



OCTOBER 2016 MEETING AGENDA

October 4-6, 2016

Stockton Seaview Hotel
401 South New York Road, Galloway, NJ 08205
Telephone 609-652-1800

Tuesday, October 4th

- 10:00 a.m. – 12:00 p.m.** **Executive Committee Meeting (Tab 1)**
– Review 2016 and proposed 2017 implementation plans
- 12:00 p.m. – 1:30 p.m.** **Lunch**
- 1:30 p.m. – 4:30 p.m.** **River Herring and Shad Committee Meeting (Tab 2)**
– Review updated decision document
– Develop Committee recommendations on whether to develop an amendment to add RH/S as Council-managed stocks

Wednesday, October 5th

- 9:00 a.m.** **Council Convenes**
- 9:00 a.m. – 9:10 a.m.** **Swearing in of New Council Member H. Ward Slacum**
- 9:10 a.m. – 10:30 a.m.** **Blueline Tilefish Framework – Meeting 1 (Tab 3)**
– Review background materials
– Approve range of alternatives
- 10:30 a.m. – 11:00 a.m.** **Law Enforcement Reports**
– NOAA Office of Law Enforcement
– U.S. Coast Guard
- 11:00 a.m. – 12:00 p.m.** **Spiny Dogfish Specifications (Tab 4)**
– Review previously set 2017 specifications and consider any modifications if necessary
- 12:00 p.m. – 1:00 p.m.** **Lunch**
- 1:00 p.m. – 2:30 p.m.** **New Jersey Special Management Zone (SMZ) Consideration (Tab 5)**
– Review Monitoring Team Report for SMZ designation of 13 NJ artificial reefs
- 2:30 p.m. – 4:30 p.m.** **River Herring and Shad Stocks in the Fishery (Tab 2)**
– Review committee recommendations
– Decide whether to develop an amendment to add RH/S as Council-managed stocks

4:30 p.m. – 5:30 p.m.

Council Communication and Outreach Plan (Tab 6)

- Review and discuss draft Communication and Outreach Plan

Thursday, October 6th

9:00 a.m.

Council Convenes

9:00 a.m. – 9:30 a.m.

Draft Environmental Assessment for Amendment 10 to the Highly Migratory Species (HMS) FMP (Tab 7)

Jennifer Cudney – HMS, NMFS

- Council review and comment

9:30 a.m. - 1:00 p.m.

Business Session

Organization Reports (Tab 8)

- NMFS Greater Atlantic Regional Office
- NMFS Northeast Fisheries Science Center
- NOAA Office of General Counsel
- Atlantic States Marine Fisheries Commission

Liaison Reports (Tab 9)

- New England Council
- South Atlantic Council

Executive Director's Report (Tab 10)

Chris Moore

Science Report (Tab 11)

Rich Seagraves

Committee Reports









- Executive Committee
- Northeast Trawl Advisory Panel






Continuing and New Business

The above agenda items may not be taken in the order in which they appear and are subject to change as necessary. Other items may be added, but the Council cannot take action on such items even if the item requires emergency action without additional public notice. Non-emergency matters not contained in this agenda may come before the Council and / or its Committees for discussion, but these matters may not be the subject of formal Council or Committee action during this meeting. Council and Committee actions will be restricted to the issues specifically listed in this agenda. Any issues requiring emergency action under section 305(c) of the Magnuson-Stevens Act that arise after publication of the Federal Register Notice for this meeting may be acted upon provided that the public has been notified of the Council's intent to take final action to address the emergency. The meeting may be closed to discuss employment or other internal administrative matters.

MID-ATLANTIC FISHERY COUNCIL - SPECIES STOCK STATUS

(AS OF SEPTEMBER 23, 2016)

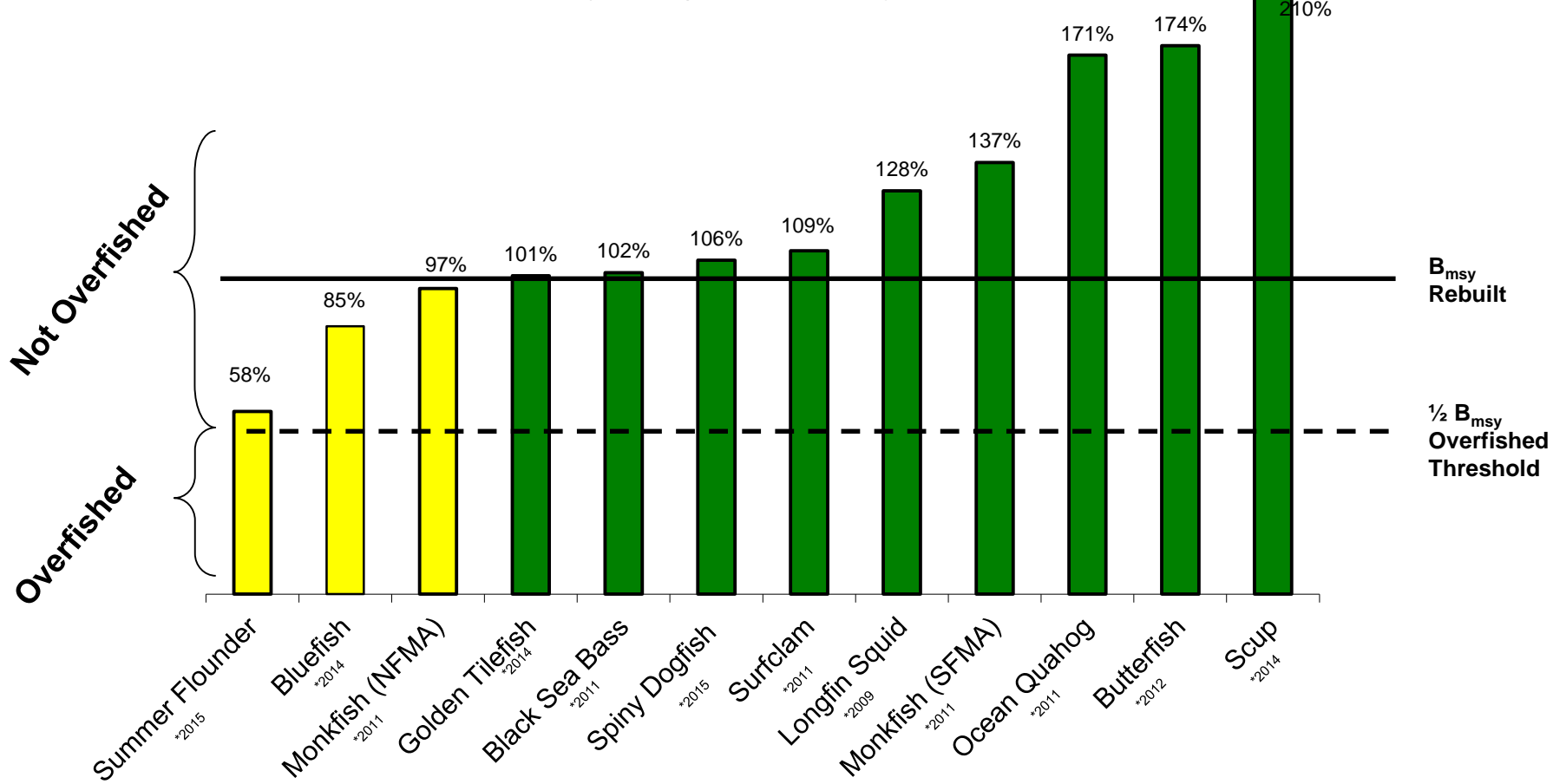
SPECIES		STATUS DETERMINATION CRITERIA		OVERFISHING	OVERFISHED	REBUILDING PROGRAM / STOCK STATUS
		Overfishing $F_{\text{threshold}}$	Overfished $\frac{1}{2} B_{\text{MSY}}$			
Summer Flounder		$F_{35\% \text{MSP}}=0.31$	69 million lbs	Yes	No	Most recent benchmark assessment was 2013. Most recent assessment update was 2016.
Scup		$F_{40\% \text{MSP}}=0.22$	96.23 million lbs	No	No	Most recent benchmark assessment was 2015.
Black Sea Bass		$F_{40\% \text{MSP}}=0.44$	12 million lbs	No	No	Most recent assessment update was 2012. Most recent benchmark assessment was 2011.
Bluefish		$F_{35\% \text{SPR}}=0.19$	111.7 million lbs	No	No	Most recent benchmark assessment was 2015.
<i>Illex</i> Squid (short finned)		Unknown	Unknown	Unknown	Unknown	Most recent benchmark assessment was 2006; not able to determine current exploitation rates or stock biomass.
Longfin Squid		Unknown	46.7 million lbs	Unknown	No	Most recent benchmark assessment was 2010; not able to determine current exploitation rates.
Atlantic Mackerel		Unknown	Unknown	Unknown	Unknown	Most recent benchmark assessment was 2010; not able to determine current exploitation rates or stock biomass.
Butterfish		$F_{\text{Proxy}}=2/3M=0.81$	50.3 million lbs	No	No	Most recent benchmark assessment was 2014.

SPECIES		STATUS DETERMINATION CRITERIA		OVERFISHING	OVERFISHED	REBUILDING PROGRAM / STOCK STATUS
		Overfishing $F_{\text{threshold}}$	Overfished $\frac{1}{2} B_{\text{MSY}}$			
Surfclam		$F=M=0.15$	1,071 million lbs	No	No	Most recent benchmark assessment was 2013.
Ocean Quahog		$F_{45\%MSP}=0.022$	3,064 million lbs	No	No	Most recent assessment update was 2013. Most recent benchmark assessment was 2009.
Golden Tilefish		$F_{25\%MSP}=0.370$	5.68 million lbs	No	No	Most recent benchmark assessment was 2014.
Spiny Dogfish (Joint management with NEFMC)		$F_{\text{MSY}}=0.2439$	175.6 million lbs Female SSB	No	No	Most recent assessment update was 2015. Most recent benchmark assessment was 2010.
Monkfish (Joint management with NEFMC)		NFMA & SFMA $F_{\text{MAX}}=0.2$	NFMA - 1.25 kg/tow SFMA - 0.93 kg/tow (autumn trawl survey)	No (north and south management areas)	No (north and South management areas)	Most recent assessment update was 2013. Most recent benchmark assessment was 2010.

SOURCES: Office of Sustainable Fisheries - Status Report of U.S. Fisheries; SAW/SARC and TRAC Assessment Reports.

Stock Size Relative to Biological Reference Points

(as of September 23, 2016)

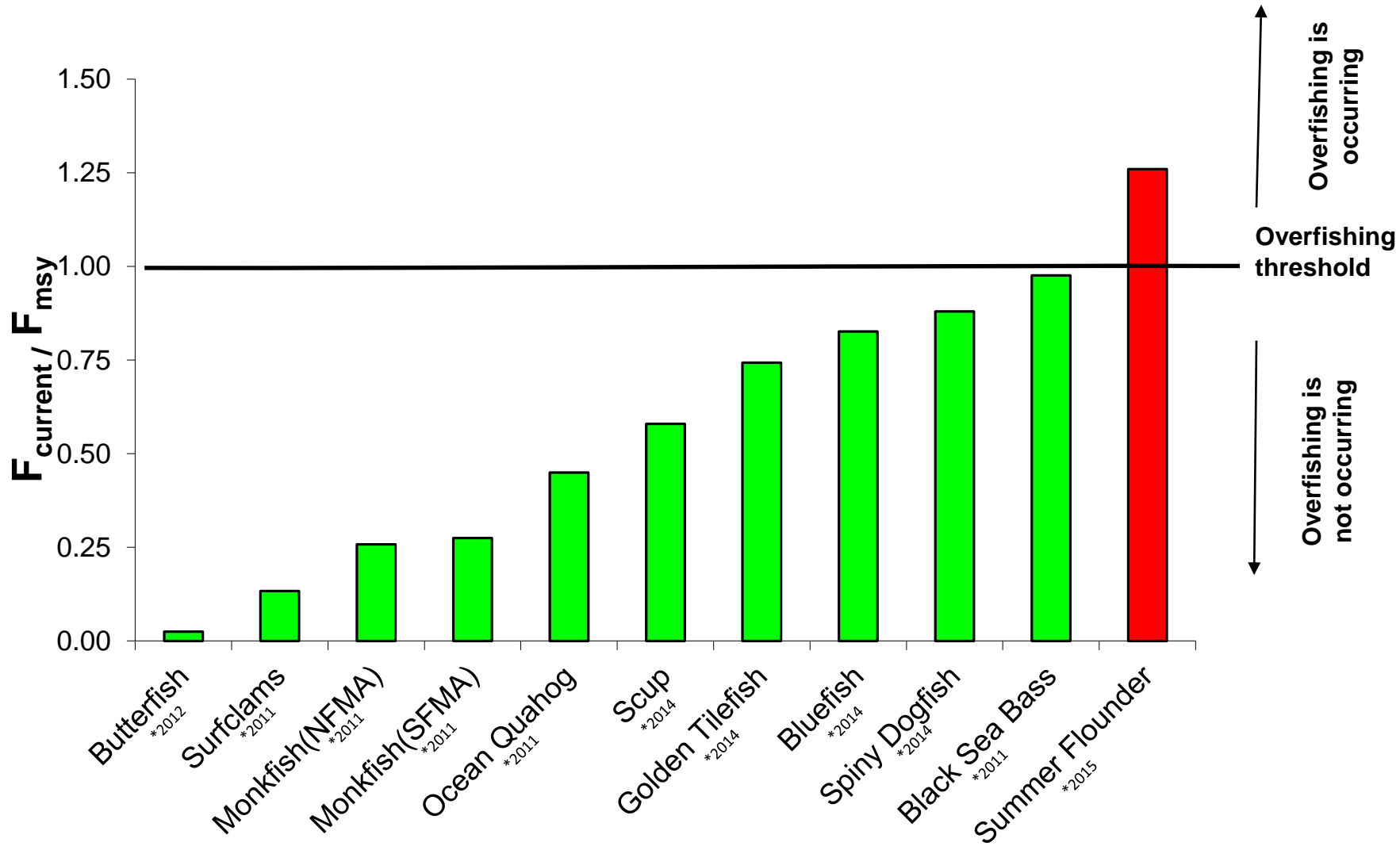


* Year of the data used to determine stock size.

NOTE: Unknown B_{msy} - *Illex* squid, and mackerel.

NOTE: Of the 14 stocks managed by the Council, 9 are above B_{msy} , 3 are under B_{msy} , and 2 are unknown.

Fishing Mortality Ratios for MAFMC Managed Species



* Year of the data used to determine fishing mortality.

NOTE: Unknown - *Illex* squid, Longfin squid, and mackerel.



Mid-Atlantic Fishery Management Council

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Michael P. Luisi, Chairman | G. Warren Elliott, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 22, 2016
To: Council
From: Chris Moore
Subject: 2016/2017 Implementation Plans

The Executive Committee will meet on **Tuesday, October 4th at 10:00 a.m.** to receive an update on the 2016 Implementation Plan and discuss the 2017 Implementation Plan.

The following documents are enclosed:

- 1) Updated 2016 Implementation Plan – the Proposed Deliverables section has been updated to reflect modifications and additional projects/activities that were not included in the original implementation plan
- 2) Proposed Deliverables for the 2017 Implementation Plan

The 2014-2018 Strategic Plan and other related documents are available on the Council's website at www.mafmc.org/strategic-plan.



2016 IMPLEMENTATION PLAN

MID-ATLANTIC FISHERY MANAGEMENT COUNCIL

UPDATED SEPTEMBER 22, 2016
APPROVED DECEMBER 10, 2015

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INTRODUCTION

The Council initiated its Visioning and Strategic Planning Project in 2011 in an effort to address current and future challenges and secure a more stable and sustainable future for Mid-Atlantic fisheries. Between September 2011 and February 2012, the Council collected input for the strategic plan from more than 1,500 stakeholders through surveys, roundtable meetings, and position letters. Their input was summarized in the *Stakeholder Input Report*, released by the Council in June 2012.

In August 2012, the Council established a Visioning and Strategic Planning Working Group composed of Council members, stakeholders, and regional leadership. Through a series of meetings from August-December 2012, the working group crafted a vision, mission, goals, and objectives for the strategic plan. The framework developed by the working group was further refined by Council staff and approved by the Council in August 2013. The final 2014 – 2018 Strategic Plan is available at www.mafmc.org/strategic-plan, along with other related documents and background information.

The Council's strategic plan provides the first comprehensive strategic approach for fisheries management in federal waters off the Mid-Atlantic coast. Over the next five years, the strategic plan will guide the Council's efforts to achieve sustainable and productive fisheries, a healthy marine ecosystem, and stable coastal communities.

Implementation of the strategic plan will be a long-term process supported through the annual development of one-year implementation plans that identify specific tasks necessary for achieving the Council's goals and objectives. Annual implementation plans are designed for use as a planning tool by the Council and staff and as a way to update the public on progress toward achieving the goals and objectives of the strategic plan. Each year's plan is designed to provide a comprehensive and realistic framework for merging the Council's ongoing projects with new initiatives.

STRATEGIC PLAN OVERVIEW

Vision

Healthy and productive marine ecosystems supporting thriving, sustainable marine fisheries that provide the greatest overall benefit to stakeholders.

Mission

The Council manages marine fisheries in federal waters of the Mid-Atlantic region for their long-term sustainability and productivity consistent with the National Standards of the Magnuson-Stevens Fishery Conservation and Management Act. The Council is committed to the effective stewardship of these fisheries and associated habitats by incorporating scientific information and informed public input in transparent processes that produce fishery management plans and programs.

Core Values

- ❖ Stewardship
- ❖ Integrity
- ❖ Effectiveness
- ❖ Fairness
- ❖ Competence
- ❖ Clear Communication

2014 – 2018 GOALS, OBJECTIVES, AND STRATEGIES

Communication

Goal: Engage, Inform, and educate stakeholders to promote public awareness and encourage constructive participation in the Council process.

- Objectives:**
- Develop and implement a strategic communications plan to provide clear and accurate information to a broad range of stakeholders
 - Engage a diverse audience of stakeholders
 - Increase stakeholder trust and facilitate greater stakeholder engagement by making the Council process accessible and transparent
 - Increase awareness and understanding of fishery science and management
 - Increase stakeholder involvement in the development of fishery management actions

Science

Goal: Ensure that the Council's management decisions are based on timely and accurate scientific data that are analyzed and modeled in a manner that improves management performance and builds stakeholder confidence

- Objectives:**
- Promote the collection and analysis of accurate and timely scientific data to support the Council's management plans and programs
 - Improve our understanding of the social and economic dimensions of Mid-Atlantic fishing communities
 - Promote the collection and analysis of data needed to support the Council's transition to an Ecosystem Approach to Fisheries Management
 - Encourage effective stakeholder participation in data collection and analysis
 - Promote efficient and accurate methods of monitoring and reporting

Management

Goal: Develop fishery management strategies that provide for productive, sustainable fisheries.

- Objectives:**
- Evaluate the Council's fishery management plans
 - Incorporate economic and social analysis of management alternatives into the decision-making process
 - Develop management strategies that enable efficient operation of commercial and recreational fishing businesses
 - Develop innovative management strategies for recreational and commercial fisheries
 - Advance ecosystem approaches to fisheries management in the Mid-Atlantic

Governance

Goal: Ensure that the Council's governance structures and practices fairly represent stakeholder interests, are coordinated with the Council's management partners, and include a clear and well-defined decision-making process.

- Objectives:**
- Establish a formal decision-making process for the development and evaluation of management actions
 - Develop and strengthen partnerships to promote greater efficiency and enhance coordination among management partners and other relevant organizations
 - Ensure that stakeholder interests are accurately understood and meaningfully considered in the Council process

PROPOSED 2016 DELIVERABLES

This section provides an overview of deliverables expected by the end of the implementation plan period. Since many of the proposed implementation activities cannot be measured with traditional metrics, the list of deliverables establishes a mechanism for measuring the Council's progress toward achieving the goals and objectives of the strategic plan.

