are operated by the Lowell Hydroelectric Project (FERC Project No. 2790). The third dam upstream is the Amoskeag Dam in Manchester, NH, at 119 rkm, it is equipped with a pool and weir fishway. At this time. the next two dams in NH (Hooksett and Garvins) have no fish passage

Shad Spawning/Nursery Habitat. the amount of existing and potential shad nursery habitat in the Merrimack River. Currently. upstream passage in the Merrimack River is blocked at the Hooksett Dam at 132 rkm. The Merrimack River Shad Restoration Plan (MRTC 2010) estimated that there was approximately 5,687 acres of potential mainstem nursery habitat downstream of the Hooksett Dam. The plan also identified 700 acres of potential nursery habitat available in tributaries to the Merrimack River downstream of the Hooksett Dam. Restoring passage at Hooksett and Garvins would provide another 3,802 acres of habitat currently unavailabale to spawning shad.

The Technical Committee for the Anadromous Fishery Management of the Merrimack River first introduced a strategic plan for restoration in the Merrimack River that contained an interim objective of annually passing 35,000 shad at the Essex Dam fish lift (USFWS 1997). The 1997 plan recognized that variable river discharge can alter both fish lift operations and attraction flows to the fish lift entrance which can influence the passage efficiency of shad present below the dam annually. The shad restoration plan for the Merrimack River was updated in 2010 (MRTC 2010) and contains shad restoration targets based on habitat units.

Coordination within the Merrimack River Watershed

The Massachusetts Division of Marine Fisheries accepts the restoration goals of the cooperative Merrimack River Anadromous Fish Restoration Program as specified in the updated shad restoration plan (MRTC 2010). Based on upstream habitat units and the assumed production metric of 100 shad per acre of habitat, the MRTC (2010) goal for passage is 744,083 shad at the Essex Dam and 651,173 shad at the Pawtucket Dam. The plan provides detailed recommendations for achieving shad restoration goals through fish passage improvements and stocking measures with long-term monitoring and program evaluation.

Additionally, the state of New Hampshire also accepts the restoration goals of the cooperative Merrimack River Anadromous Fish Restoration Program as documented in their American Shad Fishing/Recovery Plan submitted to the ASMFC Shad and River Herring Technical Committee in 2012 (NHFG 2011). New Hampshire presently has closed both the recreational and commercial shad fisheries to harvest while allowing catch and release for sportfishing in the Merrimack River. New Hampshire Department of Fish and Game monitor the number of shad passing the Amoskeag Dam in Manchester, NH, by fishway counts.

A. Landings

No Merrimack River-specific shad landings data are available. Harvest in MA has been restricted to hook and line since 1987. Communications with local fishing clubs and bait and tackle shops indicate a small sportfishery persists with relatively low participation and low retention of shad.

B. Fishery Independent and Dependent Indices

i. Juvenile Abundance Indices: There have been no historical or recent efforts to create a juvenile abundance index on the Merimack River.

ii. Fish Lift Monitoring of Spawning Run

Long-term fishery independent indices for shad are available from fish lift data at large hydropower dams on the Merrimack River. Cooperative monitoring efforts have been ongoing in the Merrimack River since 1969 involving the USFWS, *MarineFisheries* and *MassWildlife*. The Merrimack River shad run is considered to be of sufficient size to support out-of-basin transfers for restoration efforts. The monitoring efforts include annual spawning stock surveys at the fish lifts, biological sampling, as well as determination of age structure and population mortality and survival estimates. *MassWildlife* is responsible for reporting shad monitoring at the two fish lifts in MA. The most recent performance reports (covering March 1, 2010 through February 28, 2011) was prepared by *MassWildlife* and submitted to the USFWS and *MarineFisheries.*

From 2006 to 2010, approximately 700-1700 adult shad were collected annually at the Essex Dam for hatchery propagation and restoration efforts in the Merrimack River, Charles River and Maine rivers. American shad fish passage counts at the Essex Dam fish-lift from 1983–2011 are presented in Table 2. High water levels in 2005 and 2006 caused the closure of the fish lifts which severely limited counts and collections. The series mean count, excluding 2005/2006, is 24,425 shad, the median is 16,909, and the 25^{th} percentile is 10,882. The lift counts can be standardized by the number of days when the lift was operating each season (Table A3). The lift day index has a series mean of 381 shad/day, a median of 261 shad/day and 25^{th} percentile of 174 shad/day. We include 25^{th} percentile values as proposed thresholds for lower run sizes.

Essex Dam Lift Operations. The Essex Dam fish lift begins operating each year between April 15^{th} and May 1^{st} depending on flow conditions. The lift is typically operated from 0800 to 1600 with lifts occurring each hour. The lift frequency and range of time can be extended if large numbers of shad are present. The lift operation ceases when the shad run is complete, usually in the latter half of July. The installation of flash boards on the dam crest is critical to attract shad to the fish lift entrance and prevent them from aggregating at the base of the dam. During both 2005 and 2006, high flows prevented the installation of flash boards until June. In 2010 the flash boards were replaced with an inflatable flashboard system. Data on the number of lifts each year are available for only 10 years in time series. The tally of days when the lift operated is available each year and can be used to standardize lift counts to account for days when high flow or operational factors prevent lifting.

iii. Passage Efficiency

Existing fish passage limitations, including passage efficiency, have been reviewed and summarized in the Merrimack River Shad Restoration Plan (MRTC 2010). Downstream passage assessments are recommended by the Merrimack River Shad Restoration Plan (MRTC 2010), along with specific recommendations to improve fish passage efficiency throughout the watershed. Presently, downstream passage efficiency studies are underway at the five main stem dams in the Merrimack River. Upstream passage efficiency at the Essex Dam in Lawrence has not been assessed, although specific efforts to improve passage have been implemented recently through the Technical Committee that should increase passage efficiency.

Upstream passage efficiency at the Pawtucket Dam in Lowell is low. Data collected between 1989 and 2009 indicates that on average only 29% of fish that pass through the Essex Dam fish lift eventually ascend the lift at the Pawtucket Dam. Sprankle (2005) conducted telemetry studies to assess passage efficiency at the Lowell Dam. Sprankle (2005) found that 66% of the shad radio tagged at the Essex Dam arrived at the pool downstream of the Lowell Dam and 55% entered the dam tailrace. Only 4% of the shad entering the tailrace passed the Lowell Dam fish lift. No ripe shad have been caught below the Essex Dam during electrofishing monitoring, indicating that no spawning habitat occurs below the dam and all shad are seeking to move upstream.

Table 2. American shad counts at the Essex Dam fish lift in Lawrence, MA, Merrimack River 1983–2011. Source: *MassWildlife*, and USFWS Central NE Fisheries Resource Office. Notes: the counts of 2005 and 2006 are not included in the 25th percentile calculation due to high flows; and the 2012 count of 21,396 shad was not included in the threshold calculation.

YEAR	*COUNT*	*YEAR*	*COUNT*
1983	5,629	1998	27,891
1984	5,497	1999	56,465
1985	12,793	2000	72,781
1986	18,173	2001	76,717
1987	16,909	2002	54,586
1988	12,359	2003	52,939
1989	7,875	2004	45,115
1990	6,013	2005	6,456
1991	16,098	2006	1,205
1992	20,796	2007	17,529
1993	8,599	2008	25,116
1994	4,349	2009	23,199
1995	13,857	2010	10,442
1996	11,322	2011	13,835
1997	22,586		
		Mean	24,151
		Median	16,098
		25th %	10,882

4. Fisheries to be Closed

Commercial fisheries for shad are presently closed in Massachusetts with no change proposed. Recreational fisheries are presently opened state-wide with a bag limit of six fish per angler per day. This plan proposes to close all Massachusetts shad harvest outside of the Merrimack River and Connecticut Rivers.

5. Fisheries Requested to be Open

This plan proposes to maintain recreational shad catch and harvest in the Merrimack River and Connecticut River. A proposal to change shad fishing in all other Massachusetts rivers to catch and release only will be initiated in 2012.

6. Sustainability Targets

A. Definition.

A sustainable American shad fishery will not diminish future stock reproduction and recruitment.

B. Methods for Monitoring Fishery and Stock.

No stock abundance indices are available for Merrimack River shad other than the ongoing fish lift monitoring at the Essex Dam. This long-term census data is proposed as the basis for establishing sustainable fishery benchmarks. The Essex Dam fish lift count series has 29 years of census and CPUE data of the annual spawning run. There is also a truncated series of biological data on shad size, age, and sex composition. From these data, benchmarks will be derived on fish count data, total instantaneous mortality (Z) and repeat spawning ratio. Because the time series for age and mortality estimates and repeat spawning percentage is brief, the present plan will depend on the distribution of long-term fish lift data. Mortality benchmarks will be presented in the present plan but will serve as a warning threshold until additional data can be collected.

Fish Lift Count Benchmark – Merrimack River. The 25th percentile of the 1983-2011 fish lift count data series of 174 shad/ lift day at the Essex Dam will serve as a spawning run benchmark for management action. Three consecutive years below this benchmark will trigger consultation between *MassWildlife* and *MarineFisheries* to discuss reducing recreational harvest. This interim value will be updated and revised as necessary in future reviews of the plan.

Repeat Spawning Ratio. Ongoing shad scale aging will provide data on the ratio of repeat spawners in the spawning run. Repeat spawning ratio data are available for the Merrimack River from 2004-2010 (Table 3). The time series is too brief to allow the setting of a repeat spawning ratio benchmark or to discern any trends. This data collection will continue and be reported in the River Herring and American Shad ASMFC Compliance Report annually.

Table 3. Repeat spawning percentage (RSP) of sub-sampled American shad collected at the Essex Dam fish-lift, Merrimack River (Source: 2010 ASMFC River Herring and American Shad MA Compliance Report). The numbers in parentheses following RSP are the years of repeat spawning, with RSP (0) for virgin shad.

YEAR	*N*	*RSP (0)*	*RSP (1)*	*RSP (2)*	*RSP (3)*	*RSP (4)*	*RSP (5)*	*RSP (6)*
2004	243	53	23	13	6	4	1	0
2005	182	53	25	13	8	2	0	0
2006	175	66	22	8	4	0	0	0
2007	208	76	15	7	1	0	0	0
2008	211	84	7	5	3	0	0	0
2009	151	32	45	15	5	3	1	0
2010	181	38	43	15	3	1	1	0

Mortality Benchmark. Amendment 3 defined the shad mortality warning threshold as the level of total instantaneous mortality (Z) that resulted in a female spawning stock biomass that was 30% of the total female spawning stock biomass in a stock that experienced only natural mortality ($Z = M$). Amendment 3 provides benchmark values for New England shad runs of $Z_{30} = 0.98$ and $A_{30} = 0.62$ (annualized mortality).

The total instantaneous mortality rate (Z) was estimated using the Chapman-Robson method and regression-based estimates on pooled age data (Table 4-5). The Chapman-Robson method is a probability-based estimator that has been shown to be more accurate and less biased than the linear regression-based catch curves, especially when sample size is small. Shad ages 5 through 10 were used in the analysis. The suitability of the 2004-2010 Merrimack River survival estimates may be limited by many factors including small sample sizes, a brief data series, combined genders in the estimate, and the assumption that all mortality is natural. The trend to date is that Merrimack River shad mortality is within ±10% of Z_{30}. The Amendment 3 New England mortality and survival benchmarks will be adopted by this plan as warning thresholds until a longer time series is recorded.

Table 4. Sample size and sex ratio of American shad collected at the Essex Dam fish-lift, Merrimack River (Source: 2010 ASMFC River Herring and Shad MA Compliance Report).

YEAR	*MALE*	*FEMALE*	*M:F RATIO*
2000	103	114	0.90:1.00
2001	115	89	1.29:1.00
2002	79	120	0.77:1.00
2003	39	76	0.51:1.00
2004	152	119	1.28:1.00
2005	105	95	1.11:1.00
2006	79	99	0.8:1.00
2007	99	113	0.9:1.00
2008	113	114	0.99:1.00
2009	96	118	0.8:1.00
2010	65	116	0.6:1.00

Table 5. Estimates of mortality (Z) and survival (s) from American shad sampled at the Essex Dam fish lift, Merrimack River and aged by *MarineFisheries*, 2004 – 2010.

	REGRESSION (LS)		*CHAPMAN-ROBSON*		*REPEAT SPAWNING*	
YEAR	*Z*	*s*	*Z*	*s*	*Z*	*s*
2004	0.8	0.4	0.8	0.4	0.8	0.5
2005	1.2	0.3	1.0	0.4	0.8	0.4
2006	0.9	0.4	0.9	0.4	0.9	0.4
2007	0.8	0.4	0.8	0.4	1.2	0.3
2008	1.4	0.2	1.0	0.4	1.1	0.3
2009	0.9	0.4	0.9	0.4	1.0	0.4
2010	1.0	0.4	0.9	0.4	1.2	0.3

C. Timeframe.

These benchmarks and warning thresholds will be enacted on January 1, 2013 and remain active until a plan review is conducted after three years.

7. Proposed Regulation Modification to Support Targets

A. Recreational Bag Limits

MarineFisheries and *MassWildlife* will initiate the regulatory process in 2012 to lower the bag limit for American shad from 6 fish per angler per day to 3 fish per angler per day in the Merrimack r and Connecticut Rivers. Secondly, the harvest of shad in all other rivers (Table A1) will be recommended for closure and the fishery will be allowed as catch and release only. The agencies have had internal discussions and agree to proceed cooperatively towards implementing these regulatory changes.

B. Enforcement

Massachusetts Environmental Police are charged with enforcing recreational shad bag limits on the Merrimack River and the upcoming no possession regulation on other rivers. *MarineFisheries* and *MassWildlife* will coordinate with regional enforcement staff each spring to exchange information on illegal harvest.

8. Adaptive Management.

A. Evaluation Schedule. Fish lift count data, age structure data, mortality estimates, and repeat spawner percentages will be reported annually in the MA River Herring and American Shad ASMFC Compliance Report. These ongoing data collections will contribute to a revision of the sustainable fishery plan three years from the date of inception (January 1, 2013).

B. Consequences or Control Rules

Three consecutive years below the fish lift count 25th percentile benchmark at the Essex Dam on the Merrimack River will trigger consultation between *MassWildlife* and *MarineFisheries* discuss reducing recreational harvest. These interim values will be revised when this plan is updated in the future. Exceedance of the New England mortality warning threshold of Z_{30} at the Merrimack River will be noted in the annual compliance report and be used to supplement management decisions and actions when the fish lift benchmark is exceeded.

C. Potential Future Benchmarks

Improved Essex Dam Lift Index. There is potential to modify the shad count index at the Essex Dam fish lift by standardizing the fish counts to discharge and water temperature. For this to be attempted, daily records need to be summarized for all variables. These data may not be fully available for the entire time series.

Hatchery Evaluation (% wild vs. hatchery). In 2004, the USFWS and *MarineFisheries* began an experimental hatchery operation using American shad from the Merrimack River system as a source for stocking in the Charles River. USFWS and *MarineFisheries* have released between 700,000 and four million oxytetracycline (OTC) marked shad fry annually into the Charles River in Waltham from 2006 through 2010. Recaptures of OTC marked shad were first made in the Charles River in 2011. Future evaluations on the contribution of hatchery stocking to spawning runs may result in additional population targets in the Charles River.

Other Monitoring. *MassWildlife* and *MarineFisheries* are interested in developing an additional or alternative shad abundance index to complement the fish lift count series. Two options that have been discussed are an electrofishing survey or a seine survey based juvenile abundance index. At the present there is no funding in existing programs to support a new abundance index for shad.

Connecticut River

The Connecticut River is the longest river in New England at 655 km and the largest in volume, with a mean freshwater discharge to Long Island Sound of 19,600 cfs. The Connecticut River defines the border between New Hampshire and Vermont and passes through the states of Massachusetts and Connecticut. The river is tidal to Windsor Locks, Connecticut at rkm 100. The lowermost fish passage facility is at the Holyoke Dam located at rkm 138 in the City of Holyoke and Town of South Hadley. The Holyoke Hydroelectric Project (FERC No. 2004) operates a 42.9 megawatt hydropower facility at the Holyoke Dam. The Holyoke Dam is 30 ft high and 985 ft in length, impounds a 2,290 reservoir, and includes six hydroelectric generating systems. The upstream fish passage facilities are two fish lifts, one at the Hadley Falls Station tailrace and the other at the bypass reach. Fish passage facilities for the Holyoke Dam are described in detail in the 2010 Annual report on upstream fish passage (HGE 2011).

Shad have been managed cooperatively on the Connecticut River since 1967 by the Connecticut River Atlantic Salmon Commission. The states of Connecticut, Massachusetts, New Hampshire and Vermont, as well as the USFWS and NMFS are signatories of the Commission. The 1967 agreement stated restoration goals of a total Connecticut River population of two million shad, passage of one million shad above the Holyoke Dam, 850,000 shad above Turners Falls Dam and 750,000 shad above Vernon Dam. The Commission approved a shad management plan in 1992 that retained these goals while seeking to restore shad to its historic range in the Connecticut River Basin (CRASC 1992).

Shad Spawning/Nursery Habitat.

PENDING CT REPORT

Coordination within the Connecticut River Watershed

The Connecticut River Atlantic Salmon Commission has coordinated extensive efforts to manage and restore shad in the watershed over the last 40 years. The Commonwealth of Massachusetts is a cooperator in the Commission's shad plan and benefits from this long-term commitment and experience. All Connecticut River shad restoration goals and population benchmarks will be directly adopted from the existing shad plan. Further details on the management plan or fishway operations are available in other documents (CRASC 1992; HGE 2011).

A. Landings

No Connecticut River-specific shad landings data in MA are available. The fishery has been restricted to hook and line since 1987. Communication with local fishing clubs and bait and tackle shops indicate a small sportfishery persists and that is mainly catch and release.

B. Fishery Independent and Dependent Indices

i. Juvenile Abundance Indices

The Connecticut Department of Environmental Protection maintains a juvenile shad population index. Their beach seine survey is the only known data source for juvenile shad indices that could be adopted for the MA shad fishery plan.

ii. Fish Lift Monitoring of Spawning Run

American shad fish passage counts at the Holyoke Dam fish-lift from 1967 – 2011 are presented in Table 6. The mean annual shad count at the Holyoke Dam during this period is 246,113 shad and the median is 244,189. The 25th percentile value of 155,000 shad will be considered a threshold for diminished run sizes.

The Connecticut Department of Energy and Environmental Protection conducts biological sampling of shad at the Holyoke fish lift. *References and possibly data summaries will be provided in later drafts of this plan (waiting on CT draft and data).*

Holyoke Dam Fish List Operations. The Holyoke fish lift begins operations on April 1st each year or when flows fall below 40,000 cfs and continues until July 15th. Details on fish lift operations are provided in HGE (2011).

iii. Passage Efficiency

A study in 1992 estimated average annual fish lift efficiency to be close to 50% (CRASC 1992). However, as a result of FERC relicensing in 2001 the lifts were rebuilt with larger hoppers and faster lift rate and these changes may have resulted in a change in passage efficiency.

Table 6. Monitoring counts of American shad recorded at the Holyoke Dam, Holyoke, MA, Connecticut River, 1967-2011. Source: USFWS Connecticut River Coordinator's Office. Note: the 2012 count of 490,431 shad was not included in the threshold calculation.

YEAR	*COUNT*	*YEAR*	*COUNT*
1967	19,000	1990	360,000
1968	25,000	1991	520,000
1969	45,000	1992	720,000
1970	66,000	1993	340,000
1971	53,000	1994	170,000
1972	26,000	1995	190,000
1973	25,000	1996	280,000
1974	53,000	1997	300,000
1975	110,000	1998	320,000
1976	350,000	1999	190,000
1977	200,000	2000	225,000
1978	140,000	2001	270,000
1979	260,000	2002	370,000
1980	380,000	2003	280,000
1981	380,000	2004	192,000
1982	290,000	2005	116,511
1983	530,000	2006	156,352
1984	500,000	2007	163,466
1985	480,000	2008	156,492
1986	350,000	2009	160,649
1987	270,000	2010	164,439
1988	290,000	2011	249,480
1989	350,000		
		Mean	246,113
		Median	244,189
		25th%	155,000

4. Fisheries to be Closed

Commercial fisheries for shad are presently closed in Massachusetts with no change proposed. Recreational fisheries are presently opened state-wide with a bag limit of six fish per angler per day. This plan proposes to close all Massachusetts shad harvest outside of the Merrimack River and Connecticut Rivers.

5. Fisheries Requested to be Open

This plan proposes to maintain recreational shad catch and harvest in the Merrimack River and Connecticut River. A proposal to change shad fishing in all other Massachusetts rivers to catch and release only will be initiated in 2012.

6. Sustainability Targets

A. Definition.

A sustainable American shad fishery will not diminish future stock reproduction and recruitment.

B. Methods for Monitoring Fishery and Stock.

Fish Lift Count Benchmark – Connecticut River. The 25th percentile of the 1967-2011 fish lift count data series of 155,000 shad at the Holyoke Dam is proposed as a spawning run benchmark for management action. Three consecutive years below this benchmark will trigger consultation between *MassWildlife* and *MarineFisheries* to discuss reducing recreational harvest. This interim value will be updated and revised as necessary in future reviews of the plan.

The use of fish lift days of operation was considered to standardize the fish lift count data at Holyoke Dam. Records for the total number of days when the fish lift was in operation were available from 1980-2011. Over that time period the mean number of shad lifted per operational day was 4,094, the median was 3,986 and the 25th percentile value was 2,479. However, this period does not include the lower shad counts earlier in the time series. This absence of fish lift day data may bias the use of the 25th % as a management threshold. With the starting year of 1980, the recent low lift counts result in lower counts than the 2,479 shad/lift day for seven of the last eight years. For the present plan, it is recommended to use the total lift counts for the entire data series (1967-2011) and to consider other metrics in future plans.

C. Timeframe.

These benchmarks and warning thresholds will be enacted on January 1, 2013 and remain active until a plan review is conducted after three years.

7. Proposed Regulation Modification to Support Targets

A. Recreational Bag Limits

MarineFisheries and *MassWildlife* will initiate the regulatory process in 2012 to lower the bag limit from 6 to 3 shad per angler per day in the Merrimack and Connecticut Rivers. Secondly, the harvest of shad in all other rivers (Table A1) will be recommended for closure and a fishery will be allowed as catch and release only. The agencies have had internal discussions and agree to proceed cooperatively towards implementing the regulatory changes.

B. Enforcement

Massachusetts Environmental Police are charged with enforcing recreational shad bag limits in the Merrimack River and the upcoming no possession regulation in other rivers. *MarineFisheries* and *MassWildlife* will coordinate with regional enforcement staff each spring to exchange information on illegal harvest.

8. Adaptive Management.

A. Evaluation Schedule. Fish lift count data and biological thresholds will be reported annually in the MA River Herring and American Shad ASMFC Compliance Report. These ongoing data collections will contribute to a revision of the sustainable fishery plan three years from the date of inception (January 1, 2013).

B. Consequences or Control Rules

Three consecutive years below the fish lift count 25^{th} percentile benchmark at the Holyoke Dam on the Connecticut River will trigger consultation between *MassWildlife* and *MarineFisheries* discuss reducing recreational harvest. These interim values will be revised when this plan is updated in the future.

C. Potential Future Benchmarks

Improved Holyoke Dam Lift Index. There is potential to modify the shad count index at the Holyoke Dam fish lift by standardizing the fish counts to discharge and water temperature. For this to be attempted, daily records need to be summarized for all variables. These data may not be fully available for the entire time series.

CATCH AND RELEASE RIVERS

In addition to the shad runs on the Merrimack and Connecticut rivers, shad have been recently documented in the Palmer River, Jones River, North River, Neponset River, and Charles River, with modest sportfishing know to occur in the North River tributaries and the Palmer River. Shad fishing in the five smaller river systems will be managed as catch and release fisheries starting in 2013. Both *MassWildlife* and *MarineFisheries* are interested in expanding monitoring to include the runs in these five river systems but do not have program funds available. The Charles River does have an active restoration project to stock OTC marked shad juveniles and monitor recruitment from stocked shad. The three-year review of this shad plan will include an update on the Charles River project, and a refinement of recovery goals for the shad runs in the five catch-and-release rivers.

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Appendix

Table A1. Rivers in Massachusetts with American shad runs present.

River	***Drainage***	***Drainage Area*** *(m^2)*	***Q -- cfs*** *(mean May)*	***Fishery Status***
Connecticut	Connecticut River	8,332	21,400	active sportfishery
Palmer	Buzzards Bay	28	10*	minor sportfishery
Jones	South Shore	20	43	no known targeting of shad
North	South Shore	30	69	minor sportfishery
Neponset	Boston Harbor	101	392	no known targeting of shad
Charles	Boston Harbor	227	370	no known targeting of shad
Merrimack	Merrimack River	4,635	11,800	active sportfishery

* The stream flow gauge in the Palmer River was located far upstream of shad habitat.

Table A2. Recreational estimates of total catch of American shad in Massachusetts (Source: MRFSS http://www.st.nmfs.noaa.gov/pls/webpls/MR_CATCH_TIME_SERIES.RESULTS)

Year	***TOTAL CATCH (TYPE A + B1 + B2)***	***PSE***
1981	3,545	100
1983	2,533	100
1989	6,628	43
1990	11,817	70.1
1991	737	100
1993	10,930	61.7
1994	2,053	100
1996	1,115	100
1997	45,548	50.5
1998	73,152	39.1
1999	69,206	28.8
2000	15,992	40.4
2001	3,405	52.7
2004	1,673	100
2006	55,232	52.3
2007	1,588	100
2008	4,452	71.2
2009	1,850	100
2010	0	

Table A3. American Shad Counts at Essex Dam Fish Lift on Merrimack River, Lawrence, MA. The lift data source is the USFWS Central New England Fishery Office. The discharge (Q) data source is the USGS National Water Information System, Station No. 01100000. Lift counts in 2005 and 2006 are excluded from the index because high flows prevented lifts for over a month.

Year	American Shad (No.)	Lift Days (No.)	Lifts (No.)	Shad Count Index	Lift Day Index	Lift Start Date	Lift End Date	Mean Q April	Mean Q May	Mean Q June	Mean Q July
1983	5,629	54		5,629	104	5/9/1983	7/9/1983	23,870	16,980	9,277	2,158
1984	5,497	42		5,497	131	5/9/1984	7/31/1984	27,650	16,240	23,660	7,606
1985	12,793	54		12,793	237	5/1/1985	7/22/1985	8,150	5,705	2,665	1,982
1986	18,173	54	506	18,173	337	5/2/1986	7/25/1986	14,070	5,842	7,782	4,368
1987	16,909	54	467	16,909	313	5/15/1987	7/23/1987	37,440	10,020	6,198	4,837
1988	12,359	54	485	12,359	229	5/9/1988	7/15/1988	12,480	14,080	4,061	3,563
1989	7,875	54		7,875	146	5/1/1989	7/28/1989	17,120	18,990	11,250	3,758
1990	6,013	54		6,013	111	5/1/1990	7/31/1990	16,750	14,840	7,128	3,187
1991	16,098	54		16,098	298	5/1/1991	7/14/1991	12,520	9,242	3,310	1,613
1992	20,796	54		20,796	385	5/4/1992	7/31/1992	12,350	8,774	7,046	3,850
1993	8,599	54		8,599	159	5/10/1993	7/15/1993	31,730	6,829	3,361	1,334
1994	4,349	54		4,349	81	5/2/1994	7/9/1994	23,330	13,020	3,951	2,324
1995	13,861	54		13,861	257	5/1/1995	7/9/1995	6,979	6,077	3,243	1,687
1996	11,322	54	325	11,322	210	5/20/1996	7/12/1996	24,300	21,270	5,834	8,611
1997	22,661	57	412	22,661	398	5/6/1997	7/7/1997	25,600	13,070	4,158	3,737
1998	27,891	57	443	27,891	489	5/4/1998	7/22/1998	15,790	10,900	20,940	8,730
1999	56,461	64	632	56,461	882	4/28/1999	7/2/1999	10,860	5,748	1,994	1,765
2000	72,800	65	618	72,800	1120	5/1/2000	7/7/2000	23,170	12,660	7,469	3,515
2001	76,717	65	501	76,717	1180	5/7/2001	7/20/2001	26,020	7,375	8,390	2,750
2002	54,586	65	558	54,586	840	4/29/2002	7/12/2002	12,310	11,920	8,273	2,173
2003	55,620	77		55,620	722	5/10/2003	7/3/2003	20,750	12,010	7,939	2,559
2004	36,593	77		36,593	475	4/29/2004	7/15/2004	22,730	11,930	5,850	3,397
2005	6,382	81				5/12/2005	7/19/2005	26,860	15,800	12,240	6,385
2006	1,205	46				4/17/2006	5/12/2006	7,554	27,810	22,410	9,813
2007	15,876	73		15,876	217	5/10/2007	7/16/2007	29,380	14,680	6,354	3,558
2008	25,116	64		25,116	392	5/13/2008	7/14/2008	26,640	11,910	3,638	6,668
2009	23,199	89		23,199	261	4/20/2009	7/17/2009	19,930	8,757	9,806	15,340
2010	10,442	83		10,442	126	4/24/2010	7/15/2010				
2011	13,835	73		13,835	190	5/2/2011	7/15/2011				
			Mean	24,151	381						
			Median	16098	261						
			25th %	10882	174						

Connecticut River American Shad Sustainable Fishing Plan

Submitted to the Atlantic States Marine Fisheries Commission
Prepared by
Connecticut Department of Energy and Environmental Protection
Marine Fisheries Division
September 2012

Introduction

Annual spawning migrations of American shad (*Alosa sapidissima*) in the Connecticut River have supported both recreational and commercial fisheries in the State of Connecticut, as well as recreational fisheries in upriver states, for generations. While American shad was once one of the largest commercial and recreational fisheries in the State, it now remains as mostly an artisanal fishery that holds primarily cultural and historical value. There is currently a commercial driftnet fishery that occurs in the lower CT River. The recreational fishery occurs in the range north of Hartford, Connecticut (Rkm 84) and south of the Holyoke Dam in Massachusetts (Rkm 139).