SUMMER FLOUNDER, SCUP AND BLACK SEA BASS

- 2017 specifications (review)
- 2017 recreational management measures
- Advisory Panel fishery performance reports
- Comprehensive summer flounder amendment (ongoing)
- ~~Black sea bass amendment (initiate)~~
- Scup gear restricted area framework
- Summer flounder allocation project
- Black sea bass assessment (contract)

MACKEREL, SQUID, AND BUTTERFISH

- 2017 squid and butterfish specifications (review)
- Squid capacity amendment (ongoing)
- 2017 specifications for Atlantic mackerel (review)
- Advisory Panel fishery performance reports
- Longfin squid mesh increase review
- Butterfish cap review

RIVER HERRING AND SHAD

- RH/S cap for Atlantic mackerel fishery for 2017 (review)
- RH/S progress update
- Stock in fishery issue

BLUEFISH

- 2017 specifications (review)
- Advisory Panel fishery performance report

GOLDEN AND BLUELINE TILEFISH

- 2017 specifications (review)
- Advisory Panel fishery performance report
- 5 year IFQ review (ongoing)
- Framework 2
- Blueline tilefish amendment
- Blueline tilefish genetics study (contract)
- Blueline recreational landings workshop
- Blueline tilefish recreational specifications framework

SURFCLAMS AND OCEAN QUAHOGS

- 2017-2018 specifications (develop and approve)

- Advisory Panel fishery performance reports
- Excessive shares amendment (ongoing)
- ~~ITQ review project (contract)~~

SPINY DOGFISH

- 2017 specifications (review)
- Advisory Panel fishery performance report

MONKFISH (NEFMC LEAD)

- Framework 9 – Monkfish/dogfish gillnets regulatory issue fix
- 2017-2019 Monkfish Specifications

ECOSYSTEM AND OCEAN PLANNING/HABITAT

- Council habitat policy documents
- Habitat objectives for EAFM approaches
- EFH review paper

GENERAL

- EAFM guidance document
- Omnibus observer funding amendment (GARFO lead)
- Unmanaged forage fish action ~~(ongoing)~~
- NJ SMZ request

COMMUNICATION AND OUTREACH

- General Council communications plan
- Council action web pages
- Fact sheets and outreach materials
- Website FAQ page
- Virtual workshop on website utility
- ~~Public comment policy/guidelines~~

SCIENCE AND RESEARCH

- Mid-Atlantic collaborative research program review (ongoing)
- 2016 – 2017 Mid-Atlantic collaborative research projects
- For-hire fisheries eVTR framework
- Framework to modify Council's risk policy
- Omnibus amendment for data modernization (GARFO lead)

POSSIBLE ADDITIONS

- ~~Black sea bass adaptive management project (contract)~~
- ~~Black sea bass allocation project (contract)~~
- ~~Scup quota period framework~~
- ~~Goals and objectives for MSB~~
- ~~Add Deep Sea Coral protection areas to national MPA network~~
- Develop a mechanism to notify the Council of landings of unmanaged species

ACTION DEVELOPMENT CHECKLIST

A significant portion of the strategies included in the Council's strategic plan cannot be "completed" because they relate to tasks that should be considered an intrinsic part of every project or action. This section is the companion to the Proposed Deliverables section—it provides a mechanism for ensuring that the Council is upholding the standards included in its strategic plan. The Action Development Checklist was designed to be used by the Council and Staff as a guide for integrating the Council's strategic goals into the development and evaluation of management alternatives.

COMMUNICATION

- Ensure that communication materials meet the federal plain language guidelines
- Provide conference lines or webinar access to meetings whenever possible
- Ensure that meetings and events are posted on Council website calendar in a timely manner and with relevant information and documents
- Follow Council guidelines for collection and summarization of public comments
- Ensure that background information about the action is included with briefing materials each time the issue is discussed at a Council meeting
- Consider the feasibility and appropriateness of a workshop as part of the action development process
- Ensure that scoping and public hearings are held in locations with high concentrations of interested individuals
- Use targeted communication to inform stakeholders and solicit public input from individuals and groups that are most likely to be interested in or affected by the potential action

SCIENCE

- Fully consider species interactions in the assessment process and in the determination of catch limits
- Effectively communicate stakeholders' concerns or recommendations regarding monitoring/observing to the NEFSC

MANAGEMENT

- Evaluate the cumulative social and economic impacts of proposed and existing management alternatives
- Consider energy efficiency in the development of management measures
- Account for uncertainty in recreational catch estimates
- Support the development of models and analyses that evaluate alternative bag, size, and seasonal limits
- Reduce regulatory discards
- Ensure fair access to recreational fisheries throughout their range
- Incorporate species interactions into fishery management plans and coordinate these considerations across appropriate management plans
- Consider the relationship between essential fish habitat and productivity of marine resources into management decisions
- Minimize adverse ecosystem impacts

GOVERNANCE

- Follow Council guidelines for evaluation of stakeholder input
- Use advisory bodies and stakeholder input to inform the decision-making process and actively monitor changing conditions in the fisheries and ecosystem

SCIENCE AND RESEARCH NEEDS

This section summarizes the specific science and research needs that were identified in the strategic plan. These strategies are handled differently because they require additional planning in coordination with NOAA's Northeast Fisheries Science Center and other research institutions. The Science Center has already played a significant role in the development of the strategic plan, but since the Council has little control over how and when the science-related tasks of the strategic plan will be addressed, the implementation of these strategies requires a unique approach.

DATA NEEDS

- Timeline for completion of acceptable benchmark assessments for all of the Council's managed fisheries
- Oceanographic data related to climate change and ocean acidification
- Regional evaluation of species interactions within the marine ecosystem
- Climate change risk assessment for the Northeast marine ecosystem
- Habitat data—particularly data to link habitat protection with fishery productivity
- Relevant and up-to-date social and economic data about Mid-Atlantic communities
- Real-time commercial fisheries data
- Bioeconomic models

RESEARCH METHODOLOGY, FUNDING, AND PROGRAM ADMINISTRATION

- Electronic VTRs / log books in the commercial and for-hire sectors
- Innovative technologies (e.g., electronic monitoring, smart phones, etc.) to improve the accuracy and/or efficiency of data collection
- Evaluation of potential uses for volunteer angler data in recreational management decisions
- Additional observer program funding options
- Cooperative and collaborative research program expansion

MANAGEMENT STRATEGY INNOVATION

- Management strategies that account for uncertainty in recreational catch estimates
- Management strategies that reduce regulatory discards
- Management strategies that minimize adverse ecosystem impacts
- Management strategies that ensure fair access to recreational fisheries

2016 IMPLEMENTATION ACTIVITIES

This section identifies the specific activities and projects that the Council plans to begin or complete in 2016. The matrix is organized around the four goal areas identified in the strategic plan and includes anticipated timelines for completion of each task. Please note that the matrix below does not include routine or annual activities such as development of advisory panel fishery performance reports or annual specifications.

Implementation Activity	Year				
	14	15	16	17	18
COMMUNICATION & OUTREACH					
1. General council communication and outreach plan		•	•		
2. Website FAQ page			•		
3. Virtual workshop on website utility			•		
4. Public comment policy/guidelines		•	•		
SCIENCE & RESEARCH					
5. Mid-Atlantic collaborative research program review		•	•		
6. 2016-2017 Mid-Atlantic collaborative research projects			•	•	
7. For-hire fisheries eVTR framework			•		
8. Framework to modify Council's risk policy			•		
9. Omnibus amendment for data modernization (GARFO lead)			•	•	
10. Convene Scientific and Statistical Committee Meetings (as needed)	•	•	•	•	•
MANAGEMENT					
Mackerel, Squid, Butterfish and River Herring/Shad					
11. Squid Capacity Amendment		•	•	•	
12. Longfin squid mesh increase review			•		
13. Butterfish cap review		•	•		
Summer Flounder, Scup, Black Sea Bass					
14. Comprehensive summer flounder amendment	•	•	•		
15. Black sea bass amendment			•	•	
16. Scup gear restricted area framework	•	•	•		
17. Summer flounder allocation project		•	•		
18. Black sea bass assessment (contract)		•	•		
River Herring and Shad					
19. Address additional conservation of river herring and shad through an interagency working group	•	•	•	•	
20. Review RH/S Cap for Atl. mackerel fishery for 2017			•		
21. RH/S Progress Update		•	•		
22. Stock in fishery issue			•		

Implementation Activity	Year				
	14	15	16	17	18
Surfclam and Ocean Quahog					
23. Excessive Shares Amendment		•	•	•	
24. 5 Year ITQ Review (contract)			•	•	
Golden and Blueline Tilefish					
25. 5-year IFQ review	•	•	•		
26. Framework 2		•	•		
27. Blueline tilefish amendment		•	•		
28. Blueline tilefish genetics study (contract)		•	•		
29. Blueline recreational landings workshop			•		
Ecosystems and Ocean Planning/Habitat					
30. Council Habitat Policy Documents		•	•		
31. Habitat Objectives for EAFM Document		•	•		
32. EFH Review Paper		•	•		
General					
33. EAFM Guidance Document	•	•	•		
34. Omnibus Observer Funding Amendment (GARFO Lead)	•	•	•		
35. Unmanaged forage action		•	•		
36. New Jersey SMZ Request			•		
GOVERNANCE					
37. Complete advisory panel fishery performance reports for each fishery	•	•	•	•	•
38. Participate on Seafood Marketing Committee		•	•	•	•
39. Participate in Partnership for Mid-Atlantic Fisheries Science	•	•	•	•	•
40. Participate in Atlantic Coastal Cooperative Statistics Program	•	•	•	•	•
41. Marine Recreational Information Program	•	•	•	•	•
42. Mid-Atlantic Regional Association for Coastal Ocean Observing System	•	•	•	•	•
43. Participate on the Chesapeake Bay Goal Implementation Team	•	•	•	•	•
44. Participate in Coastal and Marine Spatial Planning activities through coordination with Bureau of Ocean Energy Management (BOEM) and the Mid-Atlantic Regional Planning Body	•	•	•	•	•
45. Participate in Protected Resources Take Reduction meetings	•	•	•	•	•
46. Continue to coordinate with the NEFSC, particularly in relation to the goals, objectives, and strategies of the NEFSC strategic plan	•	•	•	•	•

PROPOSED 2017 DELIVERABLES

This section provides an overview of deliverables expected by the end of the implementation plan period. Since many of the proposed implementation activities cannot be measured with traditional metrics, the list of deliverables establishes a mechanism for measuring the Council's progress toward achieving the goals and objectives of the strategic plan.

SUMMER FLOUNDER, SCUP AND BLACK SEA BASS

- 2017 black sea bass specifications (review based on benchmark assessment results)
- 2018 specifications for summer flounder, scup, and black sea bass (review)
- 2018 recreational management measures for summer flounder, scup, and black sea bass
- Advisory Panel fishery performance reports
- Comprehensive summer flounder amendment (ongoing)
- Black sea bass amendment (initiate)
- Scup framework to modify quota periods

MACKEREL, SQUID, AND BUTTERFISH

- 2018-2020 specifications for squids and butterfish (develop and approve)
- Squid capacity amendment (ongoing)
- 2018 specifications for Atlantic mackerel (review)
- Advisory Panel fishery performance reports
- Butterfish cap review
- Goals and objectives for MSB

RIVER HERRING AND SHAD

- RH/S cap for Atlantic mackerel fishery for 2018 (review)
- RH/S progress update

BLUEFISH

- 2018 bluefish specifications (review)
- Advisory Panel fishery performance report
- Bluefish allocation amendment (initiate)

GOLDEN AND BLUELINE TILEFISH

- 2018-2020 golden and blueline tilefish specifications (develop and approve)
- Advisory Panel fishery performance reports
- 5 year IFQ review

SURFCLAMS AND OCEAN QUAHOGS

- 2018-2020 surfclam and ocean quahog specifications (develop and approve)
- Advisory Panel fishery performance reports
- Excessive shares amendment (ongoing)
- ITQ review project (contract)
- Review and revise FMP goals and objectives

SPINY DOGFISH

- 2018 spiny dogfish specifications (review)
- Advisory Panel fishery performance report

ECOSYSTEM AND OCEAN PLANNING/HABITAT

- EFH review paper (ongoing)
- Add Deep Sea Coral protection areas to national MPA network

GENERAL

- EAFM guidance document (refine risk assessment approach for 2018)

COMMUNICATION AND OUTREACH

- Implementation of Council Communication and Outreach Plan
- Council action web pages
- Fact sheets and outreach materials

SCIENCE AND RESEARCH

- Mid-Atlantic collaborative research program review
- 2016 – 2017 Mid-Atlantic collaborative research projects (ongoing)
- Framework to modify Council's risk policy
- Omnibus amendment for data modernization (GARFO lead)
- 2017 tilefish survey project

POSSIBLE ADDITIONS

- Black sea bass adaptive management project (contract)
- Black sea bass allocation project (contract)
- River and shad stock in fishery issue
- Chub mackerel amendment
- False albacore action



Mid-Atlantic Fishery Management Council
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Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 26, 2016
To: Council
From: Jason Didden *JDD*
Subject: RH/S Agenda Items

In this tab please find the following:

-August 15, 2016 RH/S Committee Meeting Summary

-Updated RH/S Decision Document

-September 20, 2016 Letter from Earth Justice (other correspondence received after the briefing book correspondence deadline will be forwarded to the Council and posted to <http://www.mafmc.org/briefing/october-2016>)



Mid-Atlantic Fishery Management Council

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Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 10, 2016
To: River Herring/Shad (RH/S) Committee/Council, Council
From: Jason Didden *JDD*
Subject: August 15, 2016 Committee Meeting Summary

The RH/S Committee met on August 15, 2016 to review the updated RH/S White Paper and a draft RH/S Decision Document. J. Didden summarized the documents and then the Committee discussed a variety of edits they would like to see made to the decision document before the October Council meeting. Those requested edits are summarized below in the form of a punch-list:

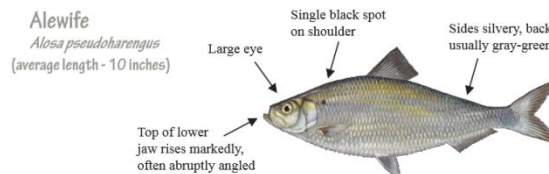
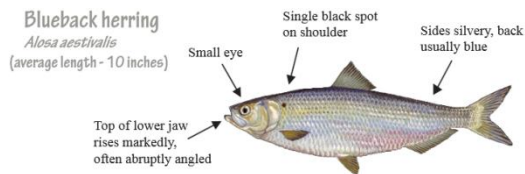
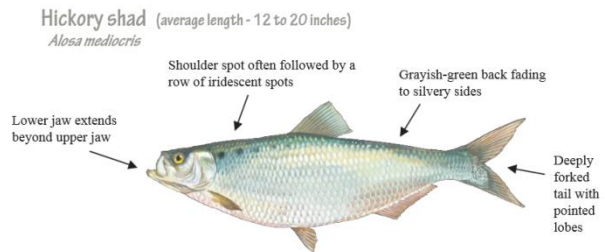
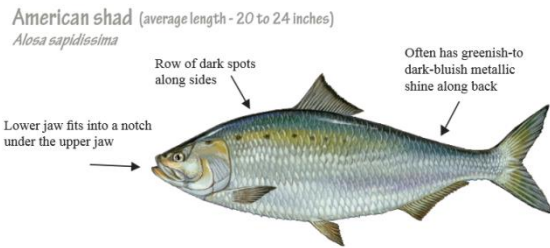
- Check EFH discussion consistency (established or not under stock in fishery). Include discussion of EFH in Federal waters. Note indirect benefits from sturgeon (also shortnose) EFH for RH/S under EFH discussion.
- Add discussion of effects on RH/S catch if mackerel fishery improves or if there are more RH/S to be caught.
- Add context for genetic analysis in terms of scope of coverage across fisheries. Add more discussion about ongoing genetic work as it relates to identifying where bycaught fish come from in terms of their natal stream areas. Add discussion of what the genetic analyses mean in terms of catch of Mid-Atlantic fish and potential impacts from fisheries beyond the control of the Council and how ABCs/ACLs could allow for additional control on catch of RH/S that originate from Mid-Atlantic areas by fisheries outside of the control of the Council.
- Add discussion of problems/concerns with operation of current caps (especially uncertainty in estimates). Highlight possible impacts regarding observer coverage changes from Council management (SBRM limitations & Industry-Funded Monitoring Amendment).
- Add context for dam removals and review source for shad problems re: passage. Note trends in RH/S abundance relative to dam removals and other possible sources of decline. Qualify benefits of dam removals relative to other obstructions and other sources of mortality. Highlight efforts/resources spent on habitat improvement in state waters.

- Add information about range of RH/S interactions in other fisheries – request updated gear-based catch estimates as was done for Amendment 14 (i.e. by species). Add text about trends in catch. Try to get updated catch & run information from ASMFC.
- Add discussion of how RH/S were traditionally caught (separate or mixed with current fisheries), and note possible importance of recent catches given depleted status of RH/S despite smaller scale relative to historic fisheries.
- Add more detail and discussion of jurisdictional issues, especially as related to New England Fishery Management Council and interactions among existing caps under status quo and if there was an ABC.
- Add discussion of what fish might be used for if a directed fishery was able to be re-established, re: socioeconomic benefits. Add more discussion of what an optimal situation for RH/S would look like both socio-economically and ecologically. What would success look like and mean for wider range of interested parties.
- Do additional coordination with GARFO to ensure that the decision document meets the conditions of the relevant court orders (including indirect impacts).
- Provide clarification about what age ranges are represented by the NMFS and NEAMAP surveys.
- Check with observer program about size composition of fish caught in the RH/S caps.
- Check what is occurring currently with biological sampling in states.
- Carryover genetic & climate work more from the White Paper to the discussion document.
- Clarify state of existing knowledge regarding where current catch comes from in terms of in-river catches versus ocean (state vs. Federal) catch.
- Add details on what a NMFS-led assessment entails versus an ASMFC-led assessment.

**RIVER HERRING AND SHAD - POTENTIAL MANAGEMENT BY THE
MID-ATLANTIC FISHERY MANAGEMENT COUNCIL**

October 2016 Decision Document

Mid-Atlantic Fishery Management Council



Fish illustrations: Duane Raver/U.S. Fish and Wildlife Service, Source:
http://www.ncwildlife.org/Portals/0/Fishing/documents/Herring_Shad_ID_guide_sm.pdf



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1.3 COMMON ACRONYMS AND ABBREVIATIONS

ABC	– Acceptable Biological Catch
ACL	– Annual Catch Limit
ACFCMA	– Atlantic Coastal Fisheries Cooperative Management Act
AM	– Accountability Measure
ASMFC	– Atlantic States Marine Fisheries Commission
Commission	– Atlantic States Marine Fisheries Commission
Corps	– U.S. Army Corps of Engineers
Council	– Mid-Atlantic Fishery Management Council
EA	– Environmental Assessment
EFH	– Essential Fish Habitat
FERC	– Federal Energy and Regulatory Commission
FMP	– Fishery Management Plan
Lb.	– pounds
Kg	– kilograms
MAFMC	– Mid-Atlantic Fishery Management Council
MT	– Metric Ton (~2204.6 pounds)
Nm	– Nautical Mile
NEFMC	– New England Fishery Management Council
NMFS	– National Marine Fisheries Service (also known as NOAA Fisheries)
NOAA	– National Oceanic and Atmospheric Administration
TEWG	– Technical Expert Working Group
U.S.	– United States
U.S.C.	– United States Code

1.4 WORDING CONVENTIONS

In this document, "catch" refers to all fish caught in a fishery (whether targeted or not and whether retained or discarded). Targeted fish are those intended to be caught. Non-target species are those caught but not targeted. Bycatch usually refers to discards but is a term often used in fishery management to refer to several different things and so it is not used in this document except where unavoidable (for example a statute, report title, program name, etc.). Instead, fish caught and then discarded at sea are called "discards." Landings are fish caught and retained. Fish that are not targeted but are landed are called "incidentally landed catch."