The Connecticut River is the state's only occurrence of a commercial shad fishery. Shad were once one of Connecticut's top five most economically important commercial finfish species in terms of landings during the 1970's and 1980's. A commercial gill-net fishery and a recreational hook and line fishery are the only methods of harvest of American shad in the Connecticut River.

The Connecticut Department of Energy and Environmental Protection (CT DEEP) has conducted annual research studies on American shad in the Connecticut River since 1974 to monitor annual changes in stock composition. Data is collected from mandatory annual reporting of commercial landings and recreational fisheries are monitored periodically by a roving creel survey. The Massachusetts Division of Fish and Wildlife monitors fish passage which includes adult American shad passage at the first main stem dam on the Connecticut River in Holyoke, Massachusetts. Juvenile shad are monitored by CT DEEP through an annual seine survey conducted since 1978.

The number of commercial shad fishing licenses and associated effort has been steadily declining since peak levels during and after World War II. Recent commercial license sales have declined to low levels and are expected to stay low or further decrease as fishermen retire and are not replaced. The number of fishermen who exceed age 55 is a high proportion of license holders as fewer new participants have entered the fishery in the last decade.

Connecticut River fishing mortality rates (FT) remained at moderate levels from 1966 to 1994, but after 1994, the FT estimates fell steadily in most years. Similarly, commercial gillnet effort (days fished) was highest during the late 1970s, but effort dropped steadily thereafter by more than 80% by 2011.

The Connecticut River was once one of the most popular places to go for recreational fishing for American shad and some think this was the birthplace of the sport. Numbers of fishermen, effort, catch and harvest have all varied greatly over time, but similar to commercial fishing trends,

recreational fishing for American shad exhibited a general decrease with time. Anecdotal and creel information gathered in the last ten years shows that fewer fishermen are targeting American shad in the traditional shad fishing areas from Hartford to the CT/MA state line and this trend is not expected to change much. Anglers that traditionally fished for shad in this area have switched to pursue striped bass, which provides a quality fishery from Hartford up into Massachusetts. Access to traditional shad fishing sites along the Connecticut River has changed over the years with infrastructure changes, restricted shore access due to development and the natural breaching of a low head dam in Enfield. The overall decrease in fishing effort and harvest for shad is also a reflection of a decreasing demand for consumption and fewer people knowing how to fillet and bone American shad.

The Connecticut River American Shad Sustainable Fishing Plan was developed by CT DEEP to fulfill the requirements of Amendment 3 to the Interstate Fishery Management Plan for Shad and River Herring. States or jurisdictions must submit an update to their Fishery management plans. The updated Fishing/Recovery Plans must include a description of existing and planned monitoring and existing and planned regulatory measures. It may also include a definition of sustainability, development of benchmark goals, and a proposed timeframe to achieve objectives. This Connecticut plan proposes continuation of both recreational and commercial fisheries in the Connecticut River through monitoring of juvenile production, monitoring of lift passage and adult escapement at the Holyoke Lift. Commercial shad fishing is prohibited in all other rivers in the state**.** All other river systems with recreational fisheries will change to catch and release only for American shad.

Current regulations

Commercial

Connecticut requires an annual commercial shad license for the Connecticut River. The fishery is managed through area, gear, and season restriction as well as rest days. The American shad gill net season runs from April 1 through June 15. In the inland district (north of Interstate 95 bridge), American shad may be taken only in the main body of the Connecticut River from the I-95 Bridge to the William H. Putnam Memorial Bridge on Route 3 in Glastonbury/Wethersfield (Rkm 75). In Marine Waters, American shad "shall not be netted between lines drawn south in Long Island Sound to the New York state line from Menunketesuck Point, Westbrook and from Hatchetts Point, Old Lyme except with seines, pounds, and gill nets". This regulation effectively prohibits trawl caught shad from being harvested near the mouth of the Connecticut River. The commercial shad license fee was doubled in 2009 to $200 and is the most expensive open access commercial license available in Connecticut.

Under the commercial shad fishing license the following are prohibited: Use of gill nets constructed of single or multiple strand monofilament from sunrise to sunset, monofilament twine thickness greater than 0.28 mm (#69), commercial fishing for shad from sundown Friday to sundown Sunday except by the use of a scoop net, the use of nets with mesh size less than five inches stretched mesh, fishing in other than the main body of the Connecticut River (no coves) and the use of pound nets or other fixed or staked nets to take shad except in the waters of Long Island Sound. A daily record is required in a report that must be submitted by July 15th of the fishing year.

Figure 1. Connecticut River map showing range allowed for commercial shad gillnet fishery.

Recreational

Angling for American shad is the only legal method of recreational take and may occur during the open season from April 1 through June 30. Fishing licenses are required for anyone 16 years of age or older fishing in both the Inland and Marine Districts. Recreational licenses are issued on a calendar basis and expire on December 31st. The daily possession limit is 6 American and hickory shad in the aggregate, per person, in both the inland and marine districts.

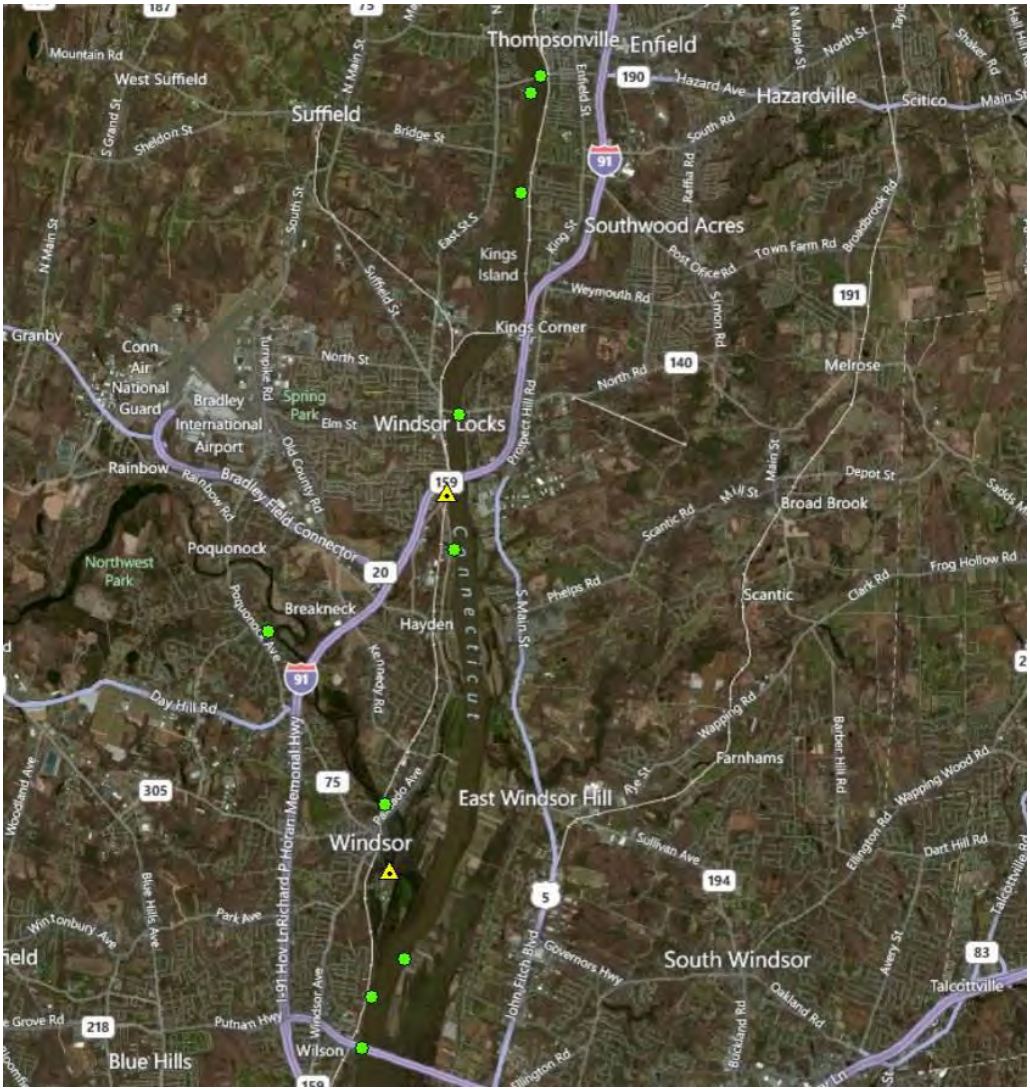

Figure 2. Map of the CT River north of Hartford with the creel survey sites for the American shad recreational fishery. The sites marked in yellow are sites that had shad angler activity in 2010.

Description of the Fishery, and Resource Surveys

Commercial Fishery

The commercial shad fishery in the Connecticut River is a spring (April-June) drift gillnet fishery that extends from the river mouth to Glastonbury, CT (river km 62). Since shad landings are originally reported in pounds, landings were transformed to numbers by dividing adjusted landings in weight by 5.0 pounds and 3.5 pounds (females and males) that reflects the long-term average weight of the commercial landings.

While the State of Connecticut has some data on landings dating back to 1880, this report focuses on more recent landings that were collected in a more systematic fashion and are deemed to be more reliable. Monitoring of shad abundance (numbers and pounds), age structure and spawning history of the commercial fishery has been conducted annually from 1974 to 2011. The fishery has changed little since the adoption of outboard powered vessels other than the change to drift gill nets from all other gear types (haul seine, fixed gill nets and traps/pound nets).

Commercial and recreational landing (numbers) of Connecticut River shad varied greatly from 1976 to 2010. Both riverine commercial and recreational landings remained relatively high from 1981 to about 1992 with peak total landings occurring in 1986. Although both commercial and recreational landings in the River fell steadily from 1993 to 2011, recreational landings dropped recently at a faster rate. Total riverine landings fell below 15,000 fish annually from 2006 to 2011. The drop in riverine commercial landings after 1992 is consistent with a similar drop in commercial fishing effort (gillnet days). Not only has commercial gillnet effort fallen since 1992, but the number of licensed commercial shad fishermen has also dropped proportionally to fishing effort. Moreover, the fraction of fishermen who are above age 55 has increased steadily as shad fishermen have dropped out of the fishery since 1993, indicating that few if any younger fishermen have entered the fishery over the last decade. If this trend continues, it is likely that the gillnet fishery in the Connecticut River over the next decade could either drop to a few fishermen or phase out completely.

Connecticut River landings and fishing mortality rates (FT) remained at moderate levels (FT range: 0.11-0.45) from 1966 to 1994, but after 1994, the FT estimates fell steadily, in most years, by 40% to 70% to levels well below 0.10 from 1996 to 2010. Similarly, commercial gillnet effort (days fished) was highest during the late 1970s, but effort dropped steadily thereafter by more than 80% by 2010. Commercial gillnet effort fallen since 1990 and the number of licensed commercial shad fishermen has also dropped proportionally to fishing effort. The number of fishermen who exceed age 55 has climbed steadily as participants have dropped out of the fishery since 1993, indicating that few younger fishermen have entered the fishery over the last decade. Since CT DEEP monitoring of Commercial landings, reported landings peaked in 1980s and have since declined to less than 100,000 lbs. since 2004.

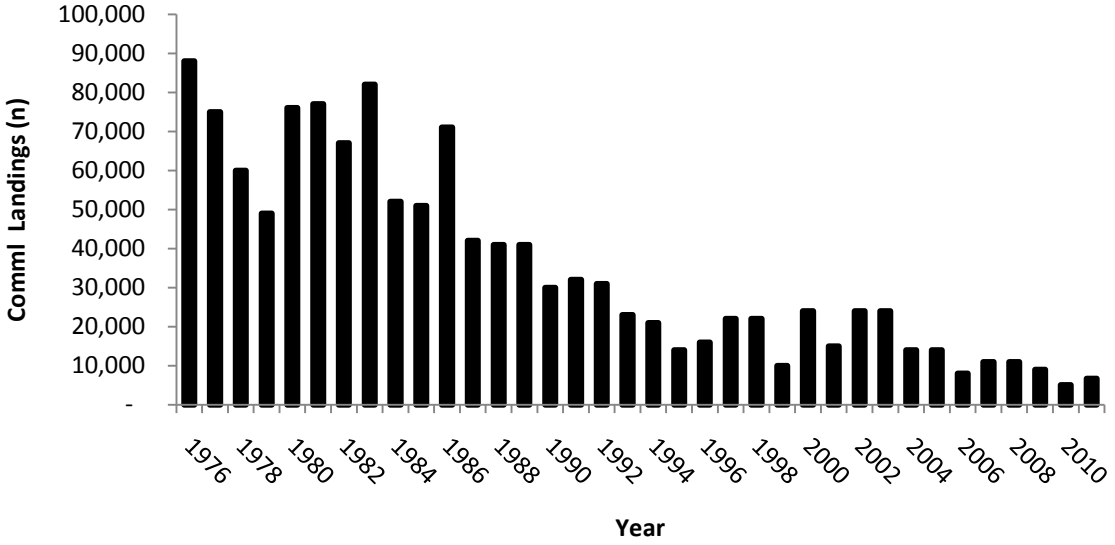

Figure 3. Annual Connecticut River American shad commercial landings (n), 1950-2011.

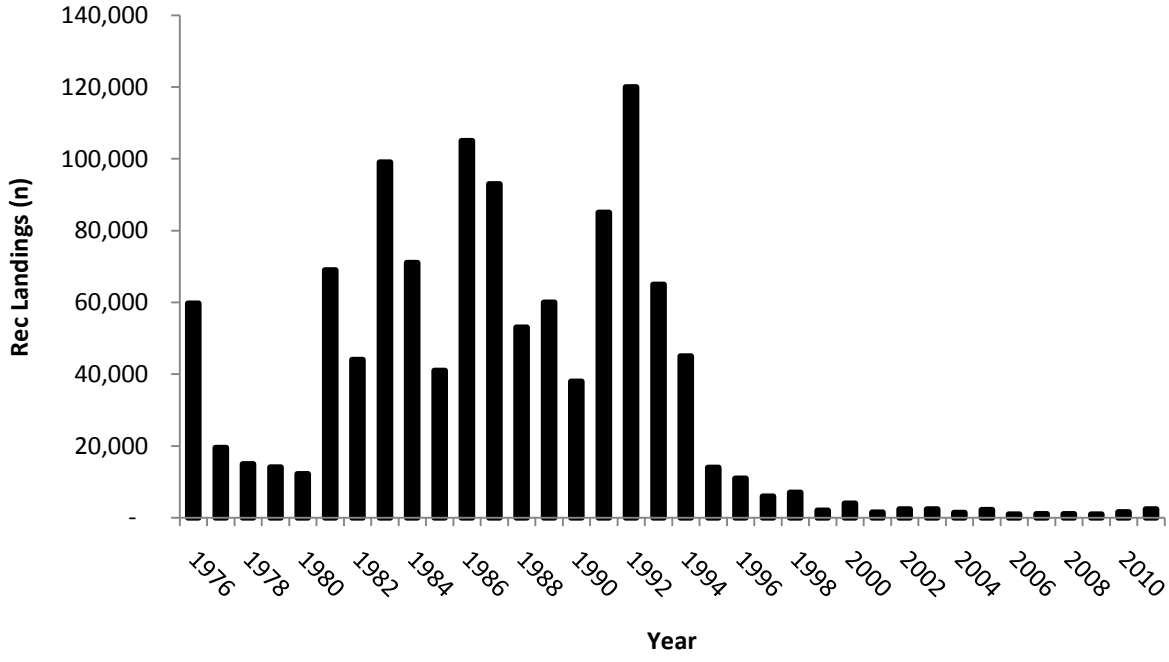

Figure 4. Annual Connecticut River American shad recreational landings (n), 1976-2011.

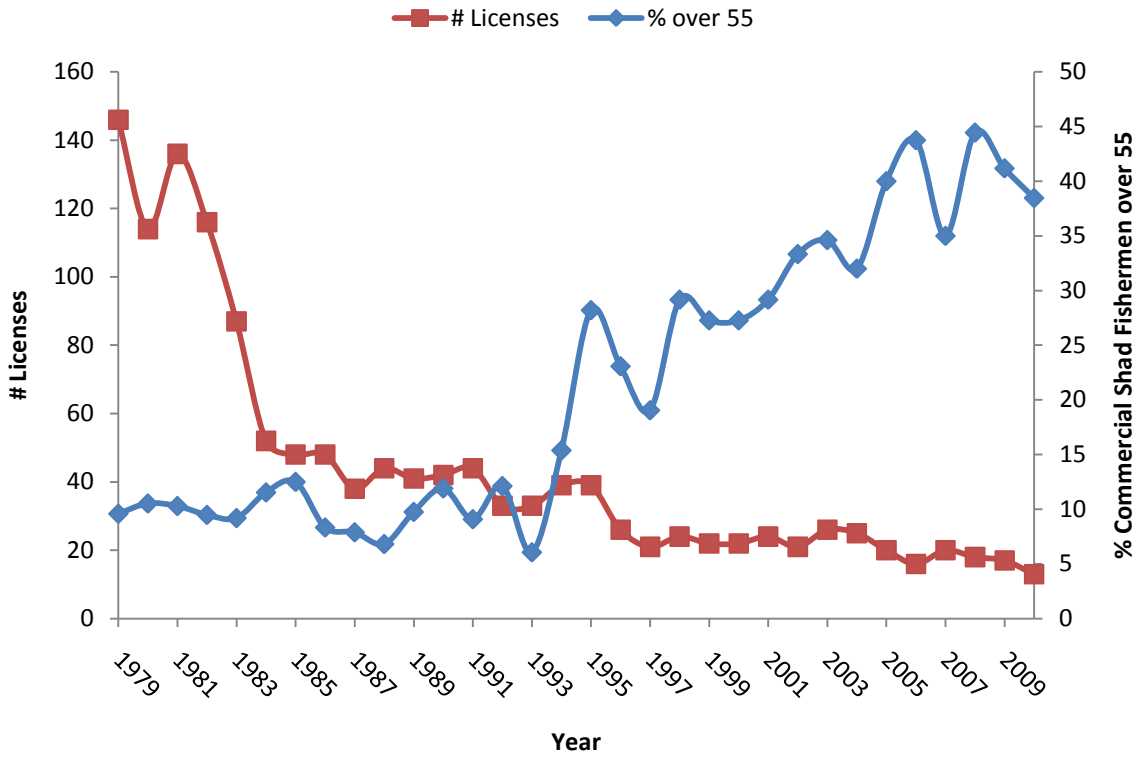

Figure 5. Plot of annual commercial shad license sales and percentage of license holders over 55, 1979-2010.

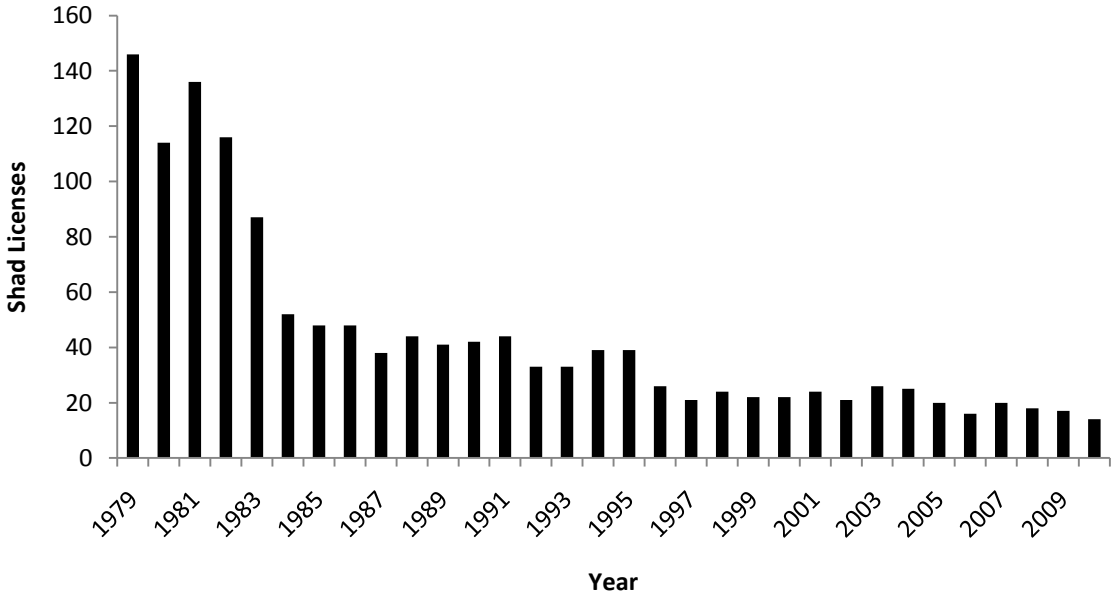

Figure 6. Number of commercial shad licenses sold, 1979-2010.

Coastal Intercept Fishery

A coast-wide intercept fishery for American shad had expanded from 1975 to 1990, but fell steadily thereafter to the lowest level of 12,000 shad in 2005. Management action by coastal states under ASMFC mandated a moratorium to ocean intercept landings after 2005. The coastal intercept fishery has harvested a mixed stock of American shad using drift gillnets during late winter and early spring. This fishery was located mainly between South Carolina and New Jersey and harvested mostly adult shad (size range: 45 - 60 cm, TL, weighing an average between 1.5 and 2.5 kg) (Savoy and Crecco 2004 Krantz et al. 1992).

The contribution of Connecticut River shad to the coastal intercept fishery between 1981 and 2005 was estimated from the annual coastal landings from Virginia to Maine and the stock identification data based on tagging and mtDNA results (Hattala et. al. 1997; Hattala 2006). Specifically, the coastal landings attributed to the Connecticut River shad stock was the sum of the VA-MD coastal harvest (times the predicted Connecticut River contribution of 0.064 and 0.03), the DE-NJ coastal landings (times 0.188), and the NY-NE coastal landings (times 0.50). The estimated coastal intercept landings (Hattala 2006) in number (assumed average weight = 2.3 kg) for the Connecticut River shad stock was doubled to reflect the combined effects of underreporting and the discard of male shad. Since the 2005 ocean intercept landings were low and may be incomplete (Hattala 2006), the estimated 2005 ocean landings from the Connecticut River stock were tripled.

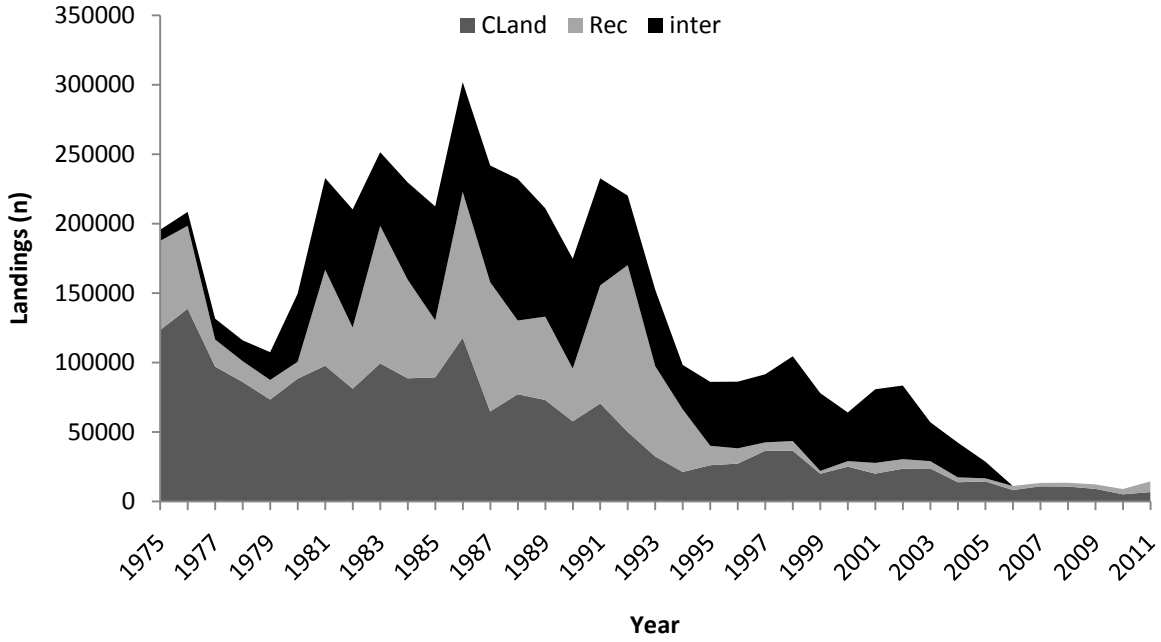

Figure 7. Commercial, recreational and coastal intercept landings, 1975-2011.

Incidental Catch in Ocean Intercept Fisheries

Much work has been done recently to investigate the incidental alosine catch occurring in fisheries in the Northeast and Mid-Atlantic. What information is available on incidental alosine catches and discards has been presented in MAFMC Draft Amendment 14 to the MSB FMP and NEFMC Draft Amendment 5 to the FMP for Atlantic Herring. For 2005-2010 observer estimates from the MSB plan, the ocean-intercept fisheries caught on average 63 mt of shad which would be the equivalent of approximately 30,000 adults (MAFMC 2012). From the Atlantic herring FMP draft amendment, catch and discards of shad from observed trips during 2009-2010 in midwater trawl, and categories A,B,C both large and small mesh bottom otter trawl, observed catches were low ranging from roughly 6,000 fish in midwater trawl to roughly 3,000 shad in both mesh type bottom trawls in all categories (NEFMC 2011).

Based on what observer data is available, it appears as though significantly lesser catches and discards of American shad have been documented in these fisheries in comparison to other alosines. Future developments of these amendments will no doubt benefit American shad as they are often seen in catches with river herring. For additional information see draft amendments (www.mafmc.org, www.nefmc.org). Past reports from CT DEEP have included analysis of incidental catches and discards and potential impacts to Connecticut River spawning stock, was also examined in Savoy and Crecco (2004) and Crecco and Savoy (2007).

Recreational Fishery

Sport fishing for American shad has been popular in the Connecticut River since the 1940's. Shore fishing was popular from Wilson CT (RKM 89) to the base of the Holyoke Dam (RKM 140). Sites that were once popular to shad fish were found to be unoccupied during the last creel survey conducted in 2010. The most productive fishing sites historically were located below natural barriers and below the Enfield (Rkm 110)and Holyoke Dams (Rkm 140). The base of the Enfield Dam was once a big shad fishing attraction, but since the natural degradation of the Enfield Dam, few people fish there to target shad and there were zero intercepts during the 2010 creel survey.

Recreational shad landings in numbers have been estimated annually from 1980-1997 and periodically thereafter (2000, 2005, 2010) by a roving creel census. Prior to 1993, there was a thriving recreational fishery for American shad in the Connecticut River from Enfield, CT (river km 99) to the Holyoke Dam, MA (river km 140). Prior to 1990, these sport landings often comprised as much as 60% of the total in-river landings. Recreational shad landings began to fall dramatically after 1995 to a point where harvest estimates from creel surveys were unreliable and imprecise as reflected by high (> 80%) proportional standard errors about the mean harvest estimates. Because of the low precision around catch estimates due to a low incidence of positive intercepts in the creel survey, recreational creel surveys in the CT River were changed to five year intervals (i.e. 2000, 2005 and 2010). Shad recreational harvest estimates between 1999, 2005, 2010 did not differ significantly ($P < 0.05$) from zero. For this reason, recreational harvest estimates from 1999 to 2009 were assumed to be 10% of the commercial harvest. The most recent creel survey was conducted in 2010.

Monitoring at the Holyoke Dam Fish Lift

Historically, there were no shad were passed above Holyoke from the completion of the Holyoke Dam in 1849 until 1955 when a fish passage facility was completed and small numbers of shad were lifted above the dam. Since opening, staff at the fish passage facility have maintained daily counts of American shad lifted each year (Watson 1970; Moffit et al 1982; Leggett et al 2004). Major technological improvements in the lift occurred in 1975, 1976 and 2005 (Henry 1976, Slater 2010). Information on the number of fish lifted daily, the number of lift days (days the lift is in operation) and the daily sex ratio at Holyoke are currently obtained from the Massachusetts Division of Fisheries.

The most recent 2005 facility upgrade includes some of the same components of the previous fishway including three entrances, two collection galleries, two crowders, two elevators, an elevated exit flue with viewing windows and fish trapping stations, a counting room, a trap and transport facility. The fishlifts can be operated automatically or manually and a video system allows the facility to be monitored from the control room (Slater 2010).

Passage Efficiency

The number of adult shad passed at Holyoke represents a portion of the total Connecticut River population, as shown by recent and past tagging efforts, as well as the continued documented presence of shad larvae in the lower river. The proportion of the Connecticut River shad population migrating beyond Holyoke Dam has risen since 1975 and has fluctuated between roughly 40-60% (Leggett et al. 2004).

A tagging reward study in the 1970s was conducted to derive a population estimate in the Connecticut River. It was found that fish tagged later during the season of the run never made it as far as the Holyoke lift and likely spawned downstream of the Dam. After 1985, the proportion of the total population migrating above Holyoke routinely exceeded 40% (Leggett et. al 2004).