In this document, "river herrings" include blueback herring and alewife. "Shads" include American shad and hickory shad. "RH/S" refers to river herring and/or shads.

The Magnuson-Stevens Fishery Conservation and Management Act is the primary law governing marine fisheries management in United States federal waters. The Act was first enacted in 1976 and amended in 1996 and in 2006. In this document, "MSA" refers to the Magnuson-Stevens Fishery Conservation and Management Act as currently amended.

The term "mortality cap" refers to a management system whereby directed fishing for one species may be stopped or limited when catch of some other species reaches a pre-set limit. Similar terms include bycatch caps or discard caps, but these would only apply to discarded fish, while a mortality cap would track all catch (retained or discarded).

"Mackerel" refers to Atlantic mackerel unless otherwise noted.

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2.0 EXECUTIVE SUMMARY

This document is designed to help the Mid-Atlantic Fishery Management Council (Council) decide whether to initiate a fishery management plan (FMP), or an amendment to an FMP, that could add, either immediately or in a longer time frame, four species *as Council-managed species*: two river herrings (blueback herring and/or alewife) and/or two shads (American shad and/or hickory shad) – these are collectively referred to as river herring/shad, or RH/S. Whether an amendment is used to add species to an existing plan, or if a new plan is created, the same requirements would apply, so the terminology used in this document is simply adding RH/S “*as Council-managed species*.” The key issue is whether RH/S require conservation and management by the Council under The Magnuson-Stevens Fishery Conservation and Management Act as currently amended (MSA).

A White Paper and a Draft Decision Document were presented to the Council’s RH/S Committee in August 2016, and the Committee and the public provided a variety of suggestions on improvements to those documents. The Draft Decision Document was formed from a portion of the White Paper, and some of the edits that were suggested apply to the material not included in the Draft Decision Document but included in the White Paper. Therefore, this Final Decision Document for the October Council meeting utilizes the expanded structure of the White Paper to provide the updated information in one stand-alone “Decision Document.” This document addresses the orders of Judge Kessler’s, to “include an analysis of the regulatory course Plaintiffs advocate,” i.e. immediately adding River Herring and Shad to the fishery and managing it by use of proxies. The decision before the Council in October is whether or not to begin an action that could immediately add RH/S as Council-managed stocks.

This document describes the relevant MSA provisions, information on RH/S, and the likely impacts of Council management on RH/S to facilitate a Council decision on whether to proceed with an action that could add RH/S as Council-managed species. As planned, the Council intends to make this decision at its October 2016 Council meeting - three years after it made a decision not to add RH/S as Council-managed species. Since then, the Council has been participating in an interdisciplinary Technical Expert Working Group (TEWG). The TEWG has provided and compiled information used by NOAA Fisheries and the Atlantic States Marine Fisheries Commission (ASMFC) in the development and execution of a proactive conservation plan focused on river herring but with logical extensions to shad. ASMFC has maintained its lead RH/S management role. This document also responds to the orders of U.S. District Judge Gladys Kessler requiring the completion of an updated white paper to ensure that a “hard look” is taken as to whether to add RH/S as Council-managed species or not.

3.0 INTRODUCTION

RH/S are managed by the ASMFC (<http://www.asafc.org/species/shad-river-herring>), but in the late 2000s concerns were brought to the Council that high volume fisheries such as mackerel may have incidental RH/S catches that are substantial enough to negatively impact RH/S populations. RH/S populations are generally at historically low levels (ASMFC 2007, ASMFC 2012). These concerns led to increased consideration of possible impacts from the mackerel fishery (also longfin squid fishery) on RH/S populations¹ by the Council, and eventually implementation of several related actions, including Amendment 14 to the Atlantic Mackerel, Squid, and Butterfish (MSB) FMP

(<https://www.greateratlantic.fisheries.noaa.gov/mediacenter/2013/11/partialapprovalam14msb.html>), Framework Adjustment 9 (MSB FW 9)

(<https://www.greateratlantic.fisheries.noaa.gov/nr/2015/August/15smbfw9ph1.pdf>), and components of several specification packages. Currently the Council is also considering ways to increase observer coverage for the mackerel fishery through the Industry-Funded Monitoring (IFM) Amendment (Council action expected in early 2017 -

<http://www.mafmc.org/actions/omnibus-observer-funding> - see 5.4.4). The IFM Amendment is being developed jointly with New England as they are considering similar provisions for the Atlantic herring fishery. Public hearing have been scheduled for the IFM Amendment – see <http://www.mafmc.org/newsfeed/2016/noaa-fisheries-announces-public-hearing-and-comment-period-for-industry-funded-monitoring-amendment>.

Through MSB Amendment 14 and MSB FW 9 (further described below), the Council has placed a limit on the incidental catch of RH/S in the mackerel fishery (currently 82 metric tons or 180,779 pounds), and taken a number of steps to improve the *quality* of observer data. The IFM Amendment seeks to build on those actions by increasing the *quantity* of observer data in the mackerel fishery.

Amendment 14 - Effective Dates: March 26, 2014 (September 1, 2014 for VMS provisions)

- Instituted weekly vessel trip reports (VTR) for all MSB permits to facilitate quota monitoring and cross-checking with other data sources;
- Required 48-hour pre-trip notification to retain more than 20,000 lb of mackerel for sufficient notice to assign observers to fishing vessels;
- Required VMS and daily catch reporting via VMS for limited access mackerel vessels to facilitate monitoring and cross-checking with other data sources;
- Required VMS and daily catch reporting via VMS for longfin squid/butterfish moratorium vessels to facilitate monitoring and cross-checking with other data sources;
- Required 6-hour pre-landing notification via VMS to land over 20,000 lb mackerel for sufficient notice to facilitate at-sea monitoring, enforcement, and portside monitoring.
- Expanded vessel requirements related to at-sea observer sampling to help ensure safe sampling and improve data quality;

¹ E.g.

https://ff4cf846da5decac479230d72f1f69132643cd28.googleusercontent.com/host/0B7aKVuJOPoZVdEJQZ1pweHVnX1k/2009/4-%20August%202009/Tab%2005_Squid,%20Mackerel,%20Butterfish%20Committee.pdf

- Prohibited slippage (when catch is released before observers can determine catch composition) on limited access mackerel and longfin squid trips, with exceptions for safety concerns, mechanical failure, and spiny dogfish preventing catch from being pumped aboard the vessel, and require a released catch affidavit (statement by the vessel operator) to be completed for each slippage event;
- Evaluated the existing river herring bycatch avoidance program to investigate providing real-time, cost-effective information on river herring distribution and fishery encounters;
- Implemented a mortality cap for river herring and shad in the mackerel fishery; and
- Established a mechanism within the fishery management plan whereby RH/S caps for other MSB fisheries can be developed through future framework actions.

NMFS disapproved several measures due to legal or other concerns. These measures were: (1) A recommended increase in observer coverage, financed by a proposed industry /NOAA Fisheries cost-sharing program; (2) an industry-wide cap on the number of times catch may be released before it is hauled on deck and sampled by an observer; and (3) a requirement for mackerel and longfin squid dealers to document how they estimated species composition of the weights of the fish they report.

Stocks in the Fishery

At one point in the development of Amendment 14 the Council considered none, one, or any combination of the RH/S species as “stocks” in the fishery. Based on guidance from NMFS and NOAA General Counsel, the Council chose to instead consider developing a separate amendment for the “stocks” in the fishery question.

After extensive discussion at its October 2013 meeting, the Council determined that additional management of river herring and shad under a Council FMP was neither required nor appropriate at that time. Instead, the Council adopted a motion to establish a working group composed of regional, state, and Federal management partners that will work to comprehensively address river herring and shad mortality and stock status throughout their ranges. The motion as approved follows:

"Move that the Council adopt a proactive coordinated approach to help the stocks of river herring and shads to recover. Specifically I propose the Council take the lead in forming a joint Council/ASMFC/State/Regional Office/Center working group to cooperatively seek to improve current management by aligning current ASMFC, individual state, and at-sea cap management measures to comprehensively address fishing mortality throughout the species range in state and federal waters, to use the Councils' SSC and other relevant scientific bodies to develop a scientific-based approach to determining the proper size of the catch cap in the mackerel and herring fisheries, and to monitor the success of current management actions by the Council and our partners, including that the Council relook at the decision to make river herring and shads stocks in the fishery in three years after we have had a chance to determine if these current efforts are working and if by assessing the proposed interim work to develop scientifically-determined caps sizes we can better justify the decision to go ahead."

As documented in a December 2013 letter to NMFS, the Council's decision was based on a range of considerations related to ongoing river herring and shad conservation and management efforts (and their outcomes), including:

- There are many ongoing river herring and shad conservation efforts at various levels, which are already coordinated by the Atlantic States Marine Fisheries Commission (Commission) and NOAA Fisheries;
- The Commission and states have recently increased their control of state landings;
- The then pending incidental catch caps for river herring and shad in the Atlantic mackerel and Atlantic herring fisheries will control incidental fishing mortality of river herring and shad in Federal waters - the Council is not aware of fisheries that directly target river herring and/or shad in federal waters;
- The results of the above recent and/or pending actions are unknown;
- NOAA Fisheries recently found that river herrings are not endangered or threatened and that coastwide abundances of river herrings appear stable or increasing;
- Additional research into stock definition and abundance is needed to establish biological reference points, which are used to set acceptable biological catches, annual catch limits, and accountability measures for Council-managed species; and
- NOAA Fisheries has recently committed to expanded engagement in river herring conservation.

Since then the Council and its RH/S Committee have collaborated with the River Herring Technical Expert Working Group (TEWG - <http://www.greateratlantic.fisheries.noaa.gov/protected/riverherring/tewg/>) to address a variety of related issues. TEWG outcomes are further described later in the document. The Council also committed in 2013 to conducting a formal evaluation of the effectiveness of the approved working group approach in three years (which will be October 2016) to determine if a different approach is required and/or appropriate. Orders from U.S. District Judge Gladys Kessler reinforced the Council's planned evaluation and provided additional guidance for what that evaluation should consider, so that the Council's decisions, and NOAA Fisheries' review of those decisions are appropriate given NMFS' responsibility for ensuring that the requirements of the MSA, NEPA, and any other applicable laws are met. This document facilitates the Council's (and NOAA Fisheries') evaluation of the RH/S management issue.

MSB Framework Adjustment 9 (MSB FW 9) – Slippage – Effective Date: September 11, 2015

To further minimize the occurrence of slippage events (when catch is released before observers can determine catch composition), MSB FW 9:

- Required for all limited access (Tier 1, 2, and 3) Atlantic mackerel vessels carrying an observer that a vessel operator must move and remain at least 15 nautical miles from where a slippage event occurs if slippage was due to safety, mechanical failure, or excess catch of spiny dogfish AND a vessel operator must immediately terminate the fishing trip and return to port if the slippage event occurs for any other reason.
- Required vessel operators to report a slippage event when it occurs on observed trips via the vessel monitoring system (with the Atlantic mackerel and longfin squid daily catch report).

4.0 MAGNUSON-STEVENSON ACT (MSA) REQUIREMENTS

4.1 DEFINITION & NEED FOR CONSERVATION AND MANAGEMENT

The MSA provides for management of fish by the Council. It states that “[e]ach Council shall...for each fishery under its authority that requires conservation and management, prepare and submit to the Secretary (A) a fishery management plan” [16 U.S.C. § 1852(h)(1)].

The MSA provides a definition of conservation and management in its definition section:

- (5) The term "conservation and management" refers to 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 of these resources.

The MSA also includes a set of findings, purposes, and policies which help provide perspective on Congress’s intent (staff has excerpted the most relevant).

“Findings”

(1) The fish off the coasts of the United States...and the anadromous species which spawn in United States rivers or estuaries, constitute valuable and renewable natural resources. These fishery resources contribute to the food supply, economy, and health of the Nation and provide recreational opportunities.

(2) Certain stocks of fish have declined to the point where their survival is threatened, and other stocks of fish have been so substantially reduced in number that they could become similarly threatened as a consequence of (A) increased fishing pressure, (B) the inadequacy of fishery resource conservation and management practices and controls, or (C) direct and indirect habitat losses which have resulted in a diminished capacity to support existing fishing levels.

(3) Commercial and recreational fishing constitutes a major source of employment and contributes significantly to the economy of the Nation. Many coastal areas are dependent upon fishing and related activities, and their economies have been badly damaged by the overfishing of fishery resources at an ever-increasing rate...

(5) Fishery resources are finite but renewable. If placed under sound management before overfishing has caused irreversible effects, the fisheries can be conserved and maintained so as to provide optimum yields on a continuing basis.

(6) A national program for the conservation and management of the fishery resources of the United States is necessary 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.

(8) The collection of reliable data is essential to the effective conservation, management, and scientific understanding of the fishery resources of the United States.

(9) One of the greatest long-term threats to the viability of commercial and recreational fisheries is the continuing loss of marine, estuarine, and other aquatic habitats. Habitat considerations should receive increased attention for the conservation and management of fishery resources of the United States.

“Purposes”

(1) to take immediate action to conserve and manage the fishery resources found off the coasts of the United States, and the anadromous species and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone ...

(4) to provide for the preparation and implementation, in accordance with national standards, of fishery management plans which will achieve and maintain, on a continuing basis, the optimum yield from each fishery;

(5) to establish Regional Fishery Management Councils to exercise sound judgment in the stewardship of fishery resources through the preparation, monitoring, and revision of such plans under circumstances (A) which will enable the States, the fishing industry, consumer and environmental organizations, and other interested persons to participate in, and advise on, the establishment and administration of such plans, and (B) which take into account the social and economic needs of the States;

(7) to promote the protection of essential fish habitat in the review of projects conducted under Federal permits, licenses, or other authorities that affect or have the potential to affect such habitat.

“Policies”

(3) to assure that the national fishery conservation and management program utilizes, and is based upon, the best scientific information available; involves, and is responsive to the needs of, interested and affected States and citizens; considers efficiency; draws upon Federal, State, and academic capabilities in carrying out research, administration, management, and enforcement; considers the effects of fishing on immature fish and encourages development of practical

measures that minimize bycatch and avoid unnecessary waste of fish; and is workable and effective;

(6) to foster and maintain the diversity of fisheries in the United States

4.2 NATIONAL STANDARDS (NS)

U.S. marine fisheries are managed under the MSA with a number of requirements, including ten National Standards. The National Standards are principles that must be followed in any fishery management plan (FMP) to ensure sustainable and responsible fishery management. As mandated by the MSA, NOAA Fisheries has developed guidelines for each National Standard. When reviewing FMPs, FMP amendments, and regulations, the Secretary of Commerce must ensure that they are consistent with the National Standard guidelines. The ten National Standards are summarized below, and then additional details are provided on several that are most relevant to the decision of whether to manage a stock.

National Standard 1 – Optimum Yield

Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

Current guidelines:

http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/national_standard_1_cfr.pdf

National Standard 2 – Scientific Information

Conservation and management measures shall be based upon the best scientific information available.

Current guidelines:

http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/national_standard_2_cfr.pdf

National Standard 3 – Management Units

To 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.

Current guidelines:

http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/national_standard_3_cfr.pdf

National Standard 4 – Allocations

Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (a) fair and equitable to all such fishermen; (b) reasonably calculated to promote conservation; and (c) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privilege.

Current guidelines:

http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/national_standard_4_cfr.pdf

National Standard 5 – Efficiency

Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

Current guidelines:

http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/national_standard_5_cfr.pdf

National Standard 6 – Variations and Contingencies

Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

Current guidelines:

http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/national_standard_6_cfr.pdf

National Standard 7 – Costs and Benefits

Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

Current guidelines:

http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/national_standard_7_cfr.pdf

National Standard 8 – Communities

Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirement of paragraph (2) [i.e., National Standard 2], in order to (a) provide for the sustained participation of such communities, and (b) to the extent practicable, minimize adverse economic impacts on such communities.

Current guidelines:

http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/national_standard_8_cfr.pdf

National Standard 9 – Bycatch

Conservation 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.

Current guidelines:

http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/national_standard_9_cfr.pdf

National Standard 10 – Safety of Life at Sea

Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

Current guidelines:

http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/national_standard_10_cfr.pdf

4.2.1 National Standard 7 details & applicability

National Standard 7 states that "[c]onservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication." 16 U.S.C. §1851(a)(7). Guidelines for National Standard 7 begin by stating that "[t]he principle that not every fishery needs regulation is implicit in this standard." National Standard 7 guidelines advise that "The Magnuson- Stevens Act requires Councils to prepare FMPs only for overfished fisheries and for other fisheries where regulation would serve some useful purpose and where the present or future benefits of regulation would justify the costs." The guidelines recommend that the following criteria be considered when deciding whether a fishery needs management through an FMP:

- (1) The importance of the fishery to the Nation and to the regional economy.

(2) The condition of the stock or stocks of fish and whether an FMP can improve or maintain that condition.

(3) 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 international commissions, or by industry self-regulation, consistent with the policies and standards of the Magnuson-Stevens Act.

(4) The need to resolve competing interests and conflicts among user groups and whether an FMP can further that resolution.

(5) The economic condition of a fishery and whether an FMP can produce more efficient utilization.

(6) The needs of a developing fishery, and whether an FMP can foster orderly growth.

(7) The costs associated with an FMP, balanced against the benefits (see paragraph (d) of this section as a guide).

(d) Analysis. The supporting analyses for FMPs should demonstrate that the benefits of fishery regulation are real and substantial relative to the added research, administrative, and enforcement costs, as well as costs to the industry of compliance. In determining the benefits and costs of management measures, each management strategy considered and its impacts on different user groups in the fishery should be evaluated. This requirement need not produce an elaborate, formalistic cost/benefit analysis. Rather, an evaluation of effects and costs, especially of differences among workable alternatives, including the status quo, is adequate. If quantitative estimates are not possible, qualitative estimates will suffice.

There is some debate about whether National Standard 7 should apply to the question of whether to manage a fishery, or whether National Standard 7 should really only apply when considering what measures to use for a fishery that has been determined is in need of conservation and management. NMFS has proposed revisions (Jan 20, 2015) to the National Standard 1 guidelines that may help “to address the important issue of identifying stocks that require conservation and management” (http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/ns1_revisions.html), which are further described below.

4.2.2 Proposed NS1 guideline revision details relative to stock in fishery decision

The proposed new National Standard 1 guidelines that relate to the decision whether Council management would be necessary are provided below. While they are draft (in the form of a proposed rule - http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/ns1_proposed_rule.pdf), it appears likely that there will be new guidance regarding whether Federal management

is necessary and appropriate, so considering the proposed revisions appears appropriate, especially since the National Standard guideline are guidelines.

(c) Stocks that require conservation and management.

(1) Magnuson-Stevens Act section 302(h)(1) requires a Council to prepare an FMP for each fishery under its authority that requires (or in other words, is in need of) conservation and management. Not every fishery requires Federal management. Any stocks that are predominately caught in Federal waters and are overfished or subject to overfishing, or likely to become overfished or subject to overfishing, are considered to require conservation and management. In addition, the following non-exhaustive list of factors should be used by a Council when deciding whether stocks require conservation and management:

- (i) The stock is an important component of the marine environment.
- (ii) The stock is caught by the fishery.
- (iii) Whether an FMP can improve or maintain the condition of the stocks.

- (iv) The stock is a target of a fishery.
- (v) The stock is important to commercial, recreational, or subsistence users.
- (vi) The fishery is important to the Nation and to the regional economy.
- (vii) The need to resolve competing interests and conflicts among user groups and whether an FMP can further that resolution.
- (viii) The economic condition of a fishery and whether an FMP can produce more efficient utilization.
- (ix) The needs of a developing fishery, and whether an FMP can foster orderly growth.