In 2011, a cooperative shad tagging study was initiated in the Connecticut River by the USFWS and the USGS Conte Anadromous Fish Research Center with assistance from many partners including CT DEEP Inland and Marine Fisheries Divisions. This study was also funded for the 2012 season and will examine effectiveness of both upstream and downstream passage. One of the objectives outlined in the study, is to determine the proportion of the shad run that passes the Holyoke Dam. Shad were collected in the lower river and radio and pit tagged. American shad pit tagged in the lower river were detected as they passed at Holyoke. This is the first river wide tagging study conducted since the most recent modifications to the Holyoke lift in 2005. While the study will continue through 2013 and possibly subsequent years, some preliminary results are available for a passage rate based on the number of tagged American shad detected passing the Holyoke Fishlift. The estimate of passage efficiency based on the 2011 pit tagged shad is 63% (Ken Sprankle USFWS personal communication.). For our purposes within this sustainability plan we will use a passage rate of 63% as the proportion of the spawning run that migrates beyond the Holyoke lift. Prior to 2005, passage rates are based on past annual population estimates stemming from previous tagging studies in the CT River. Past efficiency estimates have varied between 40 and 60% (Leggett et al. 2004)

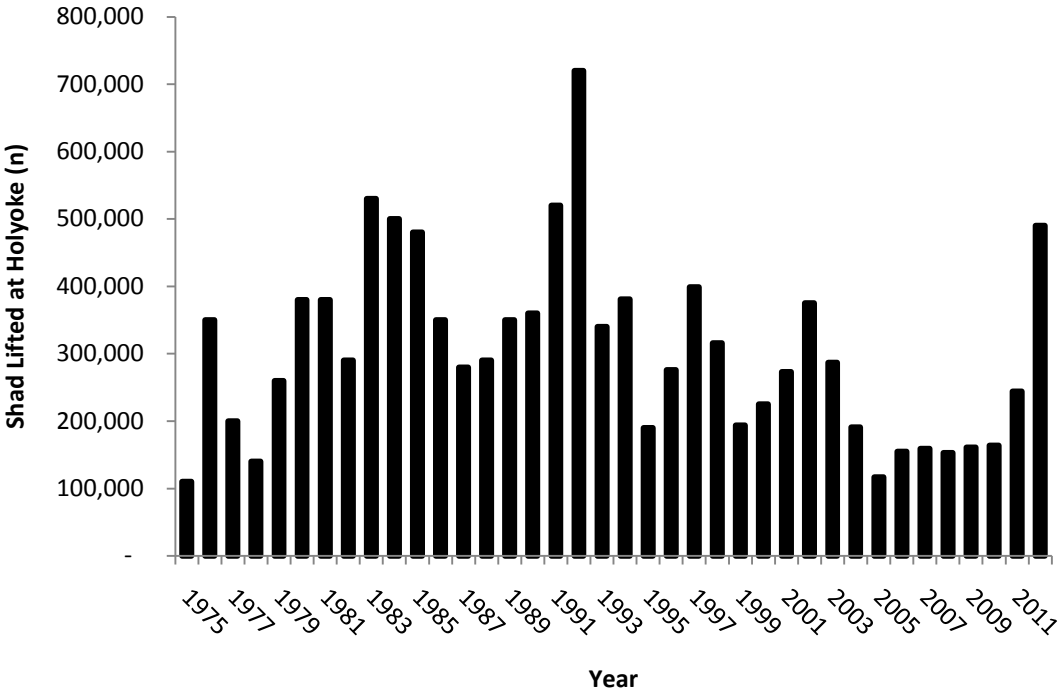

Figure 8. Shad lifted at the Holyoke Dam, 1975-2012.

Juvenile Abundance Indices (JAI)

Annual reproductive success has been monitored through collection of juvenile American shad and calculation of an annual index of relative abundance (geometric mean catch/seine haul) since 1978. Seining is conducted weekly from mid July through mid October at seven fixed stations located from Holyoke, MA to Essex, CT.

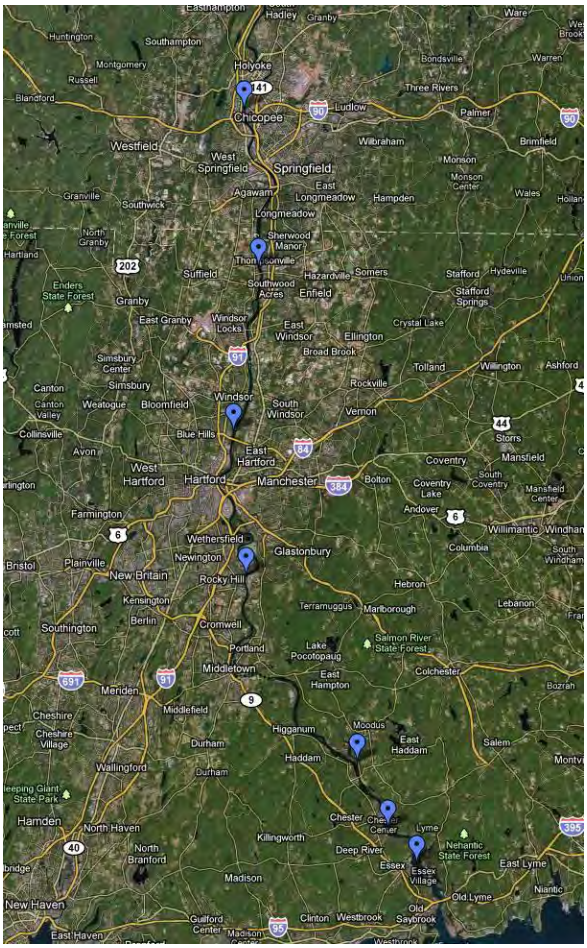

Figure 9. Map of the Connecticut River showing locations of juvenile seine sites.

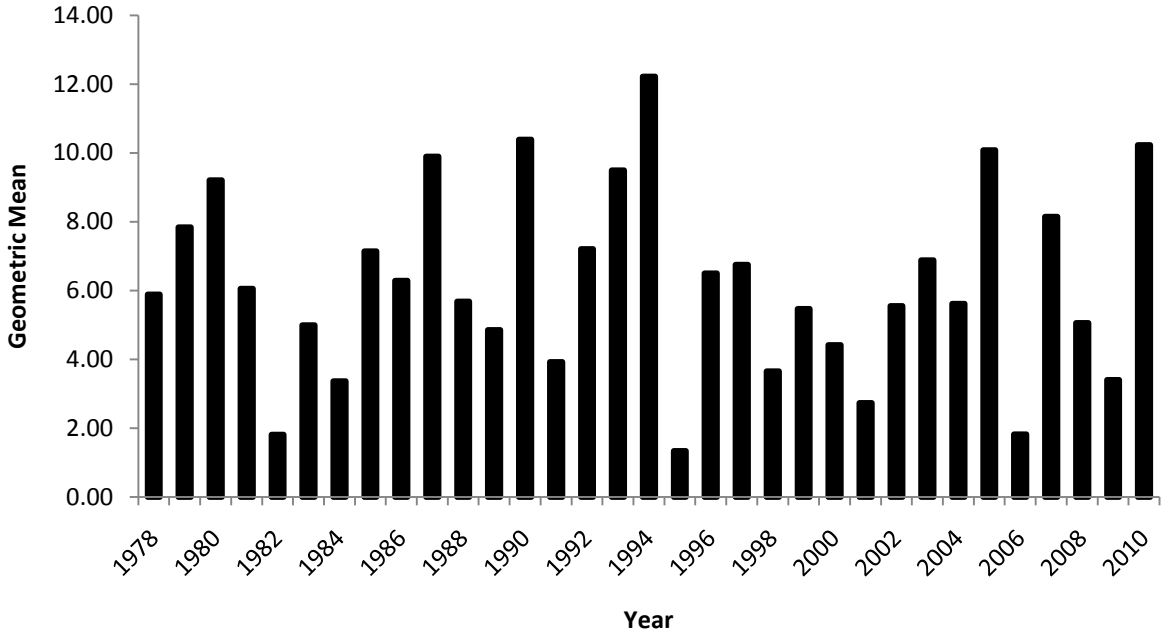

Figure 10. CT River American shad juvenile geometric mean catch per unit effort.

Sustainability Target(s)

Connecticut is proposing the continuation of the commercial and recreational fisheries in the Connecticut River. Metrics for demonstrating the sustainability of the stock have been selected based on consistent and long term monitoring of the commercial fisheries, juveniles and adults in the river.

Commercial:

Commercial fisheries are prohibited in all other systems in Connecticut and will remain prohibited.

Fisheries to be closed (Recreational)

Systems other than the Connecticut River will become catch and release for American shad.

Fisheries requested to remain open (if more specific than statewide)

Connecticut is requesting commercial and recreational fisheries to remain open in the Connecticut River. In the Pawcatuck River, which forms the border between Connecticut and Rhode Island, the open season for American shad follows Rhode Island regulations

Management of the Connecticut River shad fishery will use three metrics to verify a sustainable fishery: juvenile abundance indices (JAI), the number of shad lifted at the 1st mainstem dam (Holyoke Rkm 139), and percent escapement. Triggers are established for each metric which if "exceeded" would call for an internal review of resource conditions and set in motion a course of corrective action in the states sharing this resource on the Connecticut River (CT, MA).

Metric : JAI

Amendment 3 to the American shad and river herring Fishery Management Plan requires monitoring annual juvenile recruitment of Connecticut River. Juvenile abundance is measured to assess annual production and to provide warning of recruitment failure. The Connecticut River annual juvenile abundance index (JAI) has been monitored since 1978. The JAI is reported to ASMFC on an annual basis as a geometric mean CPUE. The sampling protocol (stations, sampling intensity and gear type) has remained consistent throughout the time period the index is calculated. Amendment 3 instituted a new definition of juvenile recruitment failure, where failure is defined as occurring when three consecutive JAI values are lower than 75% of all other values in the stock specific data series. The Connecticut River JAI will be used as a warning of recruitment failure. The management trigger will be "tripped" if three consecutive years of JAI values fall in the lowest quartile of the time series.

Table 2. Juvenile Index for American shad, 1978-2011.

Year	Geo Mean	Year	Geo Mean
1978	5.89	1994	12.22
1979	7.84	1995	1.34
1980	9.21	1996	6.5
1981	6.05	1997	6.75
1982	1.81	1998	3.65
1983	4.99	1999	5.47
1984	3.37	2000	4.42
1985	7.14	2001	2.73
1986	6.29	2002	5.55
1987	9.89	2003	6.88
1988	5.68	2004	5.62
1989	4.85	2005	10.08
1990	10.39	2006	1.82
1991	3.92	2007	8.15
1992	7.21	2008	5.06
1993	9.49	2009	3.4
1994	12.22	2010	10.23
		2011	3.08

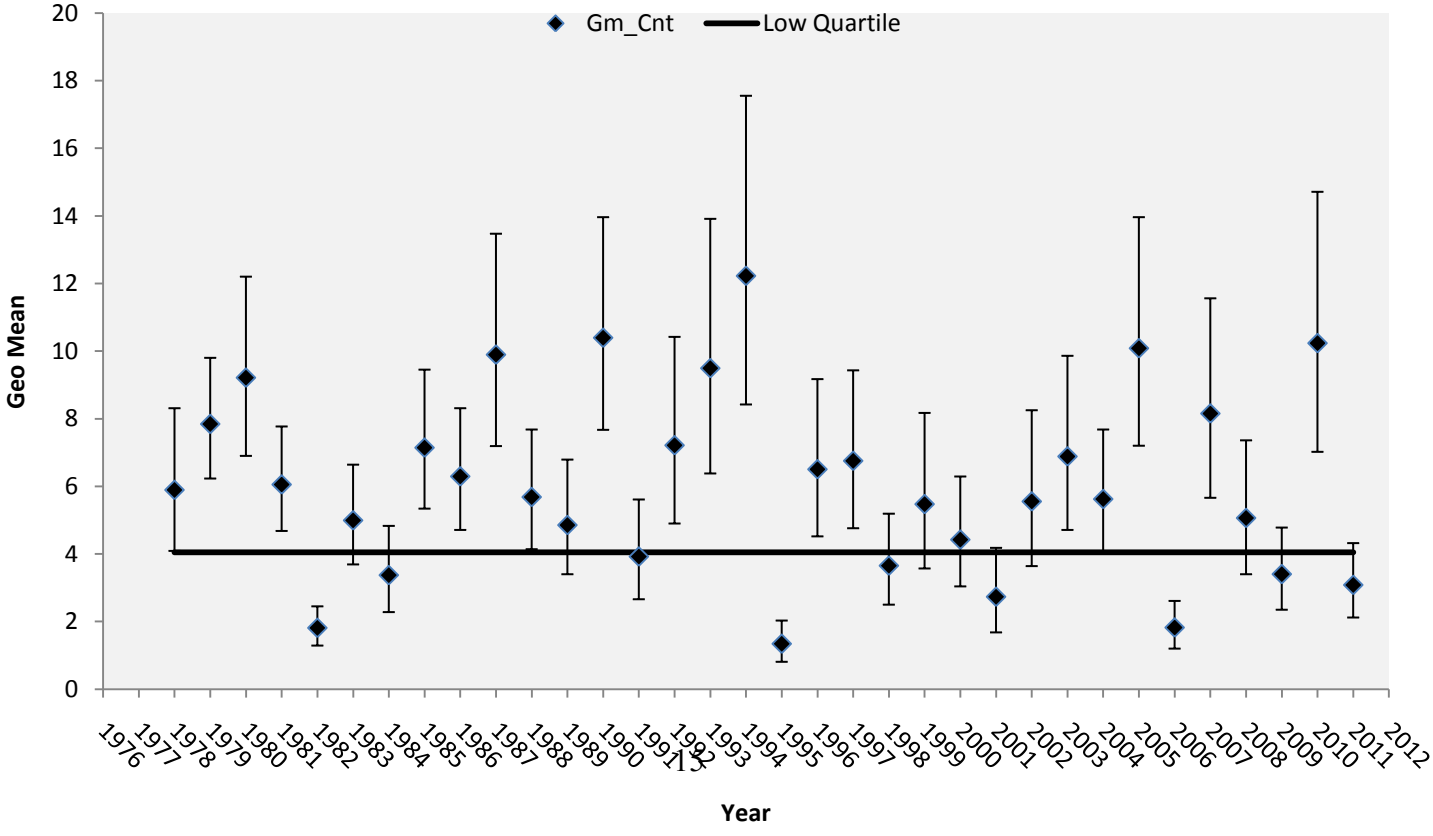

Figure 11. Annual geometric mean CPUE with 95% confidence intervals for CT River juvenile shad, 1976-2011.

Metric : Lift Count Based on Stock Recruitment A consistent way of monitoring adult stock is by tracking passage counts at the Holyoke Dam Fishlift. A fraction of the adult run is passed at the lift, so tracking sustainability using approximately 63% of the stock is risk averse and gives a buffer by not including reproduction below the dam.

The stock recruitment relationship for Connecticut River shad was used to identify a minimum adult stock size at the Holyoke Lift that may be required to sustain at least average recruitment. Using the data from the juvenile seine survey and adult passage at the lift for years 1978-2011, Beverton-Holt, Ricker and Shepard model were run to see if some sort of relationship exists between rate of recruitment and stock size. None of these stock recruitment models provided a good fit. This result is not surprising given the full range of recruitment strengths across the observed range of lift counts. In the range of 150,000 to 160,000 there are a wide range of year classes produced. We are proposing a conservative target of 140,000 as a minimal annual lift count to serve as a proxy minimum stock size. This metric is shown to be capable of producing a wide range of recruitment

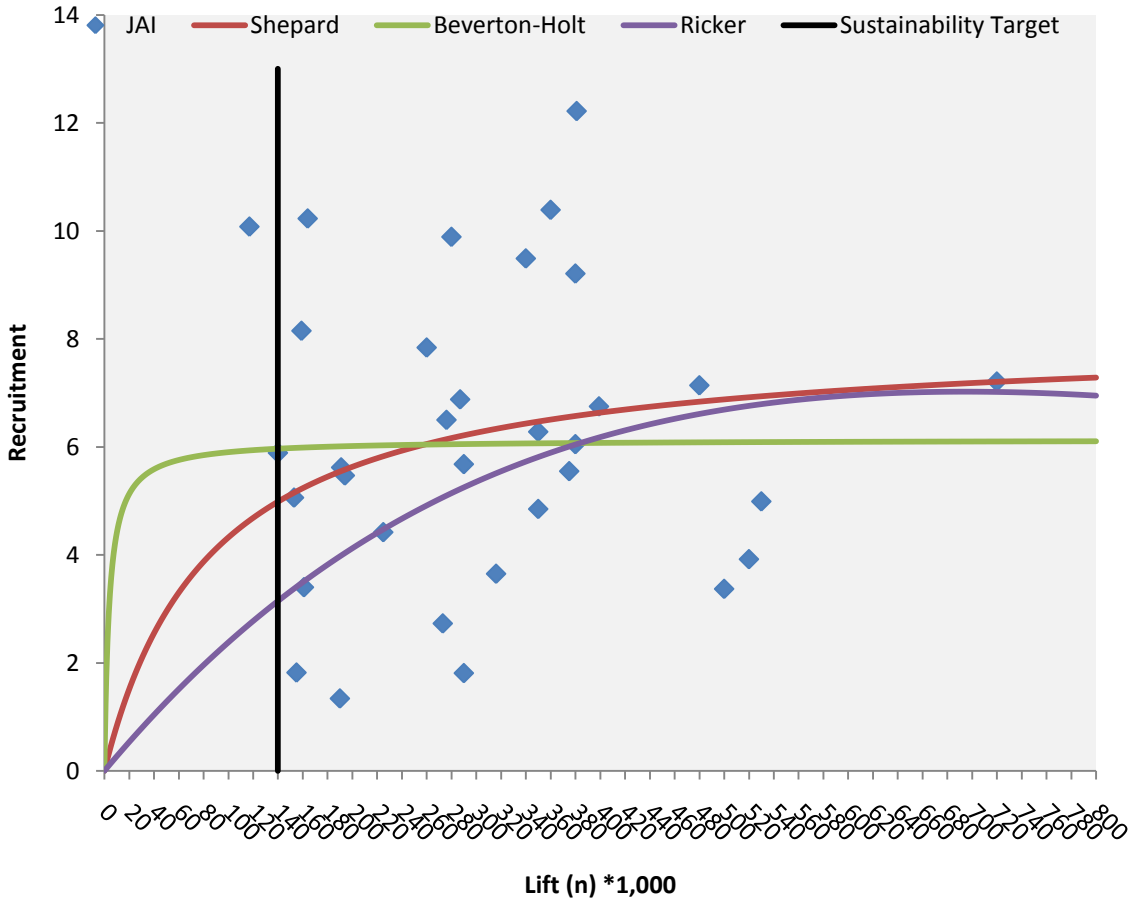

Figure 12. The Shepard, Beverton-Holt and Ricker stock recruitment curves fitted to juvenile abundance indices (JAI) on Adult lift counts (Passage), 1978-2011. Note the full range in recruitment at the lowest observed stock size (vertical reference line) at the 140,000 fish passage metric reference point.

Table 3. CT River Commercial shad landings and Lift counts, 1978-2011.

Year	JAI	Lift (n)	Landings (n)
1978	5.89	140,000	89,979
1979	7.84	260,000	83,071
1980	9.21	380,000	137,189
1981	6.05	380,000	212,000
1982	1.81	290,000	196,000
1983	4.99	530,000	234,000
1984	3.37	500,000	193,000
1985	7.14	480,000	174,000
1986	6.28	350,000	255,000
1987	9.89	280,000	219,000
1988	5.68	290,000	196,000
1989	4.85	350,000	179,000
1990	10.39	360,000	147,000
1991	3.92	520,000	194,000
1992	7.21	720,000	201,000
1993	9.49	340,000	143,000
1994	12.22	381,000	98,000
1995	1.34	190,000	74,000
1996	6.5	276,000	75,000
1997	6.75	399,000	77,000
1998	3.65	316,000	90,000
1999	5.47	194,000	68,000
2000	4.42	225,000	63,000
2001	2.73	273,000	69,500
2002	5.55	375,000	79,400
2003	6.88	287,000	54,400
2004	5.62	191,000	40,400
2005	10.08	117,000	28,260
2006	1.82	155,000	9,000
2007	8.15	159,000	12,100
2008	5.06	153,000	12,100
2009	3.4	161,000	10,000
2010	10.23	164,000	5,700
2011	3.08	244,000	6,725

Metric : Percent Escapement (numbers harvested/run size)
Escapement will be used to assure that fishery removals do not impair the ability of the stock to replace itself. A minimum escapement of 90% will be used to assure that the fishery does not impair overall stock health. A threshold of 90% escapement will be used in concert with run size as a trigger for fishery management action to prevent overfishing under the sustainable fishery definition. An escapement trigger of 90% will be used to gauge fishing intensity. Escapement rates below 90% have historically proved sustainable. Under this sustainable fishing plan this will trigger closer examination of recruitment and stock size metrics, as well as other available information to assure that stock health is not being compromised.

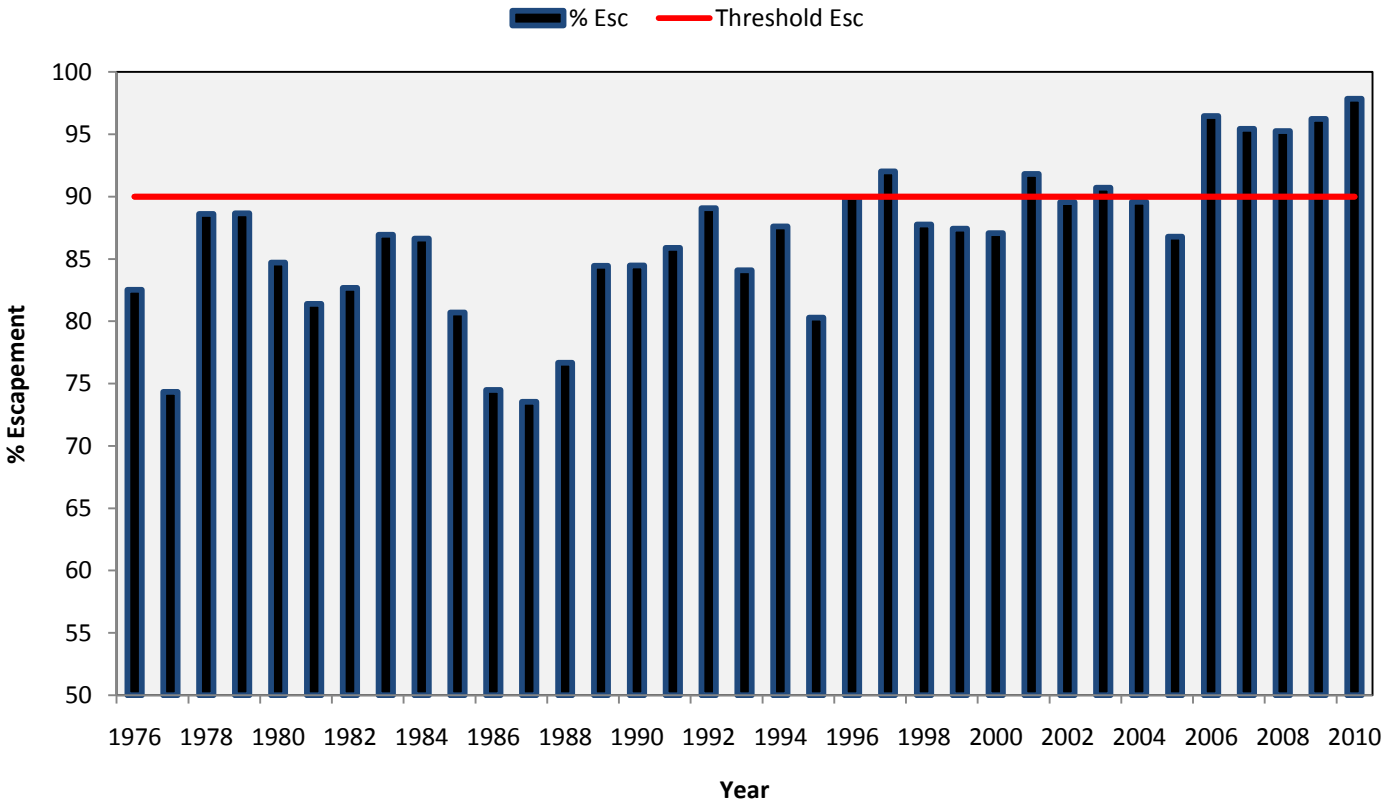

Figure 13. Percent escapement of American shad and sustainability target, 1975-2010.

Table 4. Holyoke Lift Count (n) Total in-river landings (commercial and recreational,n), coastal intercept landings estimate (n), total landings (n) and population estimate (n) of Connecticut River American shad, (1976-2011).

Year	Lift (n)	Cland (n)	CT Rec (n)	Intercept (n)	Landings	Pop Est
1976	350,000	88,000	59,696	10,000	157,696	902,377
1977	200,000	75,000	19,543	15,000	109,543	427,003
1978	140,000	60,000	14,979	15,000	89,979	789,979
1979	260,000	49,000	14,071	20,000	83,071	733,071
1980	380,000	76,000	12,189	49,000	137,189	897,189
1981	380,000	77,000	69,000	66,000	212,000	1,138,829
1982	290,000	67,000	44,000	85,000	196,000	1,131,484
1983	530,000	82,000	99,000	53,000	234,000	1,792,824
1984	500,000	52,000	71,000	70,000	193,000	1,443,000
1985	480,000	51,000	41,000	82,000	174,000	901,273
1986	350,000	71,000	105,000	79,000	255,000	999,681
1987	280,000	42,000	93,000	84,000	219,000	827,696
1988	290,000	41,000	53,000	102,000	196,000	840,444
1989	350,000	41,000	60,000	78,000	179,000	1,151,222
1990	360,000	30,000	38,000	79,000	147,000	947,000
1991	520,000	32,000	85,000	77,000	194,000	1,375,818
1992	720,000	31,000	120,000	50,000	201,000	1,837,364
1993	340,000	23,000	65,000	55,000	143,000	898,556
1994	381,000	21,000	45,000	32,000	98,000	790,727
1995	190,000	14,000	14,000	46,000	74,000	375,587
1996	276,000	16,000	11,000	48,000	75,000	748,171
1997	399,000	22,000	6,000	49,000	77,000	963,667
1998	316,000	22,000	7,000	61,000	90,000	734,898
1999	194,000	10,000	2,000	56,000	68,000	541,171
2000	225,000	24,000	4,000	35,000	63,000	487,528
2001	273,000	15,000	1,500	53,000	69,500	849,500
2002	375,000	24,000	2,400	53,000	79,400	761,218
2003	287,000	24,000	2,400	28,000	54,400	585,881
2004	191,000	14,000	1,400	25,000	40,400	387,673
2005	117,000	14,000	2,260	12,000	28,260	213,974
2006	155,000	8,000	1,000	-	9,000	255,032
2007	159,000	11,000	1,100	-	12,100	264,481
2008	153,000	11,000	1,100	-	12,100	254,957
2009	161,000	9,000	1,000	-	10,000	265,556
2010	164,000	5,100	600	-	6,700	267,017
2011	244,000	6,725	2,400	-	9,125	396,427

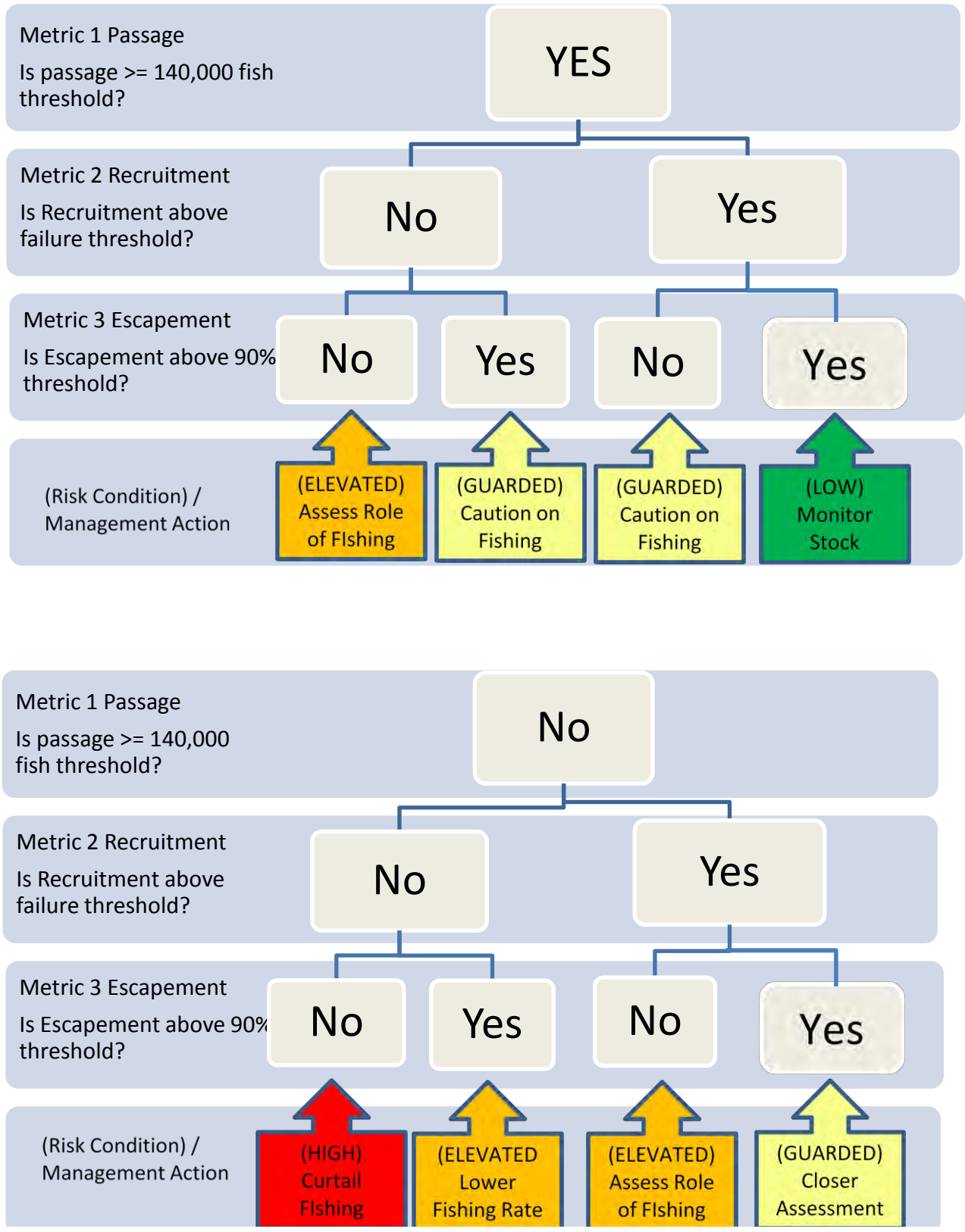

Figure 14. Sustainability Flow Chart for Connecticut River American shad stock monitoring.