- (x) The extent to which the fishery could be or is already adequately managed by states, by state/Federal programs, by Federal regulations pursuant to other FMPs or international commissions, or by industry self-regulation, consistent with the policies and standards of the Magnuson-Stevens Act.

(2) When considering adding a new stock to an FMP or keeping an existing stock within an FMP, Councils should prepare a thorough analysis of the factors, and any additional considerations that may be relevant to the particular stock. No single factor is dispositive, but Councils should consider weighting the factors as follows. Factors (c)(1)(i)-(iii) of this section should be considered first, as they address maintaining a fishery resource and the marine environment.

These factors weigh in favor of including a stock in an FMP. Councils should next consider factors (c)(1)(iv)-(ix) of this section, which set forth key economic, social, and other reasons contained within the MSA for an FMP action.

Regardless of whether any of the first nine factors indicates a conservation and management need, a Council should consider factor (c)(1)(x) of this section before deciding to include or maintain a stock in an FMP. In many circumstances, adequate management of a fishery by states, state/Federal programs, or another Federal FMP would weigh heavily against a Federal FMP action.

In evaluating the above criteria, a Council should consider the specific circumstances of a fishery, based on the best scientific information available; to determine whether there are biological, economic, social and/or operational concerns that can be addressed by Federal management.

(3) Councils may choose to identify stocks within their FMPs as ecosystem component (EC) species (see 50 CFR 600.310(d)(1)) if they do not require conservation and management. EC species may be identified at the species or stock level, and may be grouped into complexes.

Consistent with National Standard 9, MSA section 303(b)(12), and other applicable MSA sections, management measures can be adopted in order to, for example, collect data on the EC species, minimize bycatch or bycatch mortality of EC species, protect the associated role of EC species in the ecosystem, or for other reasons.

(4) A stock or stock complex may be identified in more than one FMP. In this situation, the relevant Councils should choose which FMP will be the primary FMP in which reference points for the stock or stock complex are established. In other FMPs, the stock or stock complex may be identified as “other managed stocks” and management measures that are consistent with the objectives of the primary FMP can be established.

(5) Councils should periodically review their FMPs and the best scientific information available and determine if the stocks are appropriately identified. As appropriate, stocks should be reclassified within a FMP, added to or removed from an existing FMP, or added to a new FMP, through a FMP amendment that documents the rationale for the decision.

In the proposed rule for these guidelines

(http://www.fisheries.noaa.gov/sfa/laws_policies/national_standards/documents/ns1_proposed_rule.pdf), NMFS notes that “the MSA and current NS guidelines indirectly touch upon” whether a fishery requires or is in need of conservation and management. The revised guidelines appear to encourage the same type of evaluation that was in the National Standard 7 guidelines (and some of the same language is proposed to be transferred), but make it more explicit that these considerations would take place when considering whether to manage in the first place by placing this guidance first, in the general section. By noting that FMPs shall be submitted for any fishery “that requires conservation and management,” there logically must be situations where Council-management through a federal FMP is not required, and both the current National Standard 7 guidelines and the proposed revisions both recommend the Council to evaluate how relevant Council management would be so that a good-faith effort is conducted to determine the answer to whether a fishery *requires* conservation and management under a Federal FMP by a Council.

4.3 REQUIRED & DISCRETIONARY CONTENTS OF FISHERY MANAGEMENT PLANS (FMPS)

The required and discretionary provisions for fishery management plans are the tools that Councils use to manage any particular fishery. Reviewing the provisions is thus useful for considering the question of whether to manage RH/S as Council-managed species, because these are the measures the Council could use as part of management.

Required Provisions

Section 303a of the MSA contains 15 required provisions for FMPs, which are listed and discussed below.

(1) contain the conservation and management measures, applicable to foreign fishing and fishing by vessels of the United States, which are-- (A) 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; (B) described in this subsection or subsection (b), or both; and (C) consistent with the National Standards, the other provisions of this Act, regulations implementing recommendations by international organizations in which the United States participates (including but not limited to closed areas, quotas, and size limits), and any other applicable law

(2) contain a description of the fishery, including, but not limited to, the number of vessels involved, the type and quantity of fishing gear used, the species of fish involved and their location, the cost likely to be incurred in management, actual and potential revenues from the fishery, any recreational interest in the fishery, and the nature and extent of foreign fishing and Indian treaty fishing rights, if any

(3) assess and specify the present and probable future condition of, and the maximum sustainable yield and optimum yield from, the fishery, and include a summary of the information utilized in making such specification

(4) assess and specify-- (A) the capacity and the extent to which fishing vessels of the United States, on an annual basis, will harvest the optimum yield specified under paragraph (3); (B) the portion of such optimum yield which, on an annual basis, will not be harvested by fishing vessels of the United States and can be made available for foreign fishing; and (C) the capacity and extent to which United States fish processors, on an annual basis, will process that portion of such optimum yield that will be harvested by fishing vessels of the United States

(5) specify the pertinent data which shall be submitted to the Secretary with respect to commercial, recreational, and charter fishing in the fishery, including, but not limited to, information regarding the type and quantity of fishing gear used, catch by species in numbers of fish or weight thereof, areas in which fishing was engaged in, time of fishing, number of hauls, and the estimated processing capacity of, and the actual processing capacity utilized by, United States fish processors

(6) consider and provide for temporary adjustments, after consultation with the Coast Guard and persons utilizing the fishery, regarding access to the fishery for vessels otherwise prevented from

harvesting because of weather or other ocean conditions affecting the safe conduct of the fishery; except that the adjustment shall not adversely affect conservation efforts in other fisheries or discriminate among participants in the affected fishery

(7) describe and identify essential fish habitat for the fishery based on the guidelines established by the Secretary under section 305(b)(1)(A), minimize to the extent practicable adverse effects on such habitat caused by fishing, and identify other actions to encourage the conservation and enhancement of such habitat

(8) in the case of a fishery management plan that, after January 1, 1991, is submitted to the Secretary for review under section 304(a) (including any plan for which an amendment is submitted to the Secretary for such review) or is prepared by the Secretary, assess and specify the nature and extent of scientific data which is needed for effective implementation of the plan

(9) include a fishery impact statement for the plan or amendment (in the case of a plan or amendment thereto submitted to or prepared by the Secretary after October 1, 1990) which shall assess, specify, and describe the likely effects, if any, of the conservation and management measures on-- (A) participants in the fisheries and fishing communities affected by the plan or amendment; and (B) participants in the fisheries conducted in adjacent areas under the authority of another Council, after consultation with such Council and representatives of those participants;

(10) specify objective and measurable criteria for identifying when the fishery to which the plan applies is overfished (with an analysis of how the criteria were determined and the relationship of the criteria to the reproductive potential of stocks of fish in that fishery) and, in the case of a fishery which the Council or the Secretary has determined is approaching an overfished condition or is overfished, contain conservation and management measures to prevent overfishing or end overfishing and rebuild the fishery

(11) establish a standardized reporting methodology to assess the amount and type of bycatch occurring in the fishery, and include conservation and management measures that, to the extent practicable and in the following priority-- (A) minimize bycatch; and (B) minimize the mortality of bycatch which cannot be avoided

(12) assess the type and amount of fish caught and released alive during recreational fishing under catch and release fishery management programs and the mortality of such fish, and include conservation and management measures that, to the extent practicable, minimize mortality and ensure the extended survival of such fish

(13) include a description of the commercial, recreational, and charter fishing sectors which participate in the fishery and, to the extent practicable, quantify trends in landings of the managed fishery resource by the commercial, recreational, and charter fishing sectors

(14) to the extent that rebuilding plans or other conservation and management measures which reduce the overall harvest in a fishery are necessary, allocate any harvest restrictions or recovery benefits fairly and equitably among the commercial, recreational, and charter fishing sectors in the fishery.

(15) establish a mechanism for specifying annual catch limits in the plan (including a multiyear plan), implementing regulations, or annual specifications, at a level such that overfishing does not occur in the fishery, including measures to ensure accountability.

Section 303b of the MSA contains discretionary provisions allowed for FMPs, which are listed and discussed below.

(1) Permitting of vessels, operators, and dealers;

(2) Zones where, and periods when, fishing shall be limited, or shall not be permitted, or shall be permitted only by specified types of fishing vessels or with specified types and quantities of fishing gear;

(3) Specified limitations on catch/sale/transshipment, which are necessary and appropriate for the conservation and management of the fishery;

(4) Regulations that prohibit, limit, condition, or require the use of specified types and quantities of fishing gear, fishing vessels, or equipment for such vessels, including devices which may be required to facilitate enforcement of the provisions of the MSA;

(5) Incorporating (consistent with the national standards, the other provisions of the MSA, and any other applicable law) the relevant fishery conservation and management measures of the coastal States nearest to the fishery and accounting for the different circumstances affecting fisheries from different States and ports;

(6) Establishment of a limited access system

-Other sections allow limited access privilege programs (generally referred to as individual fishing quotas (IFQs) or individual transferrable quotas (ITQs));

(7) Requiring fish processors who first receive fish that are subject to the plan to submit data;

(8) Requiring that one or more observers be carried on board a vessel;

(9) Assess and specify the effect which the conservation and management measures of the plan will have on the stocks of naturally spawning anadromous fish in the region;

(10) Measures that provide harvest incentives for participants within each gear group to employ fishing practices that result in lower levels of bycatch or in lower levels of the mortality of bycatch;

(11) Research set-asides;

(12) Management measures in the plan to conserve target and non-target species and habitats, considering the variety of ecological factors affecting fishery populations;

(13) (blank)

(14) such other measures, requirements, or conditions and restrictions as are determined to be necessary and appropriate for the conservation and management of the fishery.

5.0 RH/S BACKGROUND

5.1 DESCRIPTION OF RH/S BIOLOGY/LIFE HISTORY/ABUNDANCE (CURRENT AND HISTORICAL)

Life History

RH/S are anadromous fish that spend the majority of their adult lives at sea, only returning to freshwater in the spring to spawn. Historically, shad and river herring spawned in virtually every river and tributary along the coast.

River herring is a collective term for alewife and blueback herring. Alewife spawn in rivers, lakes, and tributaries from northeastern Newfoundland to South Carolina, but are most abundant in the Mid-Atlantic and the Northeast. Blueback herring prefer to spawn in swift flowing rivers and tributaries from Nova Scotia to northern Florida, but are most numerous in waters from Chesapeake Bay south. Mature alewife (ages three to eight) and blueback herring (ages three to six) migrate rapidly downstream after spawning. Juveniles remain in tidal freshwater nursery areas in spring and early summer, but may also move upstream with the encroachment of saline water. As water temperatures decline in the fall, juveniles move downstream to more saline waters. Little information is available on the life history of juvenile and adult river herring after they emigrate to the sea and before they mature and return to freshwater to spawn.

Shad young leave their home river within the first year and will spend the next few years at sea, schooling in large numbers with shad from other regions and feeding on plankton and other small fish or crustaceans. Upon reaching maturity – at about age four – they will return to the streams they were born in to spawn. Males or "buck shad" return first, followed by females or "roe shad." They spawn usually at night or during overcast days. In the southern range, females release as many as 700,000 eggs during the spawning season, but both males and females normally die after spawning. In the northern range, females typically release 300,000 eggs or less during the spawning season; however, most shad will return again to spawn in the following years, with some shad living up to ten years (<http://www.asmfc.org/species/shad-river-herring>).

5.1.1 Review of indices and available run information

Indices

NMFS Northeast Trawl Survey and the NorthEast Area Monitoring and Assessment Program (NEAMAP)

The NMFS Northeast Trawl Survey and the NorthEast Area Monitoring and Assessment Program (NEAMAP) survey provide the best synoptic information on alewife, blueback herring, and American Shad abundances. Hickory shad are caught in very few numbers. Updated NMFS (through Spring 2016) NEFSC trawl data are provided in **Appendix 1**. Spring 2016 NMFS data should be interpreted cautiously given the issues with the timing of that

survey in 2016 (it was substantially delayed). The alewife and blueback herring indices are generally high in recent years compared to the long term medians. For American shad, conversion coefficients are not available to account for the Albatross to Bigelow vessel switch, so the time series are split (up to 2008 and 2009 and after). It is thus not possible to compare the long term findings with recent years. NEAMAP (through 2016) trawl survey indices for river herrings and American shad are provided below.

Spring NEAMAP-caught RH/S tend to be juveniles, with a high proportion of fork lengths in most years in the 8-12 cm range for blueback herring, and the 12-16 cm range for Alewife and American Shad (figures available online at http://www.vims.edu/research/departments/fisheries/programs/multispecies_fisheries_research/abundance_indices/NEAMAP/index.php). Fish caught in the NEFSC surveys tend to represent a wider range of sizes (see figure below).

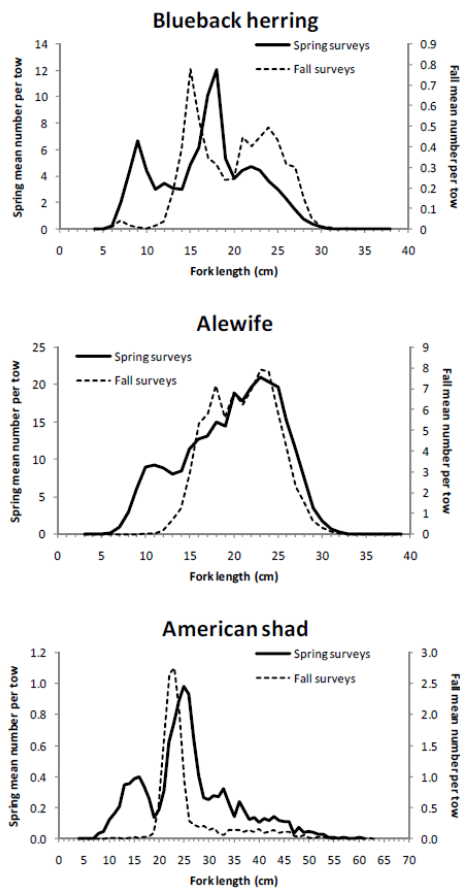


Figure 1. Length compositions (stratified mean numbers per tow) of blueback herring, alewife, and American shad caught during NEFSC spring and fall bottom trawl surveys, 1976-2008.

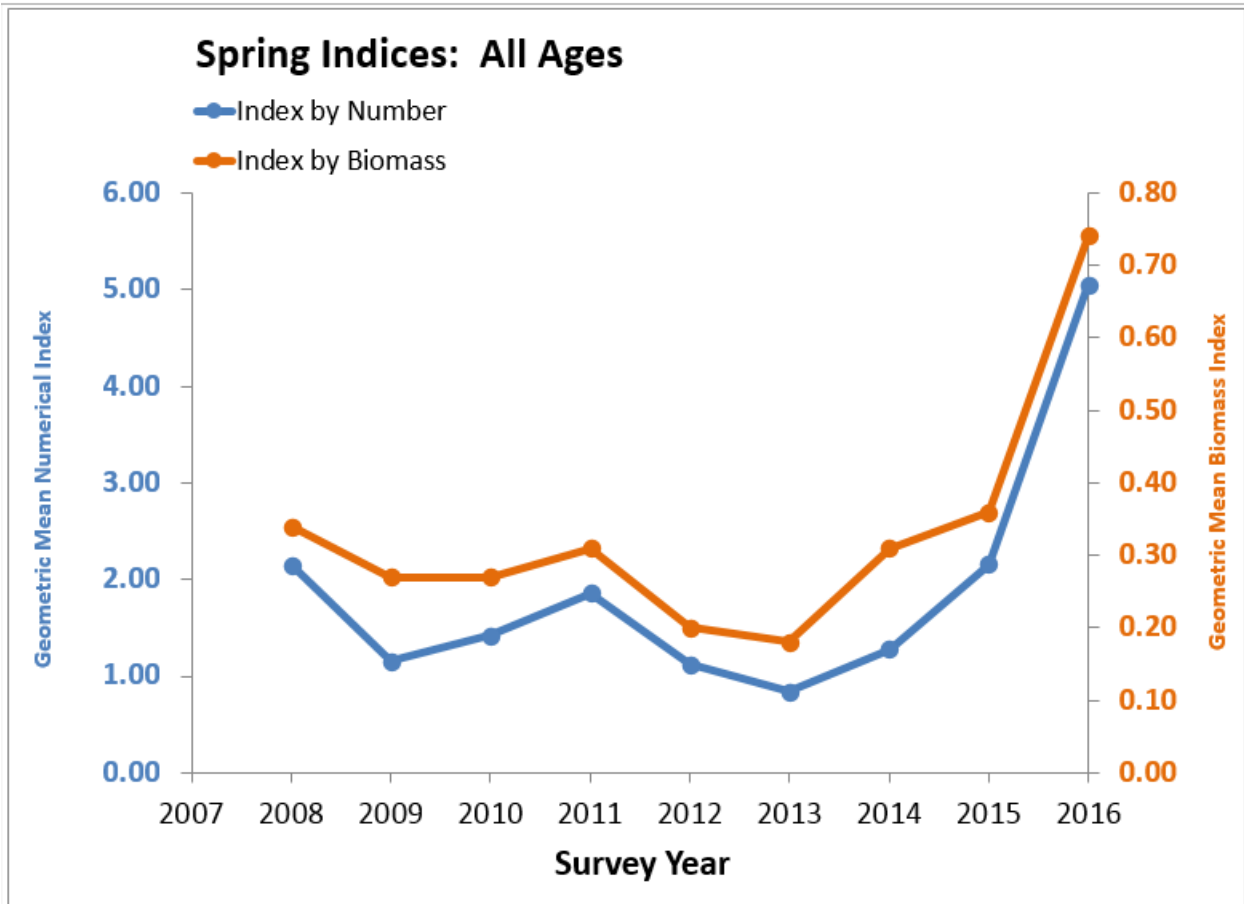


Figure 2. NEAMAP Alewife SPRING Indices

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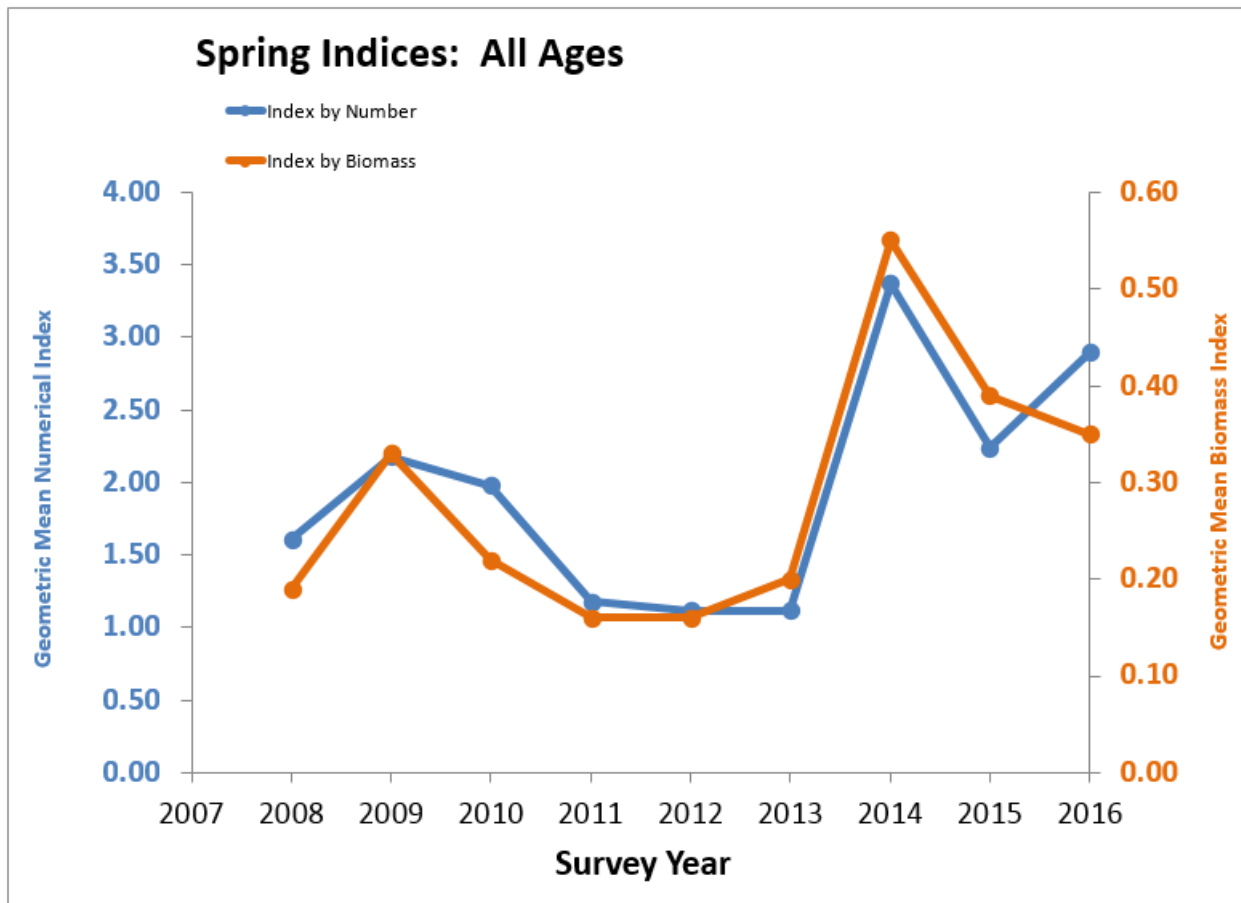


Figure 3. NEAMAP Blueback SPRING Indices

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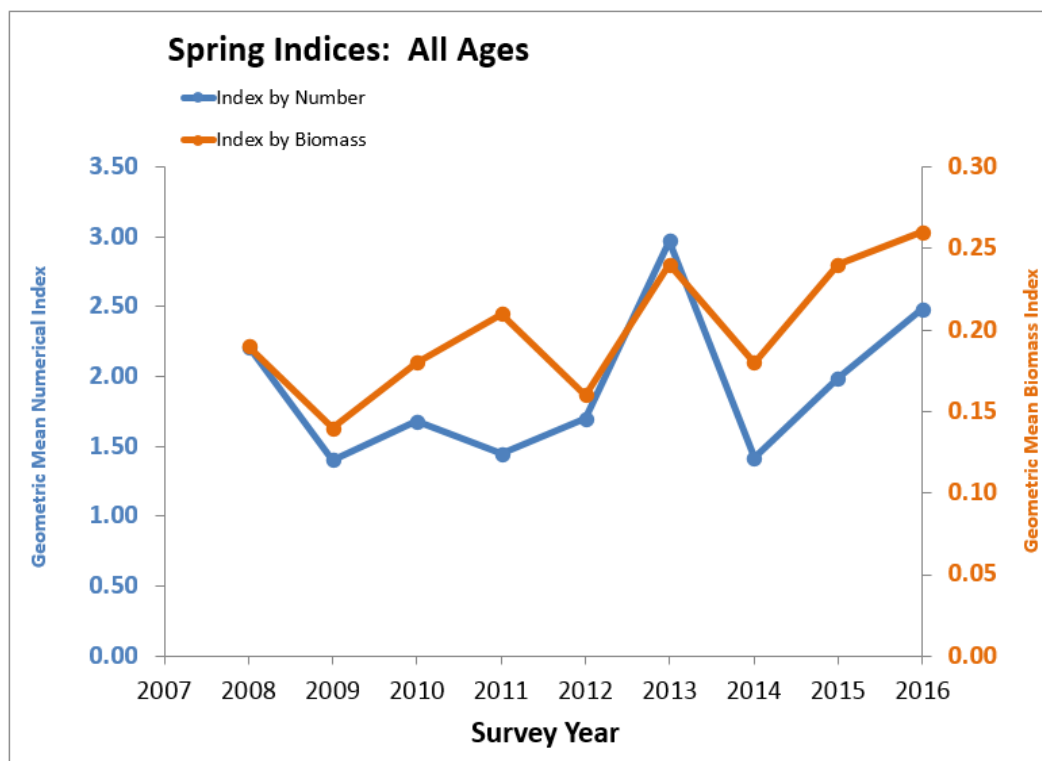


Figure 4. NEAMAP American Shad SPRING Indices

Staff also asked state staff to provide survey data for several Mid-Atlantic states that have relevant surveys. While smaller in scale than the NMFS and NEAMAP surveys, several of the state surveys are provided below for North Carolina through Connecticut. Staff did not include all of the state data that was provided, but focused on surveys that appeared most representative of overall abundances in state waters in the Mid-Atlantic. For further information of the kinds of data collected by states for RH/S, see the ASMFC *Report on the River Herring Data Collection Standardization Workshop* (March 2016) at http://www.asmfc.org/uploads/file/56fc3c6dRH_DataCollectionStandardizationWorkshopSummary_March2016.pdf. See also the state RH/S Sustainable Fishery Management Plans at <http://www.asmfc.org/species/shad-river-herring>.

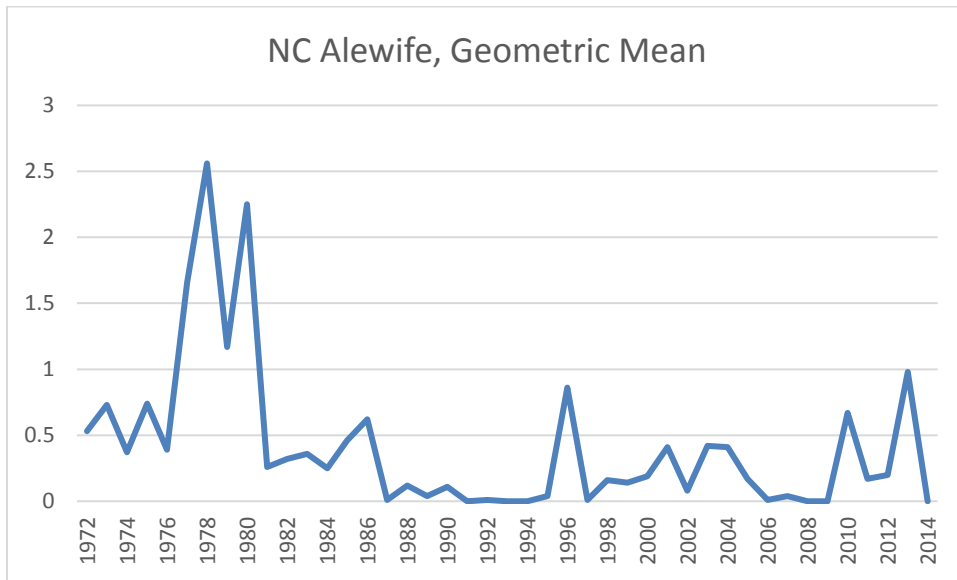


Figure 5. Alewife juvenile abundance index, from the 11 core stations, Albemarle Sound area, NC, 1972-2014.

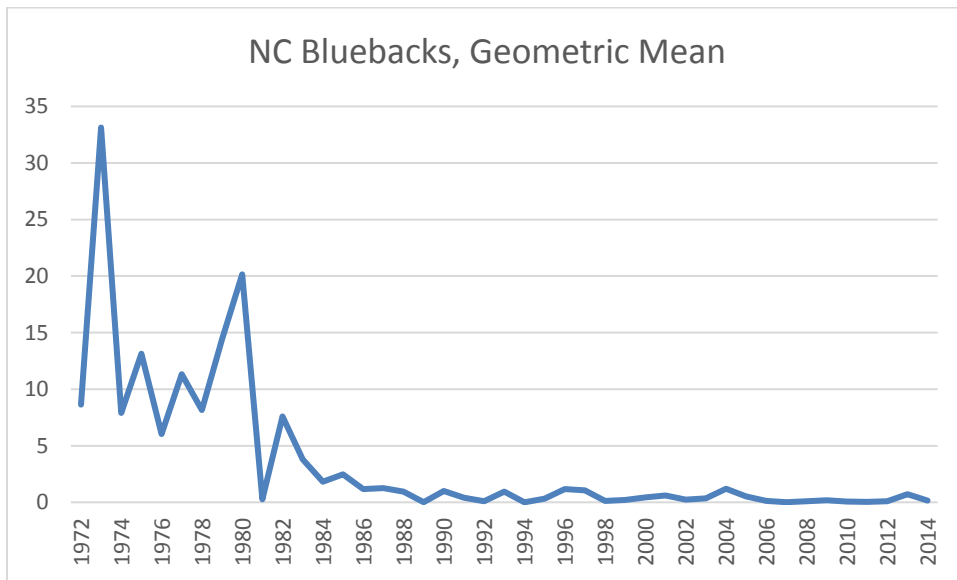


Figure 6. Blueback herring juvenile abundance index, from the 11 core stations, Albemarle Albemarle Sound area, NC, 1972-2014.

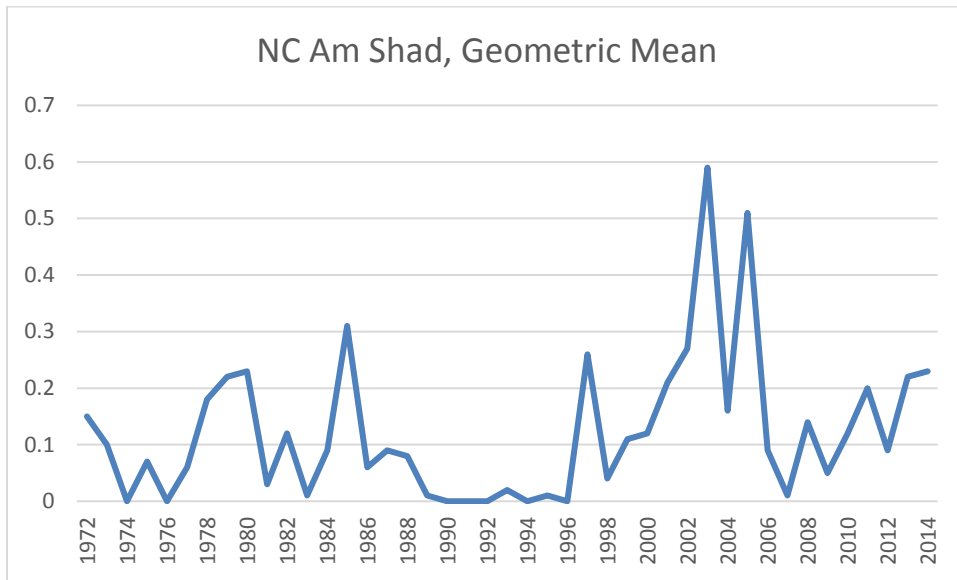


Figure 7. American shad juvenile abundance index, from the 11 core stations, Albemarle Sound area, NC, 1972-2014.

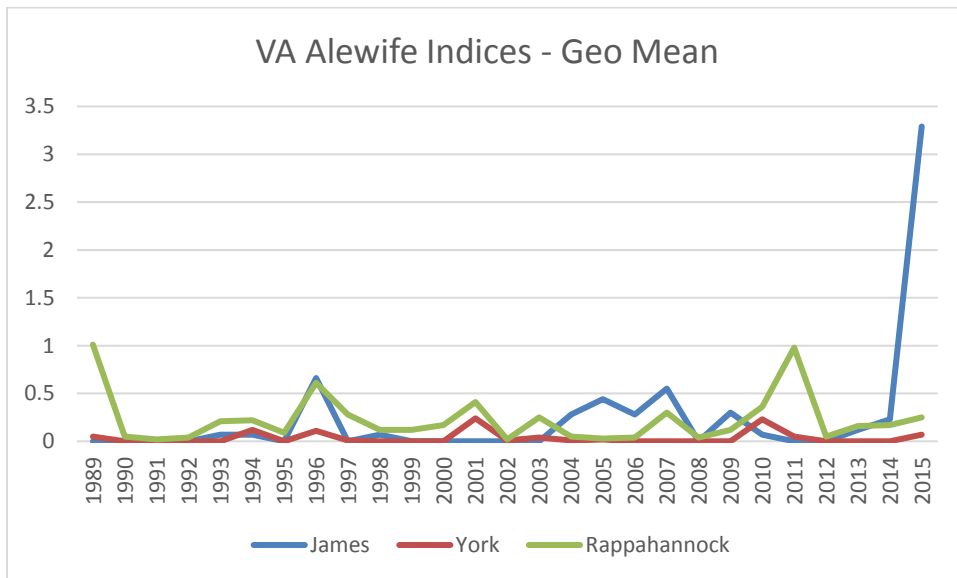


Figure 8. Geometric mean abundance of juvenile Alewife collected in beach seine surveys (1989-2015) on the James, York, and Rappahannock rivers.

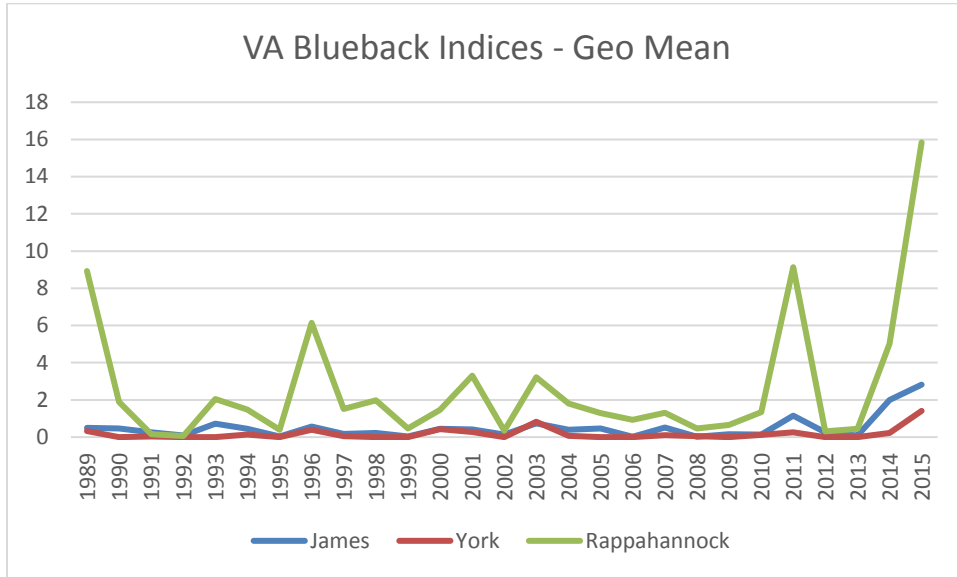


Figure 9. Geometric mean abundance of juvenile Blueback collected in beach seine surveys (1989-2015) on the James, York, and Rappahannock rivers.

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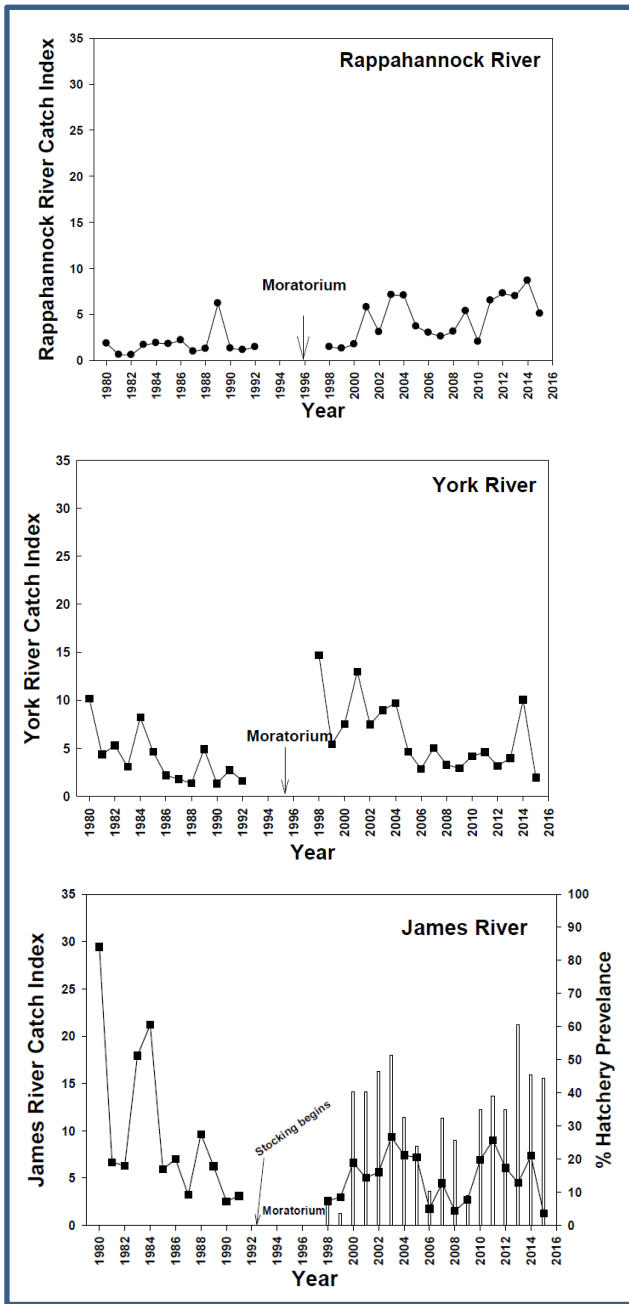


Figure 10. Catch indices of female American shad, Rappahannock, York and James Rivers