SUSTAINABLE FISHERY DEFINITION: Amendment 3 defines a sustainable fishery as "those that demonstrate their stock could support a commercial and/or recreational fishery that will not diminish the future stock reproduction and recruitment."

Methods for Monitoring Fishery and Stock

A stop light style approach will be used to express the level of perceived risk to maintaining a Sustainable Fishery in the Connecticut River system. Risk will be assessed via a combination of two stock status (response) indicators and a fishing rate (stressor) indicator recognizing that factors other than in-river fishing (ocean environment, stream flow, temperature, dam & fish passage operations, etc.) significantly influence adult run size and recruitment.

The first response metric: PASSAGE - the number of adult fish lifted at the first main stem dam in Holyoke MA (Rkm 139) - will be used as a proxy for total (adult stock) run size. The trigger or threshold for PASSAGE (140,000 fish) is the minimum number of fish passed at the dam since the mid-1970's when modern fish passage was first installed. Recruitment (JAI) during this period has varied independent of adult stock size, indicating sufficient stock reproductive capacity to support future stock reproduction and recruitment (Figure 8). All commercial fishing and virtually all sport fishing takes place below this dam.

The second metric is RECRUITMENT FAILURE, defined in Amendment 3 as three consecutive years of recruitment (JAI) in the lower quartile of the time series. The CT DEEP Marine Fisheries Division has conducted juvenile abundance surveys in the river since 1978 (Figure 11). This recruitment metric will provide an early warning of a population decline due to inadequate stock reproduction.

The final metric: ESCAPEMENT is a measure of fishing pressure on the stock expressed as the proportion of the total run "escaping" the fishery to spawn (Figure 13). A 90% escapement rate was chosen as a very conservative trigger to commence an early review of increasing fishery removals to consider potential implications for future stock reproduction. Recent escapement has been in excess of 90% but lower escapement rates were common through much of the time series with no evident diminishment in subsequent recruitment. Median ESCAPEMENT since 1976 is 87% with a range of 73%-97%.

For purposes of characterizing overall risk a stop light style scale has been developed. Each Sustainable Fishery metric will be scored annually as positive (favorable stock condition) or negative (unfavorable stock condition) relative to the threshold. Risk to maintaining a Sustainable Fishery will be judged by combining the results of the three metrics.

A **GREEN** stock status reflects all three indicators are positive, suggesting LOW risk to future stock reproduction. Management concern level is LOW. Management action is to continue monitoring. Also see figure 14.

A **YELLOW** stock status is indicated when two indicators are positive and one is negative. Management concern level is GUARDED. Management action is to more closely consider the actual values of these metrics and any other relevant biological and environmental information (e.g. river flows) to assess the threat to future stock reproduction and recruitment. Fishery

management action is contingent on a finding that harvest rates are materially contributing to diminished adult stock or recruitment. For example it may be that ESCAPEMENT is the only threshold that has been exceeded, but both PASSAGE and RECRUITMENT are well above average. In such a case no management action may be necessary. Conversely, both ESCAPEMENT and PASSAGE could be marginally "positive", but RECRUITMENT is strongly negative. In such a case additional harvest restrictions may be warranted.

An **ORANGE** stock status is indicated when two of three metrics are negative. Management concern level is ELEVATED. Management action again includes closer examination of actual metric values and other relevant biological and environmental factors contributing to the perceived stock condition. Fishery management action is contingent on a finding that harvest rates are materially contributing to diminished adult stock or recruitment. The likely need for fishery management action is greater than under the GUARDED concern level.

A **RED** stock status exists when all three metrics are negative. The management concern level is HIGH. Management action includes immediate steps to increase ESCAPEMENT above the threshold. The need for more aggressive fishery management measures including harvest moratorium would be contingent on a full examination of the stock and its capacity to support harvest at some level.

In addition to ASMFC, the Connecticut River Atlantic Salmon Commission, a compact of the states bordering the River (CT, MA, VT, NH), NMFS and USF&WS has interest in the Connecticut River American shad resource and will be party to any system wide fishery management decisions.

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COMMONWEALTH of VIRGINIA

Marine Resources Commission

2600 Washington Avenue
Third Floor
Newport News, Virginia 23607

Douglas W. Domenech
Secretary of Natural Resources

Jack G. Travelstead
Commissioner

September 21, 2012

MEMORANDUM

TO: Michelle Duval, Chair, Shad and River Herring Management Board
Larry Miller, Chair, Shad and River Herring Technical Committee
Kate Taylor, ASMFC Coordinator, Shad and River Herring Management Plan

FROM: Jack G. Travelstead, Virginia Marine Resources Commission, Virginia Representative, Shad and River Herring Management Board

SUBJECT: Request for a limited and sustainable bycatch allowance of American shad for 2013 through 2017 and a report on results of the 2012 American shad bycatch fishery

Please accept Virginia Marine Resources Commission's (VMRC) request for a limited bycatch allowance of American shad for 2013 - 2017, as described below. The VMRC is requesting the same conservation measures, in place from 2007 – 2012, be applied to the 2013 - 2017, as previously approved by the Atlantic States Marine Fisheries Commission (ASMFC). To ensure that bycatch amounts remain low, VMRC is proposing a cap on the number of licenses issued for 2013 – 2017, as well as a cap on the number of American shad that can be harvested before the bycatch of American shad would be ended in for any of these years. The number of permittees has remained at or below 25 individuals since 2008, down from 77 permits issued in 2006 which was the first year the bycatch fishery was allowed. American shad, as bycatch from other fisheries, was less than 300 American shad, as it has been each year, since 2006. Participation, effort and harvest have remained constant in this fishery, and can be considered sustainable removal rates, especially when compared to other interactions for this species (including other monitoring and restoration efforts).

I. Background

The ASMFC Shad and River Herring Management Board approved a limited bycatch allowance of American shad every year since 2006. The basis for the original request, submitted in November 2005, was to convert dead discards of American shad, taken during the pursuit of other species, into a small bycatch allowance. The provisions of these approvals were that: (1) the Virginia bycatch fishery would be limited to areas above the James River Bridge, in the James River, the George P. Coleman Bridge, in the York River, and the Norris Bridge, in the Rappahannock River, to ensure that American shad harvested, as bycatch, in other upriver anchored or staked gill net fisheries (e.g. striped bass and Atlantic croaker), were principally Virginia river stocks; (2) the bycatch fishery would be limited to anchor gill net and staked gill net gears, as these gears are associated with spring harvests of spot, croaker, bluefish, catfish, striped bass, and white perch, and discard mortality rates for American shad from these gears are nearly 100 percent; (3) the bycatch of American shad would be limited to ten American shad per vessel; (4) samples of the American shad bycatch would be collected, especially to distinguish hatchery-origin American shad from wild stocks; and (5) the bycatch fishery was approved solely for one year at a time, and any future bycatch fishery proposals would be reviewed by the ASMFC American Shad and River Herring Technical Committee and Management Board.

The VMRC adopted the conservative measures listed above, for the American shad bycatch allowance, as part of Chapter 4 VAC 20-530-10 et seq., "Pertaining to American Shad." A copy of this regulation is attached, and all provisions for the bycatch fishery specified by the ASMFC management board were adopted by the VMRC (Appendix I.). In addition, the VMRC made it unlawful to possess or land any bycatch of American shad unless an equal number of croaker, spot, striped bass, bluefish, catfish, or white perch were also possessed.

II. Proposal for a Sustainable Bycatch Allowance of American Shad 2013 -2017

The VMRC requests your approval sustainable bycatch allowance of American shad, under conditions described below:

1) All management provisions of the 2012 American shad bycatch allowance, would be maintained from 2013 through 2017 and, 2) the VMRC proposes to cap the number of permits that can be issued annually to 50, and to cap the maximum allowable annual harvest at 500 American shad.

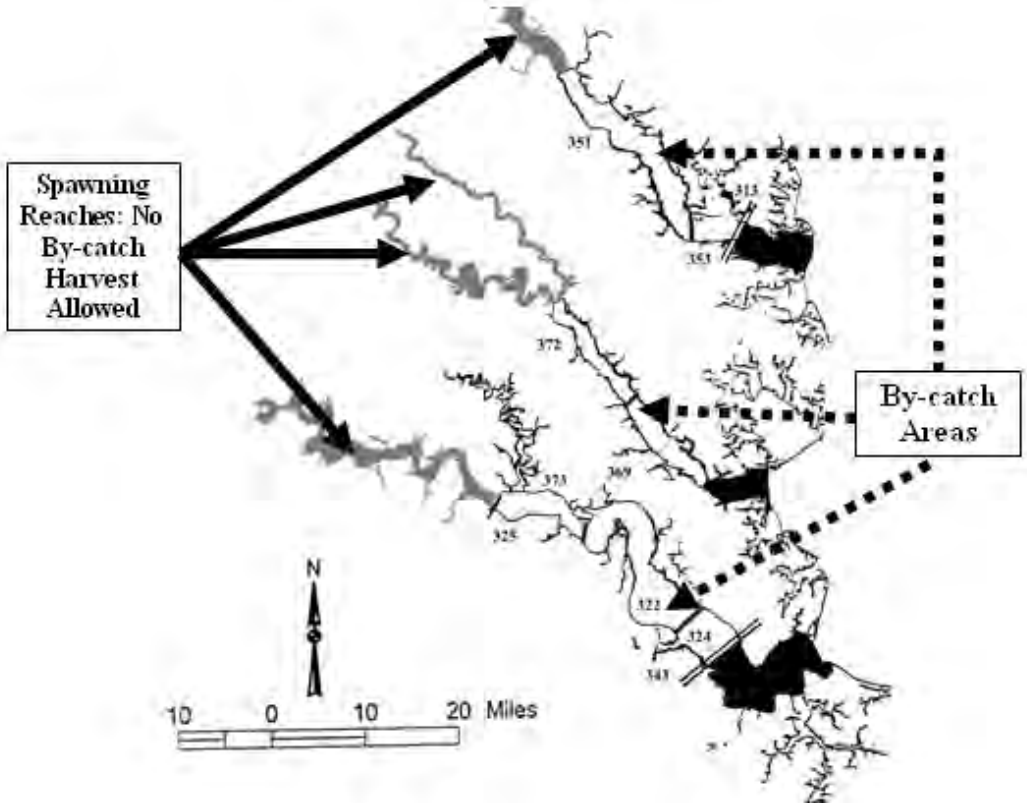

Figure 1. American shad bycatch areas, (in white) above the first bridges of the James, York, and Rappahannock rivers.

A determination of the approximate extent of Virginia's bycatch of American shad, from all gear types, in all areas throughout the Chesapeake Bay system, is an important objective for a better understanding of these stocks. The upriver anchored and staked gill net bycatch fishery, coupled with recent Virginia Institute of Marine Science's (VIMS) efforts to estimate bycatch from pound nets and other gear, currently represent the best method, for achieving this objective. The VMRC is requesting that waste (dead discards of American shad associated with spring fisheries, for specific gill net gear) be converted to usable product. A continuation of this modest American shad bycatch allowance, from 2013 through 2017, in the bycatch areas, will not challenge the health of these riverine stocks of American shad. The number of permits issued has remained between 20 to 25 for the last four years, down from the 77 issued in the first year the bycatch was allowed (2006). The York River has accounted for 60 to 100 % of the American shad retained annually, and the number of kept American shad ranged from 130 fish in 2011 to a high of 288 fish in 2009 but has never exceeded 300 fish. It should be noted that VIMS samples on average over 25% of the shad kept from the York River. All Bycatch permittees agree to allow VIMS to sample their catch, and VIMS is given a weekly update, beginning in February, of any permits issued. Sampling of the permitted bycatch can assist in collection of age, size and sex composition of the adult population and provide another opportunity for the assessment of hatchery contribution to these stocks.

The Virginia Department of Game and Inland Fisheries (VDGIF) will continue its stocking program in the James River continue a hatchery evaluation in the James, York and Rappahannock rivers. The VDGIF will also continue push net surveys in the James and Rappahannock rivers, to monitor juvenile population trends. In addition to the push net surveys, the VIMS will continue to provide juvenile abundance indices (JAIs), for all three river systems. The JAIs are provided in the annual compliance report to the ASMFC. The VIMS will also continue to provide catch rates, annual mortality estimates and biological data (age composition, length frequencies, sex ratio, and degree of repeat spawning), for stock assessment purposes.

The losses of American shad from monitoring and restoration projects have surpassed the modest losses recorded from the bycatch allowance in all years (four percent of total losses were attributed to the bycatch fishery, with 96 percent of removables from monitoring and restoration efforts in 2011 (see Table 1 of the compliance report). The losses from the bycatch fishery cannot be negatively impacting the benchmark restoration goals, when compared to the losses directly resulting from the restoration and other monitoring efforts. The bycatch allowance enables bycatch monitoring of American shad as required by Amendment 3 to the FMP. If the permitted bycatch allowance was not in place, the harvesters directing efforts on striped bass, Atlantic croaker, catfish, or menhaden would not be required to report American shad discards and this information would be unknown.

The VMRC is requesting that the ASMFC Shad and River Herring Management Board review this sustainable American shad bycatch allowance proposal, for continuation through 2017, at its October 2012 meeting.

III. Results from the limited 2012 Virginia bycatch fishery for American shad

All American shad bycatch allowable permittees were required to report their harvest, in pounds of American shad retained, to the VMRC Mandatory Reporting System, a system that requires all harvesters to report all daily harvest and effort data on a monthly basis. Monthly mandatory reports include type and amount of gear used, water body fished, gear soak time, and all species retained. The majority of American shad reported to the mandatory reporting database were in pounds; however, a few individuals reported to the mandatory reporting system in numbers. Using the calculated average weight, the mandatory reporting database converts numbers to pounds, based on an average weight per American shad of 3.57 pounds. A total of 800 pounds of American shad was reported, as harvested in 2012, to the mandatory reporting database. Using the conversion factor of 3.57 pounds per fish, that harvest corresponds to 224 American shad.