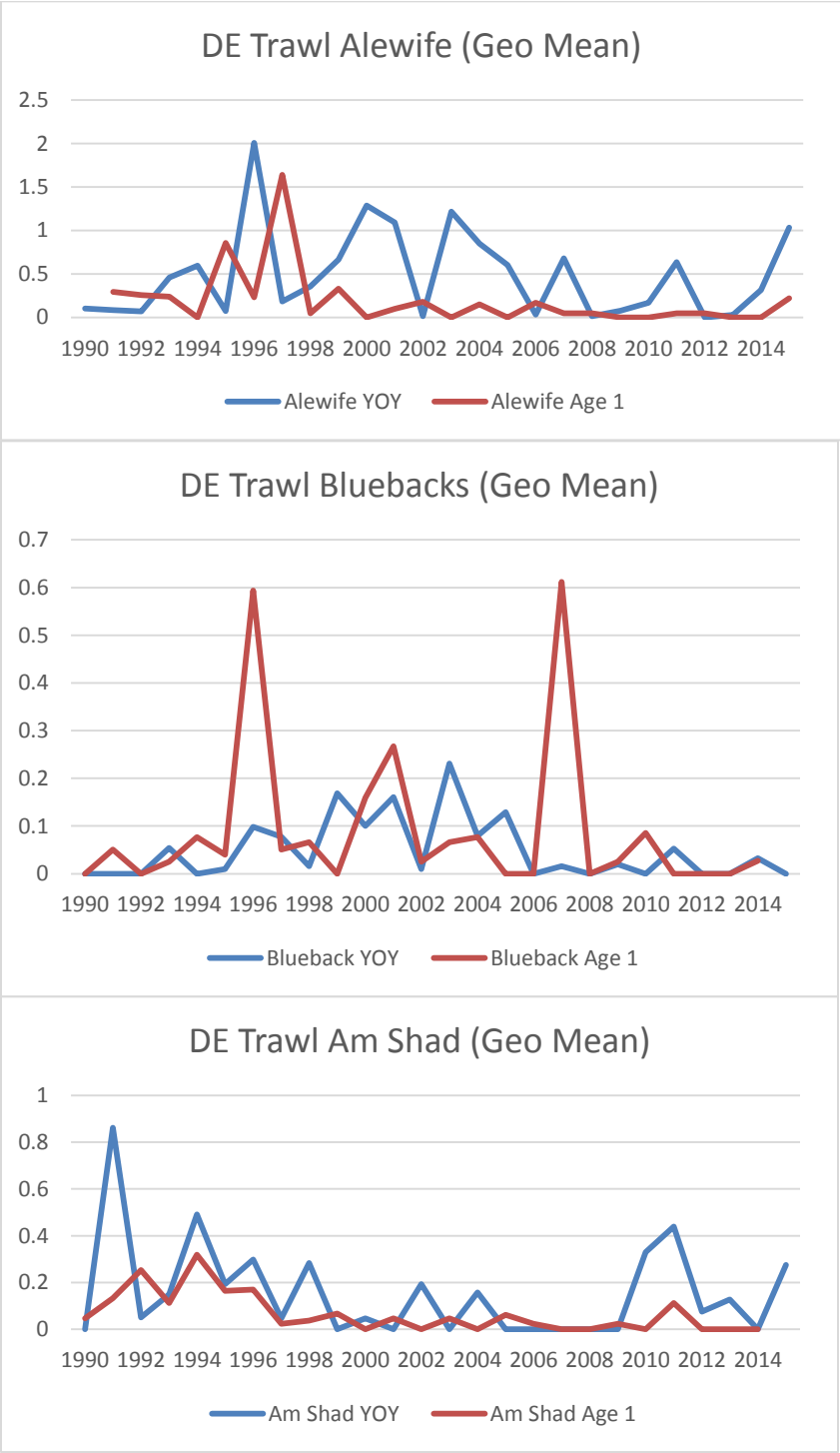


Figure 11. Delaware Juvenile Trawl Survey Indices, Alewife, Blueback, Shad

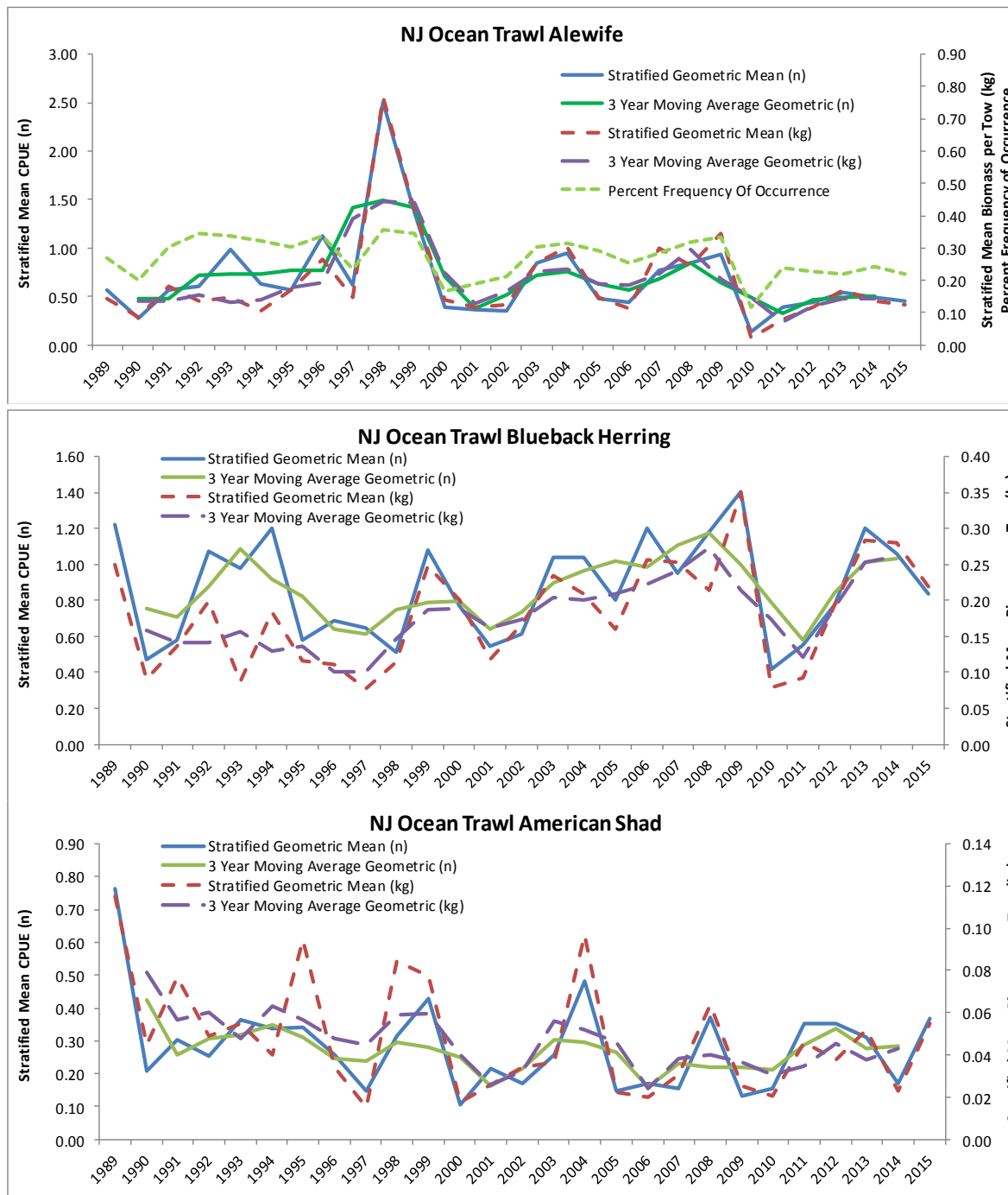


Figure 12. New Jersey – Ocean Trawl Indices Alewife, Blueback, Shad

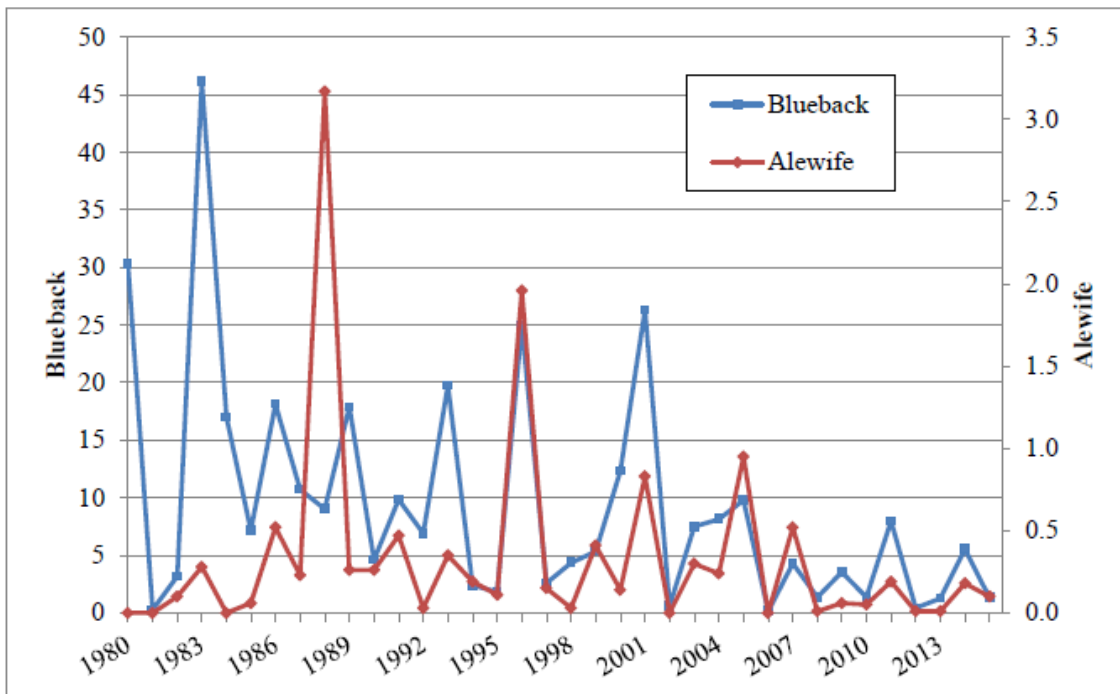


Figure 13. DE River juv. Alewife and Blueback herring indices from NJ beach seine, geometric means

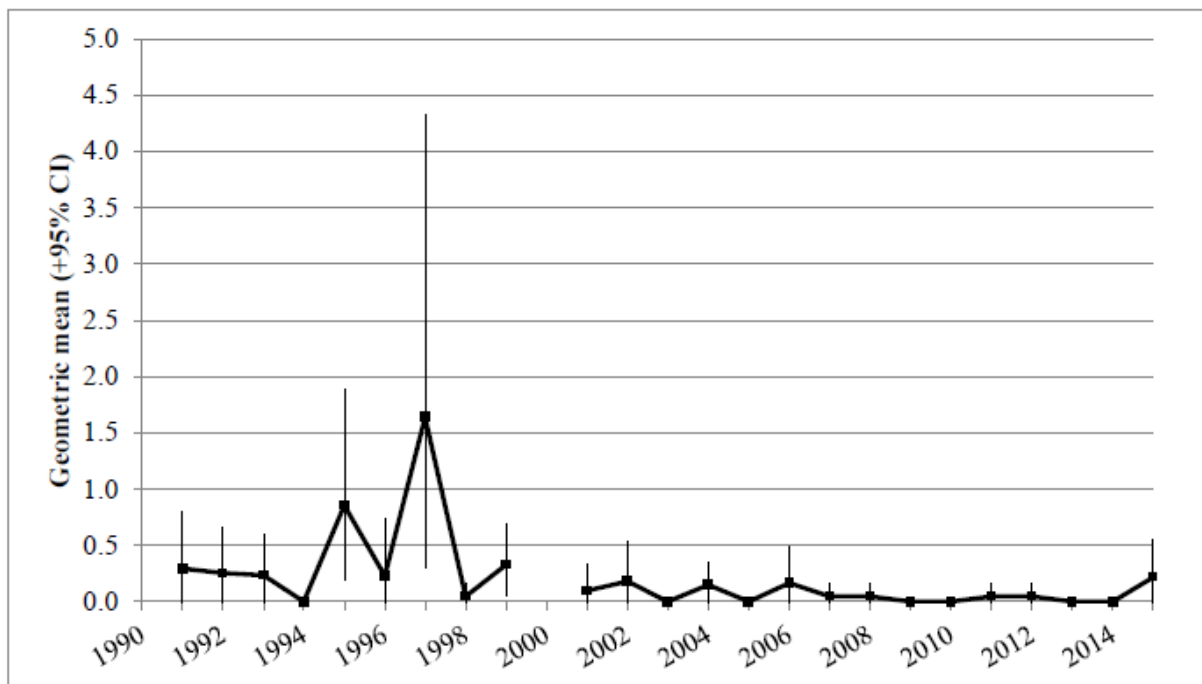


Figure 14. Annual Age 1 Alewife geometric mean DE River and Upper Bay

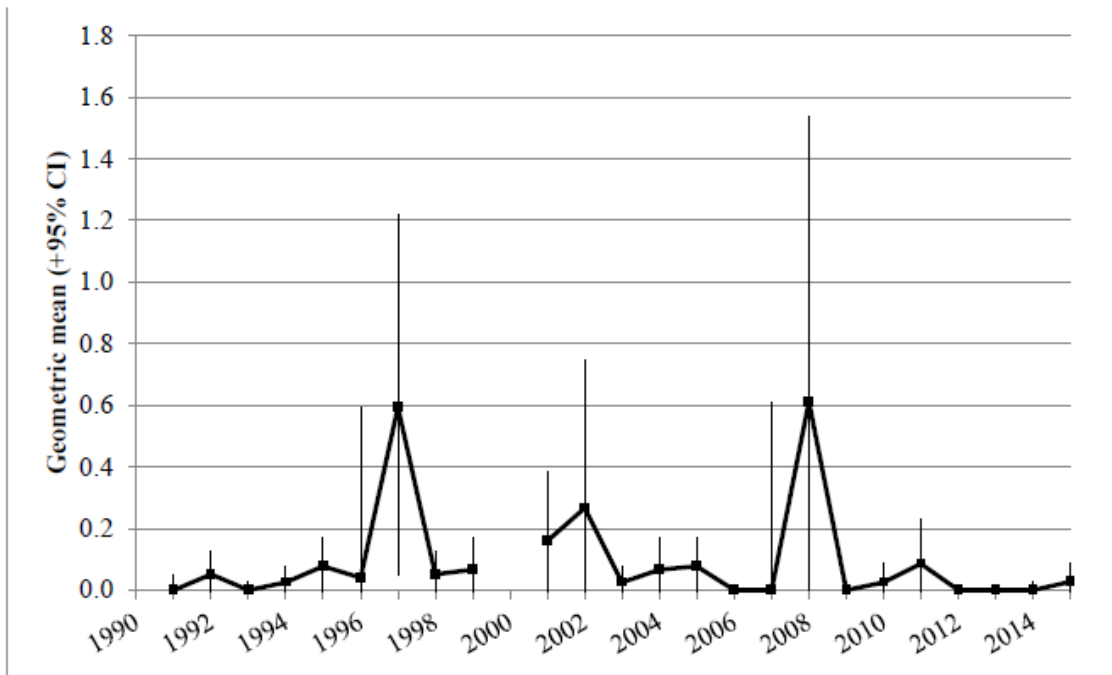


Figure 15. Annual Age 1 Blueback geometric mean DE River and Upper Bay

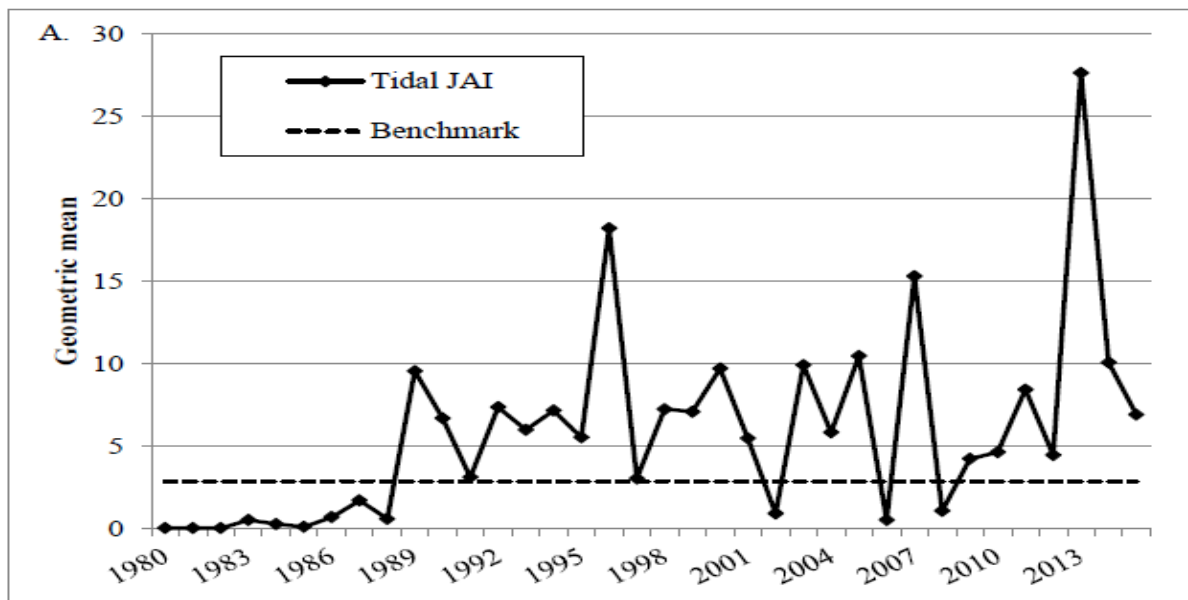


Figure 16. Juvenile American Index (JAI) Shad CPUEs (geometric mean) for the upper tidal (A) Delaware River (B) : 1980 – 2015. The 25th percentile benchmark defined in the Co-op American Shad Sustainability Plan is illustrated as the dashed line. The benchmark was derived from data inclusive of 1987 – 2010 for the upper tidal JAI.

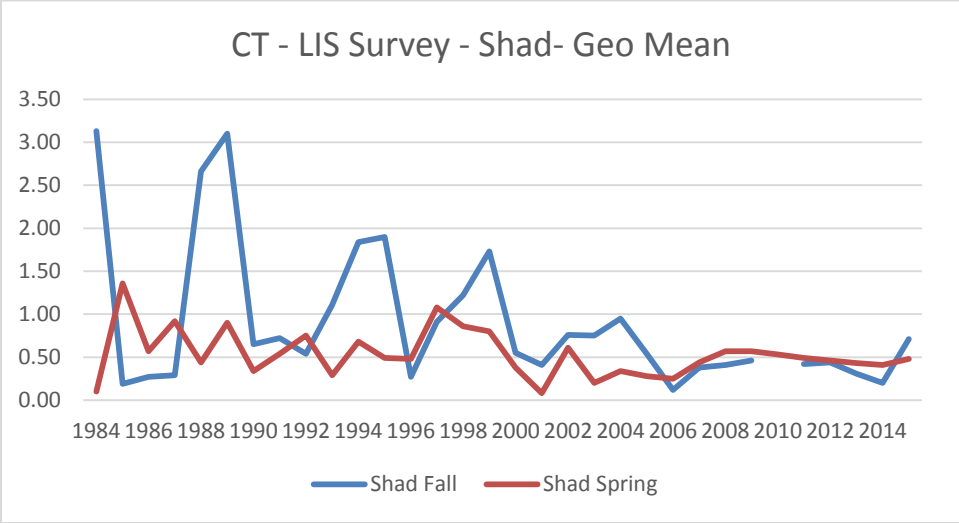
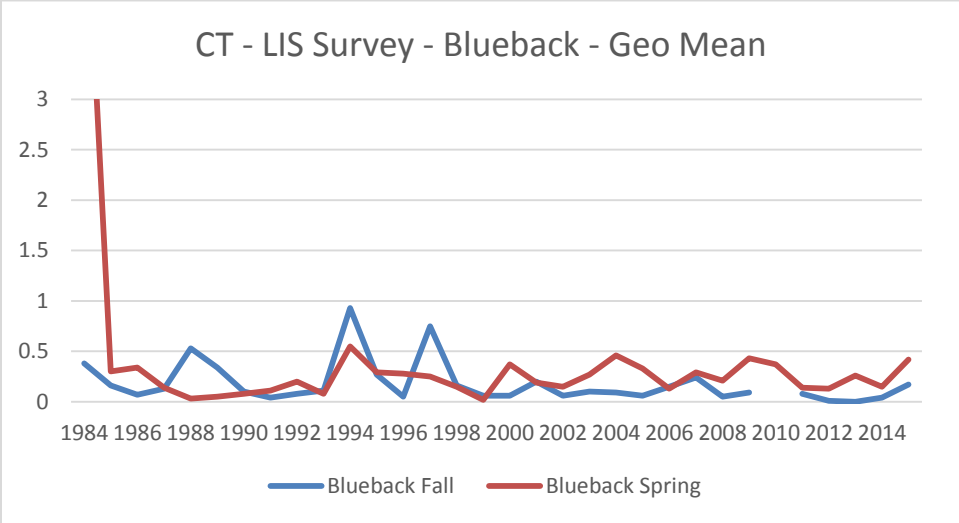
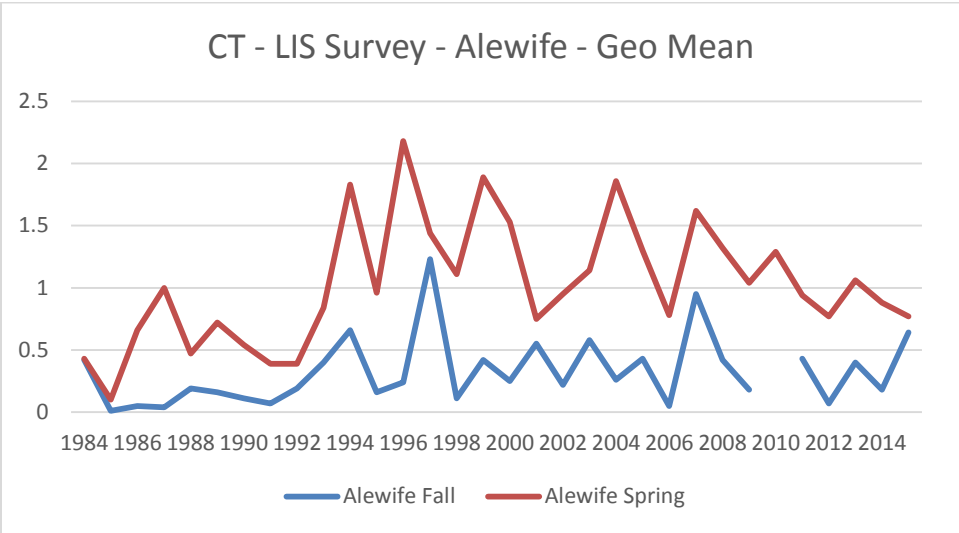


Figure 17. Connecticut Long Island Survey Indices Geometric Mean Alewife, Blueback, Am. Shad

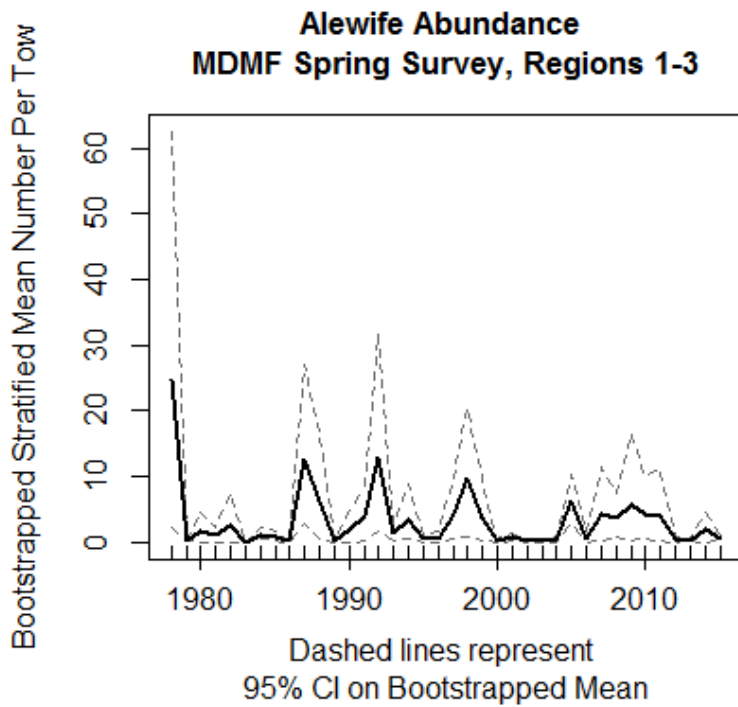


Figure 18. Massachusetts Alewife Spring Survey Southern New England

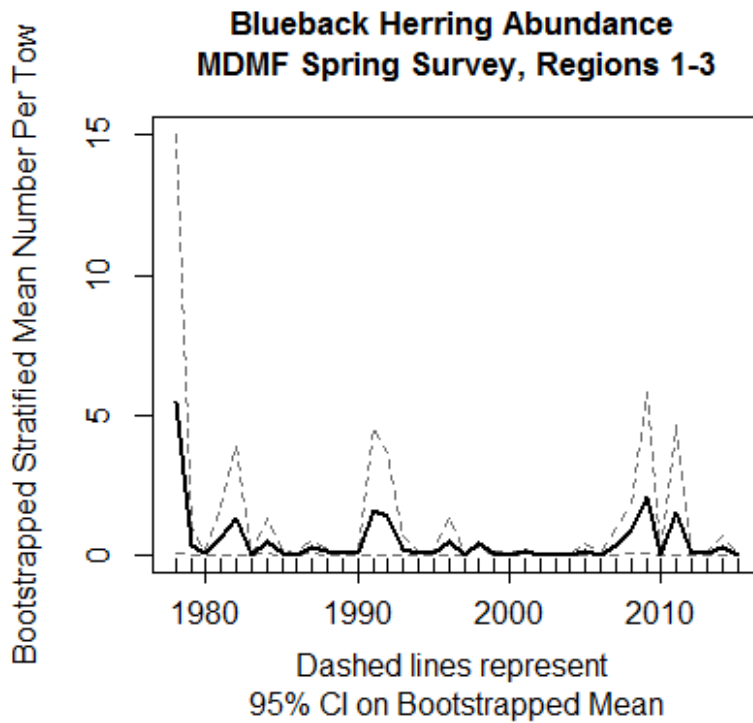


Figure 19. Massachusetts Blueback Herring Spring Survey Southern New England

Run Counts

While collecting state by state river run data is beyond the resources of Council staff (that is an assessment update type activity), the ASMFC does provide selected run counts in its FMP reviews, provided below for 2012-2014. 2015 will be provided to the Council in October if it becomes available. An issue that has come up repeatedly in TEWG discussions is that members of the public with diverse perspectives believe that a one-stop database of RH/S run strength trends would be very helpful to contextualize news reporting of runs in particular areas. Council staff has been engaging with NMFS and ASMFC staff to determine if such a project is feasible, and how it could be accomplished. The State of Maine took preliminary steps to accomplish a portal for this kind of information, www.riverherring.com, and discussions are continuing on a way to create a resource that would allow quick access to regional run count information.

Table 1. American shad and river herring passage counts at select rivers along the Atlantic Coast in 2012.

State/River	Shad	River Herring
Maine		
Androscoggin	11	170,191
Saco	6404	27,858
Kennebec	5	179,357
Sebasticook	163	1,703,520
St. Croix		36,168
New Hampshire		
Cocheco		27,608
Oyster		2,573
Lamprey		86,862
Exeter		378
Taylor		92
Winnicut		5
Massachusetts		
Merrimack	21,396	
Rhode Island		
Gilbert Stuart		107,901
Nonquit		60,132
Buckeye Brook		90,625
Pennsylvania/Maryland/Delaware		
Susquehanna (Conowingo)	23,629	52
Susquehanna (Holtwood)	4,238	
South Carolina		
St. Stephen Dam	150,082	
Total 2012	205,928	
Total 2011	307,793	

Table 2. American shad and river herring passage counts at select rivers along the Atlantic Coast in 2013.

State/River	Shad	River Herring
Maine		
Androscoggin	14	69,297
Saco	6171	43,414
Kennebec	0	94,456
Sebasticook	114	2,272,492
St. Croix		16,677
New Hampshire		
Coheco		18,337
Oyster		7,149
Lamprey		79,408
Exeter		378
Taylor		128
Winnicut		0
Massachusetts		
Merrimack	37,149	17,359
Connecticut		
Holyoke Dam	392,967	976
Rhode Island		
Gilbert Stuart		91,240
Nonquit		52,563
Buckeye Brook		45,244
Pennsylvania/Maryland/Delaware		
Susquehanna (Conowingo)	12,733	7
Susquehanna (Holtwood)	2,503	
Susquehanna (Safe Harbor)	1,927	
Susquehanna (York Haven)	202	
South Carolina		
St. Stephen Dam	324,984	
Total 2013	774,132	2,808,149
Total 2012	205,928	2,493,322

Note: Passage numbers on Susquehanna River are cumulative. For example, any shad counted at the York Haven dam has also passed the previous three dams (Safe Harbor, Holtwood and Conowingo). The dams are listed in ascending order of passage mile.

Table 3. American shad and river herring passage counts at select rivers along the Atlantic Coast in 2014.

State/River	Shad	River Herring
Maine		
Androscoggin	0	55,953
Saco	2,580	11,576
Kennebec	1	108,432
Sebasticook	26	2,282,454
St. Croix		26,893
New Hampshire		
Coheco		29,968
Oyster		4,227
Lamprey		84,868
Exeter		789
Taylor		57
Winnicut		0
Massachusetts		
Merrimack	34,789	33,515
Rhode Island		
Gilbert Stuart		102,408
Nonquit		71,501
Buckeye Brook		47,263
Connecticut		
Holyoke Dam	370,506	647
Pennsylvania/Maryland		
Susquehanna (Conowingo)	10,425	382
Susquehanna (Holtwood)	2,625	2
Susquehanna (Safe Harbor)	1,336	0
Susquehanna (York Haven)	8	0
South Carolina		
St. Stephen Dam	42,535	171,200
Total 2014	426,073	3,031,753
Total 2013	776,162	2,922,985
Total 2012	205,928	2,493,322

Note: Passage numbers on Susquehanna River are cumulative. For example, any shad counted at the York Haven dam has also passed the previous three dams (Safe Harbor, Holtwood and Conowingo). The dams are listed in ascending order of passage mile.

Table 4. American shad and river herring passage counts at select rivers along the Atlantic Coast in 2015.

State/River	Shad	River Herring
Maine		
Androscoggin	58	71,887
Saco	6,171	53,891
Kennebec	26	91,850
Sebasticook	47	2,157,983
Penobscot		782,521
St. Croix		93,503
New Hampshire		
Coheco		64,456
Exeter		5,562
Oyster		1,803
Lamprey		69,843
Taylor		
Winnicut		0
Massachusetts		
Merrimack	89,427	128,692
Rhode Island		
Gilbert Stuart		11,135
Nonquit		32,330
Buckeye Brook		15,333
Connecticut River		
Holyoke Dam	412,656	0
Pennsylvania/Maryland/Delaware		
Susquehanna (Conowingo)	8,341	13
Susquehanna (Holtwood)	5,286	2
Susquehanna (Safe Harbor)	3,896	0
Susquehanna (York Haven)	43	0
South Carolina		
St. Stephen Dam	85,417	244,631
Total 2015	611,368	3,825,435
Total 2014	426,073	3,031,753
Total 2013	776,162	2,922,985
Total 2012	205,928	2,493,322
Total 2011	307,793	3,152,748

Table 5. American shad and river herring passage counts at select rivers along the Atlantic Coast in 2016 (Preliminary)

State/River	Shad	River Herring
Maine		
Androscoggin	1,123	121,010
Saco	12,000	37,395
Kennebec	836	220,727
Sebastcook	19	3,500,000
Penobscot	1,800	1,338,081
St. Croix		33,016
New Hampshire		
Cocheco		100,973
Exeter		6,622
Oyster		863
Lamprey		92,364
Taylor		
Winnicut		0
Massachusetts		
Merrimack	67,528	417,240
Rhode Island		
Gilbert Stuart		79,464
Nonquit		9,664
Buckeye Brook		27,552
Connecticut River		
Holyoke Dam	385,930	137
Pennsylvania/Maryland/Delaware		
Susquehanna (Conowingo)	14,276	
Susquehanna (Holtwood)	6,718	
Susquehanna (Safe Harbor)	4,242	
Susquehanna (York Haven)	178	
South Carolina		
St. Stephen Dam	41,375	3,285
Preliminary Total 2016	536,025	5,988,393
Total 2015	611,368	3,825,435
Total 2014	426,073	3,031,753
Total 2013	776,162	2,922,985
Total 2012	205,928	2,493,322
Total 2011	307,793	3,152,748

Blueback herring only in CT & SC

5.1.2 Review of recent genetic/tagging studies and how they relate to bycatch

River Herring

Partly as a result of previously ongoing research, and partly as a result of TEWG-driven activities, a number of studies have been published recently that pertain to river herring and bycatch. Most immediately relevant to genetics and bycatch are Palkovacs et al. 2014 (Evol. App.) and Hasselman et al. 2016 (CJFAS), summaries of which are generally excerpted below. Palkovacs et al. 2014 used population genetic data to define groups of RH/S populations linked

by migration and then used demographic information from monitored populations to draw inferences about the status of unmonitored populations within those groups. Results show that most populations comprise genetically distinguishable units, which are nested geographically within genetically distinct clusters or stocks. They identified three distinct stocks in alewife (Northern NE, Southern NE, Mid-Atlantic) and four stocks in blueback herring (Northern NE, Southern NE, Mid-Atlantic, South Atlantic) and their results gave them confidence that they had identified the major genetic stocks within the US portions of these species ranges. Analysis of available time series data for spawning adult abundance and body size indicated declines across the US ranges of both species, with the most severe declines having occurred for populations belonging to the Southern New England and the Mid-Atlantic Stocks. They recommended those belonging to these genetic stocks as warranting the highest conservation prioritization.

Hasselman et al. 2016 used data from 15 microsatellites genotyped for baseline populations and bycatch to conduct genetic stock identification to understand how bycatch was partitioned among previously identified regional genetic stocks. They then combined this information with fishery observer and portside sampling data to estimate genetic stock-specific bycatch mortality for the southern New England Atlantic herring fishery.

River herring bycatch specimens ($n = 2928$) were sampled opportunistically by fisheries observers monitoring the Atlantic herring, shrimp (pandalid species), longfin squid (*Doryteuthis pealeii*), and Atlantic cod (*Gadus morhua*) fisheries. The majority of samples came from the Atlantic herring fishery landing in MA and RI, which use single and paired midwater trawl and bottom otter trawl fishing gear. Other sampled fisheries use only bottom otter trawls. Bycatch collections were obtained in fall (October–December) and winter (January–March) during 2011–2013 from statistical areas (SA) comprising five nearshore regions (i.e., Gulf of Maine (GoM), SA 513, 514; Cape Cod (CC), SA 521; southern New England (SNE), SA 537, 539, 611; New Jersey – Long Island (NJLI), SA 612, 613, 615; Delaware (DEL), SA 622). Bycatch overall, but especially in the Atlantic herring fishery, was disproportionately assigned to the most severely depleted genetic stocks (alewife southern New England stock—70% of assignments; blueback herring mid-Atlantic stock—78% of assignments). The authors suggested that mitigating bycatch on the southern New England fishing grounds may therefore benefit recovery efforts for alewife and blueback herring genetic stocks that have experienced the greatest declines in spawning adult abundances, though without absolute RH/S population information the impact is unknown.

For the trips that were sampled, the genetics results appear quite robust in terms of identifying where those fish originated regionally. Discussions with the paper's authors suggest that for the years sampled, the samples may not exactly represent the herring fishery but they sampled a substantial proportion of the herring fishery (about half of mid-water trawl herring landings in MA and a third of bottom trawl landings in Rhode Island). While the sampling was opportunistic they report that they do strive to sample the fishery representatively (in MA and RI) and not oversample any one vessel/area. Most samples were from southern New England due to the quota distribution and fishery activity so the results are likely to be most representative for the southern New England herring fishery.

In addition, ongoing efforts by some of the researchers involved in the above two studies include a new analysis of population genetic structure for alewife and blueback herring across both the US and Canadian ranges of both species using a new set of single nucleotide polymorphism (SNP) markers. These markers have several advantages over the microsatellites used in the past,

and this new analysis includes many more rivers, many more samples, and extends north to Newfoundland.

Over the next year, researchers will be building on this new SNP analysis to link spawning runs to marine caught samples from bycatch and fisheries-independent scientific trawl surveys. This analysis may allow refinement of genetic stock identification of bycatch to rivers or streams, extend it to more recent years, and provide better understanding of patterns of genetic structure at sea in areas where bycatch is not yet a problem (important if we want to know the potential impacts of management actions that could shift fisheries in time and space). Results have not yet been published. Also, as part of an ASMFC award, researchers are working with the UMass and MassDMF groups on a model to understand how bycatch interacts with freshwater productivity to influence alewife populations, focusing on southern New England watersheds.

Finally, there is an ongoing analysis of population structure and relative abundance of RH/S based on larval tows and adult samples for Mid-Atlantic rivers (Chesapeake Bay and North Carolina). This analysis will use the microsatellites to identify larval samples to species to get a better idea of the relative abundances of alewife and bluebacks in places where it is very hard to sample adults. It will also look at population structure in this region to determine the degree to which tributaries within major watersheds are genetically differentiated (and therefore might need to be managed separately) (pers com E. Palvovick).

Shad (From 2007 ASMFC Assessment)

Brown and Epifano (1994) obtained genetic samples from fish in the commercial harvest off of the coasts of Maryland and Virginia in 1991-1993. Results indicated high variation in stock composition among locations and among years.

Results also differed between the DNA study and a tagging study (Jesien 1992) that released fish at the same locations (Figure 1.1.8-2). The second DNA study was conducted off the NJ coast in 1996 (Brown 1996) and concluded that fish originated from Canadian, Hudson River and Susquehanna River stocks. The results of this study were deemed questionable by the ASMFC Shad and river herring Technical Committee, since the Susquehanna River is primarily comprised of hatchery produced shad of Hudson River or Delaware River origin. The true Susquehanna stock may still exist, but as a tiny remnant given that major component of the returning stock are from hatchery contributions.

The results of several tagging studies (Talbot and Sykes 1958, Miller 1982 and Leggett unpublished) were summarized by Dadswell et al. (1987). The pattern of tag returns described the coastal migration of American shad. Shad from all regions of the coast summered in the Bay of Fundy, off the St. Lawrence, and off the Canadian Maritimes/Gulf of Maine. Three “partially distinct” wintering areas occurred off Florida, the mid-Atlantic Bight, and the Scotian shelf. Parker (1992) and McCord (1988) tagged fish off of North and South Carolina; most shad were caught in each of the respective state’s waters or in systems to the south (Figure 1.1.8-3C and D). Jesien (1992) tagged shad in the ocean fishery off the coasts of Virginia and Maryland. In each of the years, a different mix of returns came from a wide range of the coast (GA to MA). Most of the fish tagged in the Maryland-Virginia region were recaptured in either Virginia rivers or the Delaware River south (Figure 1.1.8-3B).

The most recent tagging data are from an ongoing study initiated in 1995 by New York and New Jersey. Most (25%) of the released shad tagged in lower Delaware Bay were harvested in the mixed stock fishery within the Bay. An additional 22% were caught in ocean fisheries, the directed portion of which is now closed. Others were recaptured either in the Delaware, Hudson and Connecticut rivers along with an array of returns from the St. Lawrence River and Canadian rivers to the north, to the Santee River in the south.

5.1.3 Review of recent assessments

River Herring

In the most recent Atlantic States Marine Fisheries Commission river herring stock assessment (ASMFC 2012²), of the 24 river herring stocks for which sufficient data are available to make a conclusion, 23 were depleted relative to historic levels and one was increasing. The status of 28 additional stocks could not be determined because the time-series of available data was too short.

Estimates of coastwide abundance and fishing mortality could not be developed because of the lack of adequate data. The “depleted” determination was used instead of “overfished” because of the many factors that have contributed to the declining abundance of river herring, which include not just directed and incidental fishing, but likely also habitat issues (including dam passage, water quality, and water quantity), predation, and climate change. There are no coastwide reference points.

As part of a recent river herring status review under the Endangered Species Act, NMFS completed an extinction risk analysis (http://www.greateratlantic.fisheries.noaa.gov/protected/pcp/soc/river_herring.html). This analysis investigated trends in river herring relative abundance for each species range-wide as well as for each identified stock complex. This analysis found that "the abundance of alewife range-wide significantly increased over time (mid 1970s-2012), but the increase in blueback herring abundance was not significant (page 7 and Figures 8 and 9 of the referenced document). These range-wide analyses incorporated data from fishery independent surveys with the widest geographic extent, specifically the Northeast Fisheries Science Center spring and fall bottom trawl surveys and Canada’s Department of Fisheries and Oceans (DFO) Scotian Shelf survey.

Stock-specific analyses incorporated run count data³⁴ and stock-specific fishery-independent surveys. Stock-specific analyses indicated that the abundance of the Canadian alewife stock complex was significantly increasing, the abundance of the mid-Atlantic blueback herring stock complex was significantly decreasing, and all other analyzed stock complexes were not significantly increasing or decreasing in abundance.

The review noted that both alewives and blueback herring may already be at or less than two percent of the historical baseline (e.g., Limburg and Waldman, 2009), though these estimates are based on commercial landings data, which are dependent upon management and are not a reliable estimate of biomass. The review also found blueback herring to have a “Moderate-low risk” for extinction as the coast-wide trajectory was stable and three of the four stock complexes are stable. The estimated population growth rate of the mid-Atlantic stock complex was significantly decreasing based on the available information.