In addition to the permitted fishermen's requirement to reported catch and harvest, on a daily basis, to the Mandatory Reporting System, all fishermen permitted for the American

shad bycatch fishery were required to call an Interactive Voice Response System (IVRS), for each preceding weekly period and provide the following information: name, registration number, number of fishing trips taken, water body fished, number of nets set, number of American shad caught, and number retained. All American shad in the IVRS database were reported in numbers, and a total of 221 American shad were reported as harvested to the IVRS in 2012. Using the same conversion used in the mandatory reporting database, that corresponds to 789 pounds of harvested American shad. Only 3 fish were reported as discarded.

The two databases (IVRS-basis and mandatory reporting database) were reconciled by comparing data on a case-by-case basis. If the number of fish reported to the IVRS was converted to equal the pounds of American shad reported to the mandatory reporting system, a 3.62 pound average per fish would be the result. There is a slight discrepancy between the computed weight of the two databases, and this is partly due to the different average weight data used for converting numbers to pounds.

It was beneficial to have two types of reporting systems in place, to monitor the bycatch of American shad. This allowed the VMRC to note several discrepancies between call-in reports to the IVRS and the mandatory reporting monthly reports. Through comparisons of these systems, fish that had been coded incorrectly as American shad were identified, and the errors were corrected in the mandatory reporting database.

In 2012, 25 bycatch permits were issued between the months of February and March. The number of permittees has remained at or below 25 individuals since 2008, with the same individuals remaining in the fishery. The number of permittees decreased from 77 permits issued in 2006 to 38 permits issued in 2007. Of the 25 permit holders, only seven reported harvesting any American shad in 2012 (Table 1), the number of permittees reporting shad harvested under the bycatch allowance has remained below ten individuals since 2008.

Table 1. Number of commercial fishermen with American shad bycatch permits, active permits, and fishing activity reported by river system, for 2012. Permits are considered active if one or more pounds of American shad were reported.

Water Body	Year	Number of Permit Holders	Number of Active Permits	Total Trips	Number of Shad Caught	Number of Shad Kept	% of Bycatch for Year
James River	2011	9	3	25	42	42	32
	2010	9	0	7	0	0	0
	2009	8	1	6	2	0	0
	2008	6	2	3	3	3	2
	2007	16	7	58	119	52	19
	2006	32	5	27	24	23	9
York River	2011	11	4	51	88	87	67
	2010	9	5	43	229	208	84
	2009	11	6	97	302	288	100
	2008	10	6	85	89	89	60
	2007	15	8	104	199	199	73
	2006	31	5	198	233	228	90
Rappahannock River	2011	3	1	1	1	1	1
	2010	7	2	10	40*	40	16
	2009	1	0	0	0	0	0
	2008	3	1	8	81	57	38
	2007	5	2	23	22	20	7
	2006	14	2	8	3	3	2

*One fisherman in the Rappahannock River did not record the total number of shad caught, so 40 was used.

IV. Harvest Bycatch Allowance Monitoring

For the bycatch fishery, it is unlawful for any person to possess aboard a vessel or land any American shad, unless that person possessed at least an equal number of fish of only the following food-grade species: spot, Atlantic croaker, bluefish, catfish, striped bass, or white perch. A comparison of trip and effort data has been summarized, for these species, by permitted gill net gear during February through April, by water area, for 2012 (Table 2). According to permitted fishermen's past harvest activity, using anchor or staked gill net, the majority of these fishermen harvested species other than American shad prior to 2006 (first year the bycatch was allowed), from the same areas they have recently been allowed to retain bycatch of American shad.

Table 2. Harvest (in pounds) by species and bycatch area during February through April 2012 including all harvest from anchored and staked gill nets (not exclusive to American shad bycatch permit holders). Bait includes fish reported as bait and menhaden.

Bycatch Area	American Shad	Atlantic Croaker	Bait	Bluefish	Catfish	Gizzard Shad	Hickory Shad	Striped Bass	White Perch
James River General	--	--	--	--	1,817	--	--	15,077	--
James River Middle	14	124	--	5	1,677	--	466	27,615	3,109
James River Upper	15	--	12	--	4,040	365	--	7,063	7
Rapp. River General	--	14	11,375	2	526	--	--	230	--
Rapp. River Lower	7	1,258	5,949	14	--	--	--	16,282	93
Rapp. River Middle	--	832	10,933	--	5,154	6,743	219	43,713	5,396
Rapp. River Upper	--	37	5,148	--	479	150	134	26,412	1,344
York River General	260	672	156,115	--	60	20	--	31,500	417
York River Middle	43	176	54,580	5	72	1,680	--	7,872	48
York River Upper	461	--	8,150	--	2,483	525	30	5,992	3,726
Total	800	3,113	252,262	26	16,388	9,483	849	181,756	14,140

The total number of anchored and staked gill net trips during the months of February through April, for any species, by year (Table 3; Figure 2), was again included in this summary report to track the overall effort in the areas where bycatch has been approved by the ASMFC. Total effort was lower than 2009 through 2011, however 2012 data are not finalized for the February through April time period. The VMRC will continue to report on all activity in the area as well as the effort of those permitted for the American shad bycatch fishery. The harvest in the bycatch areas by all anchored and staked gill net trips was composed primarily of catfish, striped bass, Atlantic croaker, and bait (mostly menhaden). The top three species by weight, when American shad were actually retained by permitted fishermen as bycatch, were striped bass, catfish, and Atlantic croaker (Table 4).

Table 3. Total number of anchored and staked gill net trips by bycatch area during February through April (all species). The trips are not exclusive to American shad bycatch permit holders. The bycatch allowance began in 2006.

Bycatch Area	James River *	Rappahannock River	York River *	Total
2003	358	630	465	1,453
2004	318	575	607	1,500
2005	247	536	515	1298
2006	321	504	660	1,485
2007	367	329	557	1,253
2008	313	490	387	1,190
2009	392	656	783	1,831
2010	412	816	581	1,809
2011	361	794	446	1,601
2012^	210	595	428	1,233

*****James and York River trip totals contain reports coded James or York River "General" and likely contain trips outside of the bycatch area

^2012 Data are preliminary

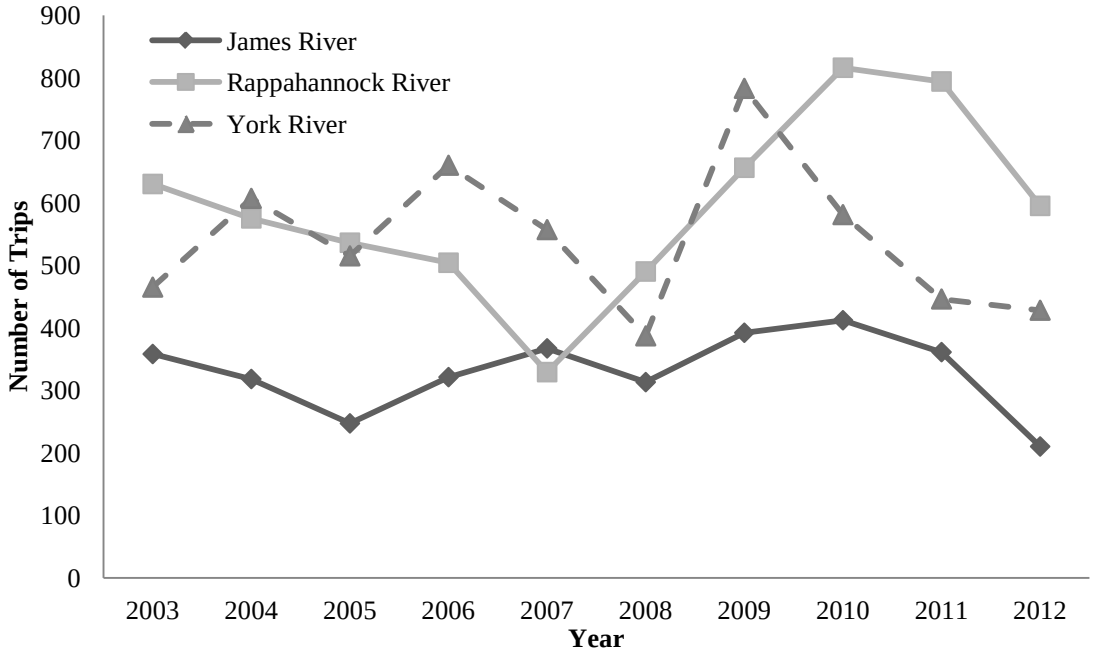

Figure 2. Total anchored and staked gillnet trips in the American shad bycatch areas from February through April, 2003 through 2012 (not exclusive to American shad bycatch permit holders). All species are included.

Table 4. Profiles of American shad bycatch permittees, including harvest totals, by species, for those trips where American shad were retained.

Harvester ID	American Shad	Atlantic Croaker	Bait*	Catfish	Carp	Hickory Shad	Striped Bass	White Perch
001	35	1,014	--	389	--	48	148	--
002	4	15	360	--	--	--	--	--
003	104	--	--	1,775	216	--	5,748	--
004	30	--	--	406	--	--	466	--
005	115	--	271	428	--	--	--	20
006	174	--	--	540	--	--	218	61
007								
008	5	--	--	--	--	--	90	--
Total	467	1,029	631	3,538	216	48	6,670	81

*Bait category is primarily comprised of menhaden

Table 5. American shad bycatch in numbers from each bycatch area from 2006 to 2012 from the IVRS database.

Bycatch Area	James River	York River	Rappahannock River	Total
2006	23	228	3	254
2007	52	199	20	271
2008	3	89	57	149
2009	--	288	--	288
2010	--	208	40	248
2011	42	87	1	130
2012	7	207	7	221
Total	127	1,306	121	1,554

V. 2012 Bycatch Fishery Summary

The 2012 Virginia bycatch fishery for American shad adhered to all guidelines established by the ASMFC. The VMRC has maintained a permitting system, based on specific criteria, that includes use of gear (staked and anchor gill nets) associated with high mortality of captured American shad. Monitoring of participating harvesters is

accomplished using two separate mandatory reporting systems. The IVRS was established with specific reporting requirements placed on each permitted fisherman. In addition, corroboration of harvesting activities gathered from the IVRS was enabled through a second reporting system, the VMRC Mandatory Reporting System.

VI. References

Atlantic States Marine Fisheries Commission (ASMFC). 2010. Amendment 3 to the Interstate Fishery Management Plan for Shad and River Herring (American Shad Management). 158 pp.

Appendix I.

VIRGINIA MARINE RESOURCES COMMISSION
"PERTAINING TO AMERICAN SHAD"
REGULATION 4 VAC 20-530-10 ET SEQ.

PREAMBLE

This chapter establishes a moratorium on the harvest of American shad and provides for a limited bycatch of American shad during the 2012 fishing season. This chapter is promulgated pursuant to the authority contained in § 28.2-201 of the Code of Virginia. This chapter amends and re-adopts, as amended, previous Chapter 4VAC20-530-10 et seq. which was adopted on February 22, 2011 and made effective on March 1, 2011. The effective date of this chapter, as amended, is February 1, 2012.

4VAC20-530-10. Purpose.

The purposes of this chapter are to rebuild the Virginia stocks of American Shad and to comply with the requirements for ocean intercept commercial fisheries as specified by the Interstate Fishery Management Plan for Shad and River Herring.

4VAC20-530-20. Definition.

The following words and terms when used in this chapter shall have the following meanings unless the context clearly indicates otherwise.

"Bycatch area" means those tidal waters of (i) the James River, from the James River Bridge upstream to a line connecting Dancing Point and New Sunken Meadow Creek; (ii) the York River, from the George P. Coleman Bridge upstream to the Rt. 33 Eltham and Lord Delaware bridges at West Point; and (iii) the Rappahannock River, from the Norris Bridge upstream to the Rt. 360 Downing Bridge at Tappahannock.

"Chesapeake Bay" means all Virginia tidal waters west of the Colregs Demarcation Line that connect the Cape Henry Lighthouse in Virginia Beach to the Cape Charles Lighthouse on Smith Island.

"Coastal area" means all Virginia tidal waters east of the Colregs Demarcation Line that connect the Cape Henry Lighthouse in Virginia Beach to the Cape Charles Lighthouse on Smith Island.

4VAC20-530-23 to 4VAC20-530-29. [Repealed]

4VAC20-530-30. Moratorium.

A. It shall be unlawful for any person to catch and retain possession of American shad from the Chesapeake Bay, except as described in 4VAC20-530-31.

B. It shall be unlawful for any person to possess aboard a vessel or land in Virginia any American shad harvested from the coastal area.

C. It shall be unlawful for any person to possess any American shad taken from the coastal area or the Chesapeake Bay, except as described in 4VAC20-530-31.

4VAC20-530-31. Bycatch fishery.

A. Any registered commercial fisherman meeting the conditions described in this subsection shall be eligible to participate in the American shad bycatch fishery in 2012:

1. The registered commercial fisherman shall apply for a VMRC American Shad Bycatch Permit and possess that permit while fishing, landing, or selling his catch of American shad.

2. The registered commercial fisherman shall complete the VMRC American Shad Bycatch Survey form to describe his pending fishing activity.

B. It shall be unlawful for any person to possess aboard a vessel more than 10 American shad. When more than one registered and permitted fisherman is fishing on the

same vessel, it shall be unlawful to possess more than 10 American shad aboard that vessel.

C. It shall be unlawful for any person to possess aboard a vessel or land any American shad unless that person possesses at least an equal number of fish of only the following food-grade species: spot, croaker, bluefish, catfish, striped bass or white perch.

D. Possession of American shad by any person permitted in accordance with this section shall be lawful only when those American shad were harvested from the bycatch area. Possession of any American shad harvested in Virginia waters that are outside of the bycatch area shall constitute a violation of this regulation.

E. American shad harvested only as bycatch by anchored gill nets and staked gill nets may be possessed or retained for sale in accordance with the provisions of this regulation. It shall be unlawful for any person to harvest, land, or possess any American shad taken by any recreational gear or by any commercial gear, except anchored gill net or staked gill net.

F. Every fisherman permitted for the American shad bycatch fishery shall contact the commission's interactive voice response system once weekly to report the following for the preceding weekly period: name, registration number, number of fishing trips taken, water body fished, number of nets set, number of American shad caught and number retained.

4VAC20-530-32. [Repealed]

4VAC20-530-35. [Repealed]

4VAC20-530-40. Penalty.

As set forth in §28.2-903 of the Code of Virginia, any person violating any provision of this chapter shall be guilty of a Class 3 misdemeanor, and a second or subsequent violation of any provision of this chapter committed by the same person within 12 months of a prior violation is a Class 1 misdemeanor.

2012 SHAD & RIVER HERRING COMPLIANCE REPORTS HAVE BEEN REMOVED FROM THIS DOCUMENT DUE TO FILE SIZE

CONTACT ASMFC IF YOU WOULD LIKE TO RECEIVE THE COMPLIANCE REPORTS