The status review concluded that the species did not currently warrant listing under the ESA. NMFS and the ASMFC are engaged in a proactive conservation strategy for river herring and the Council is also involved in the endeavor. This strategy is described at

² Staff from the NEFSC also participated and conducted analyses in support of this assessment.

<http://www.greateratlantic.fisheries.noaa.gov/protected/riverherring/tewg/index.html> and also below - it brings together a variety of management partners and stakeholders together to address river herring threats and plan conservation and data gathering activities.

Shad

The most recent American shad stock assessment report (ASMFC 2007) identified that American shad stocks are highly depressed from historical levels. Of the 24 stocks of American shad for which sufficient information was available, 11 were depleted relative to historic levels, 2 were increasing, and 11 were stable (but still below historic levels). The status of 8 additional stocks could not be determined because the time-series of data was too short or analyses indicated conflicting trends.

Taken in total, American shad stocks do not appear to be recovering. The assessment concluded that current restoration actions need to be reviewed and new ones need to be identified and applied. These include fishing rates, dam passage, stocking, and habitat restoration. There are no coastwide reference points for American shad. There is no stock assessment available for hickory shad.

5.1.4 Consider upcoming assessment updates/benchmarks

RH and Shad are scheduled to undergo assessment updates in 2018/2017 respectively. Benchmarks are scheduled for five years after the updates, though if new data or modeling improvements suggest a benchmark would be appropriate sooner, then sooner is also a possibility for benchmarks. Waiting until after 2020 for benchmarks should allow some of the improvements in data collection being worked on through the TEWG to be useful for an assessment. Also, if state moratoria and/or RH/S catch caps have had positive impacts there would be more time to observe those impacts.

5.2 DESCRIPTION OF RH/S ROLE IN THE ECOSYSTEM

Given their at-sea and in-river life phases, RH/S likely are or could be (RH/S roles in the ecosystem currently are likely diminished related to their low populations) important prey for a wide variety of animals. Alewife and blueback herring are an important forage fish for marine and anadromous predators, such as striped bass, spiny dogfish, bluefish, Atlantic cod, and pollock (ASMFC 2012). Marine mammals likely feed on RH/S at times, and other predators such as fish-eating birds (e.g. ospreys, cormorants, and herons), and other mammals (e.g. river otters, raccoons, and fishers) have been observed feeding on RH/S (<http://www.maine.gov/dmr/science-research/searun/alewife.html>). RH/S also likely facilitate general nutrient transport from marine to fresh water, depending on the size of a run (Hanson et al 2010, Norris 2012).

5.3 DESCRIPTION OF RH/S DIRECTED & INCIDENTAL FISHERIES (CURRENT AND HISTORICAL)

5.3.1 Historical use and value of RH/S directed fisheries

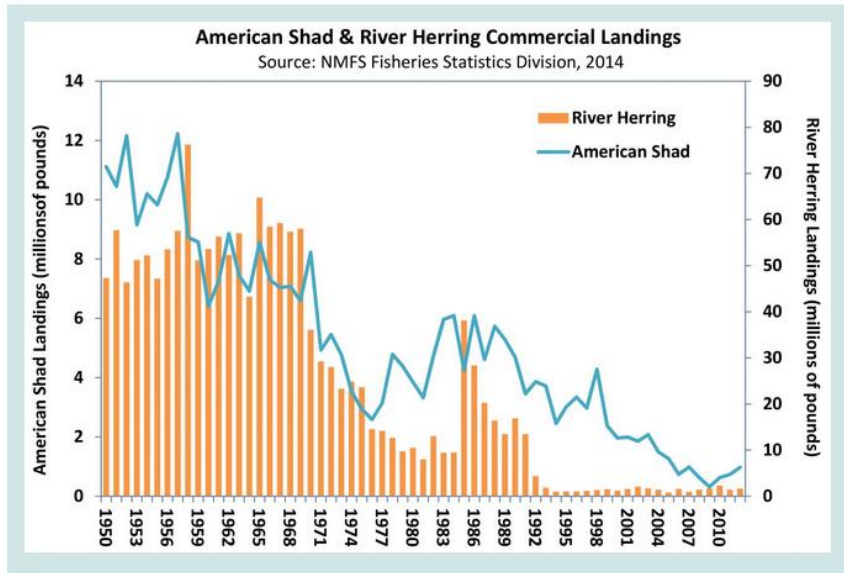


Figure 20. RH/S Commercial Landings 1950-2012

The figure above describes RH/S landings 1950-2012. 2013 river herring landings were 1.6 million pounds and 2013 American shad landings were 0.6 million pounds. 2014 river herring landings were 1.8 million pounds and 2014 American shad landings were 0.8 million pounds (ASMFC FMP Reports). The majority of recent landings have been accounted for by directed shad landings in North and South Carolina and directed river herring landings in Maine. The FMP report for 2015 data is not yet available, but regulations have likely kept landings in the same general low level as recent years. The 2012 ASMFC stock assessment also notes that tens of millions of pounds of river herring were landed by foreign fisheries in the late 1960s and early 1970s, with a peak of 80 million pounds of river herring taken in 1969 by foreign fisheries (primarily USSR).

The ASMFC annual fishery management plan reviews are available at <http://www.asmfc.org/species/shad-river-herring>. Landings figures for 2012-2015 from those reports (all “Table 2”) are provided below:

Table 6. RH/S in-river commercial and ocean bycatch landings (pounds) provided by states, jurisdictions, and NOAA Fisheries for 2012

	American Shad	River Herring	Hickory Shad
Maine ⁴		1,606,535	
New Hampshire		2,681	
Massachusetts			
Rhode Island			
Connecticut	61,623		
New York ¹	1,485	16,965	
New Jersey ²	28,120	84	924
Pennsylvania			
Delaware			
Maryland		290	
D.C.			
PRFC	4,742		446
Virginia	4,601		999
North Carolina	235,861	678	65,645
South Carolina ³	299,528	163,076	
Georgia ⁴			
Florida			
Total	635,960	1,790,309	68,014

¹New York American shad landings are from ocean bycatch

²Includes in-river and coastal harvest

³American shad landings include hickory shad

⁴Georgia & Maine (shad) landings are confidential

Table 7. RH/S in-river commercial and ocean bycatch landings (pounds) provided by states, jurisdictions, and NOAA Fisheries for 2013

	American Shad	River Herring	Hickory Shad
Maine ³		1,423,878	
New Hampshire		4,420	
Massachusetts			
Rhode Island			
Connecticut	65,679		
New York ¹	932	10,349	
New Jersey ²			3,483
Pennsylvania	2,854		
Delaware			
Maryland		305	
D.C.			
PRFC	3,799		
Virginia	4,825		755
North Carolina	257,869	743	71,326
South Carolina	205,368	192,454	652
Georgia	62,017		2,162
Florida			
Total	608,428	1,632,149	78,378

¹New York American shad landings are from ocean bycatch

²Includes in-river and coastal harvest

³Maine (shad) landings are confidential

Table 8. RH/S in-river commercial and ocean bycatch landings (pounds) provided by states, jurisdictions, and NOAA Fisheries for 2014

	American Shad	River Herring	Hickory Shad
Maine ³		1,720,285	
New Hampshire			
Massachusetts		192	
Rhode Island			
Connecticut	61,544		
New York ^{1,3}		8,450	
New Jersey ²	42,599		456
Pennsylvania			
Delaware	85,794		
Maryland			
D.C.			
PRFC	4,013		1,300
Virginia	1,325		1,025
North Carolina	193,130	989	109,407
South Carolina ⁴	333,602	114,905	1,311
Georgia ³			
Florida --			
Total	776,586	1,844,821	119,118

¹New York American shad landings are from ocean bycatch

²New Jersey shad landings includes in-river and Delaware Bay harvest

³Georgia, Maine, and New York shad landings are confidential

⁴South Carolina American shad landings include hickory shad

Table 9. RH/S in-river commercial and ocean bycatch landings (pounds) provided by states, jurisdictions, and NOAA Fisheries for 2015

	American Shad	River Herring	Hickory Shad
Maine ^		1,295,998	
New Hampshire			
Massachusetts		10,000	
Rhode Island			
Connecticut	51,004		
New York ^		5,879	
New Jersey	9,418		
Pennsylvania			
Delaware	21,733		
Maryland			
D.C.			
PRFC	1,889		
Virginia	1,185		97
North Carolina	98,118		148,714
South Carolina	258,927	693,232	902
Georgia	36,414		3,551
Florida			
Total	478,688	2,005,109	153,264

^Portions of Maine, and New York landings are confidential and not shown

RH/S have been used as a fishery resource since before colonial times. Earlier historical records are imprecise and incomplete, but were used to document landings amounts in the last river herring assessment back to 1887. The last shad assessment also has state by state landings records going back to the late 1800s, and the importance of the shad fishery was being documented as early as the late 1700s (Gerstell 1988). Even late 19th century harvests may have been conducted on already depleted populations. Historical records 1887-1938 show that in the late 1920s and early 1930s river herrings generated from \$2-\$5 million dollars a year in revenues (2010 dollars) based on landings of 12-42 million pounds, i.e. they were a substantial fishery (ASMFC 2012). There is also ample evidence for Native American use of RH/S fishery resources (e.g. Visel 2006, Basset 2015).

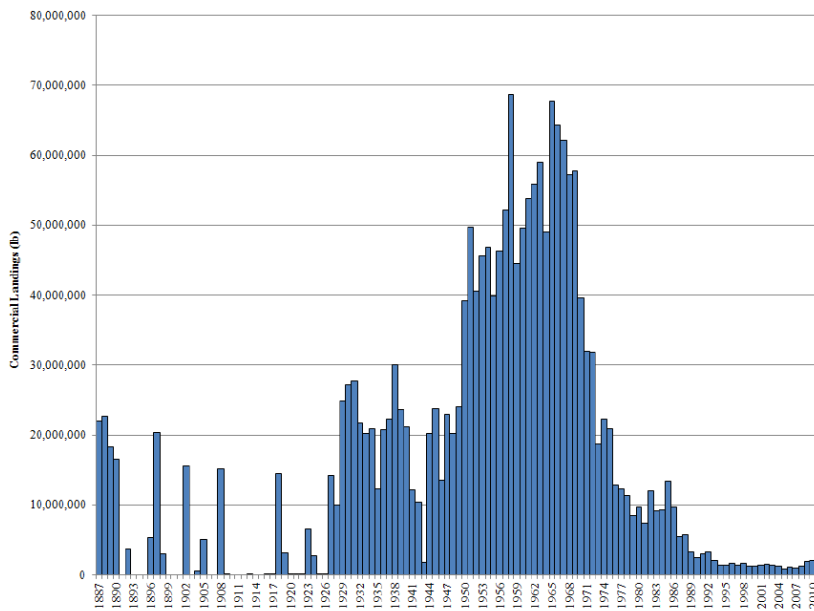


Figure 21. Historical Domestic River Herring Landings 1887-2010.

Prior to exploitation by Western European colonists, populations of RH/S in large river systems likely ran in the hundreds of millions; coastally this would have translated into annual spawning runs in the billions. Seaward emigrating young-of-year also encountered a gauntlet of marine predators; hence these young fish presented a clear trophic link between inland and marine production (ASMFC 2007, ASMFC 2012).

5.3.2 Review of the current information on incidental catch

Incidental catch for the various fleets through 2015 as estimated via Standardized Bycatch Reporting Methodology methods (except all catch not just discards) are provided in Appendix 2. Catch trends have generally been downward, especially considering that mid-water trawl estimates are only provided from 2005 onward due to data collection methodology improvements implemented then. Total catches from 1994-2004 would thus be higher (substantial mid-water trawl effort begins in 1994 but not incorporated into estimates until 2005), meaning the reductions to the current lower levels actually involve a greater relative reduction

than is apparent. Since 2005 mid-water trawl and small mesh bottom trawl account for most of the (incidental) RH/S catch, with reductions in mid-water trawl catches being mostly responsible for the overall reduction. Performance of the RH/S caps in the Atlantic Herring and Atlantic Mackerel fisheries are provided below.

Table 10. RH/S Catch Atl. Herring Fishery 2014

**River herring / shad
catch by Atlantic
herring vessels**

Report Run on: 1/8/2015
For data reported through: 1/7/2015
Monitoring period: 12/4/2014 to 12/31/2014

Management Area	Current Week's Catch (mt) ¹	Reporting Week's Catch (mt) ²	Cumulative Catch (mt)	Catch Cap (mt)	Percent of Catch Cap
Gulf of Maine Mid-water Trawl	0.0	0.0	0.0	86	0.05%
Cape Cod Mid-water Trawl	0.0	0.0	0.0	13	0.00%
Southern New England Bottom Trawl	0.3	0.0	11.3	89	12.69%
Southern New England Mid-water Trawl	0.6	0.0	15.8	124	12.70%
Total	0.9	0.0	27.1	312	8.68%

¹River herring/shad catch reported for week ending 1/3/2015

²River herring/shad catch reported for week ending 1/10/2015

Table 11. RH/S Catch Atl. Herring Fishery 2015

**River herring / shad
catch by Atlantic
herring vessels**

Report Run on: 1/14/2016
For data reported through: 1/13/2016
Monitoring period: 1/1/2015 to 12/31/2015

Management Area	Current Week's Catch (mt) ¹	Reporting Week's Catch (mt) ²	Cumulative Catch (mt)	Catch Cap (mt)	Percent of Catch Cap
Gulf of Maine Mid-water Trawl	0.0	0.0	11.1	86	12.95%
Cape Cod Mid-water Trawl	0.0	0.0	0.7	13	5.38%
Southern New England Bottom Trawl	7.4	0.0	100.7	89	113.19%
Southern New England Mid-water Trawl	2.0	0.0	64.0	124	51.59%
Total	9.4	0.0	176.5	312	56.58%

¹River herring/shad catch reported for week ending 1/2/2016

²River herring/shad catch reported for week ending 1/9/2016

Table 12. RH/S Catch Atl. Herring Fishery 2016

River herring / shad catch by Atlantic herring vessels

Report Run on: 9/22/2016
 For data reported through: 9/21/2016
 Monitoring period: 1/1/2016 to 12/31/2016

Management Area	Cumulative Catch (mt)	Catch Cap (mt)	Percent of Catch Cap
Gulf of Maine Mid-water Trawl	0.0	86	0.0%
Cape Cod Mid-water Trawl	0.7	13	5.7%
Southern New England Bottom Trawl	20.6	89	23.2%
Southern New England Mid-water Trawl	41.4	124	33.4%
Total	62.8	312	20.1%

Table 13. RH/S Catch Atl. Mackerel Fishery 2014

River herring / shad catch by Atlantic mackerel vessels

Report run on : January 8, 2015
 Data reported through: January 7, 2015
 Quota period: 1/1/14 to 12/31/14

Month	Monthly estimated river herring/shad catch (mt)	Cumulative estimated river herring/shad catch (mt)	Cumulative percent of quota (236 mt)
JANUARY	0.92	0.92	0.39%
FEBRUARY	2.92	3.85	1.63%
MARCH	0.95	4.79	2.03%
APRIL	0.13	4.92	2.09%
MAY	0.00	4.92	2.09%
JUNE	0.00	4.92	2.09%
JULY	0.00	4.92	2.09%
AUGUST	0.00	4.92	2.09%
SEPTEMBER	0.00	4.92	2.09%
OCTOBER	0.00	4.92	2.09%
NOVEMBER	1.34	6.27	2.66%
DECEMBER	0.15	6.42	2.72%

Table 14. RH/S Catch Atl. Mackerel Fishery 2015

**River herring / shad catch
by Atlantic mackerel vessels**

Report run on : January 19, 2016
 Data reported through: January 18, 2016
Quota period: 1/1/15 to 12/31/15

Month	Monthly estimated river herring/shad catch (mt)	Cumulative estimated river herring/shad catch (mt)	Cumulative percent of quota (89 mt)
JANUARY	3.09	3.09	3.47%
FEBRUARY	0.70	3.79	4.26%
MARCH	3.95	7.74	8.70%
APRIL	1.10	8.84	9.93%
MAY	0.79	9.63	10.82%
JUNE	0.00	9.63	10.82%
JULY	0.00	9.63	10.82%
AUGUST	0.00	9.63	10.82%
SEPTEMBER	0.00	9.63	10.82%
OCTOBER	0.00	9.63	10.82%
NOVEMBER	2.48	12.11	13.61%
DECEMBER	0.76	12.87	14.46%

Table 15. RH/S Catch Atl. Mackerel Fishery 2016

**River herring / shad catch
by Atlantic mackerel vessels**

Report run on : September 22, 2016
 Data reported through: September 21, 2016
Quota period: 1/1/16 to 12/31/16

Month	Monthly estimated river herring/shad catch (mt)	Cumulative estimated river herring/shad catch (mt)	Cumulative percent of quota (82 mt)
JANUARY	0.08	0.08	0.10%
FEBRUARY	0.00	0.08	0.10%
MARCH	0.33	0.41	0.50%
APRIL	0.00	0.41	0.50%
MAY	1.10	1.51	1.84%
JUNE	0.00	1.51	1.84%
JULY	0.00	1.51	1.84%
AUGUST	0.04	1.55	1.90%
SEPTEMBER	0.00	1.55	1.90%

Note:

The 2016 specifications are finalized. Effective May 26, 2016 the cap was reduced from 89 mt to 82 mt.

The Omnibus Industry Funded Monitoring Amendment has analyzed observer data to obtain RH/S incidental catch estimates for purposes of determining which fleets have accounted for RH/S catch. The table below is excerpted from draft Omnibus Industry Funded Monitoring Amendment text:

Table 16. Fleets Responsible for RH/S Catch 2005-2013.

FLEETS RESPONSIBLE FOR RH/S CATCH (TOTAL CATCH FROM 2005-2013)

Fishing Fleet	Percent of RH/S Catch
Midwater Trawl (Single and Paired)	57%
Small Mesh Bottom Trawl	33%
Large Mesh Gillnet	7%
Purse Seine	0.3%

While the 2014 RH/S caps in the Atlantic herring fishery approximately matched this pattern, catch was higher for small mesh bottom trawl in the 2015 herring caps, and that would have only accounted for a portion of total small mesh bottom trawl RH/S catch. See http://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/Mackerel_RHS/Mackerel_RHS.htm for historical performance of the Atl. herring and mackerel RH/S caps.

5.3.3 Consideration of recent/current/future observer coverage levels.

The Standardized Bycatch Reporting Methodology (SBRM) is used to place observers so that reasonable precision is obtained for discards of Federally-managed species. Since RH/S are not federally managed, RH/S are not considered when SBRM allocates observer coverage by fleet (areas and gear types). Analysis by NMFS (NMFS GARFO 2014) has previously demonstrated that coverage of RH/S in the mid-water trawl and purse-seine fisheries would not benefit substantially from being included in SBRM, largely because there are relatively few RH/S discarded in the relevant fisheries (there were only small shifts of coverage among fleets). Adding a stock to the SBRM (i.e. federal management) will only change observer coverage if discards are substantial and if a particular stock requires more coverage in a coverage strata to meet the 30% coefficient of variation standard than would be provided because of other species' coverage.

2015 coverage rates for relevant fisheries were 4.7% for mid-water trawl (MWT), 2.5% for purse seine, and 9.1% for small mesh bottom trawl (NMFS 2016). The coefficients of variation (C.V.) for the mackerel fishery's RH/S cap were 49% in 2014 and 23% in 2015 – C.V.s less than 30% are generally targeted as an acceptable level of imprecision. Analysis of the midwater trawl fleet done for the IFM amendment suggests that 25%-50% coverage is needed to obtain a C.V. about or less than 30% for RH/S catch estimates in the MWT fleet, and that 5% - 22% coverage should result in a C.V. about or less than 30% for RH/S catch estimates in the small mesh bottom fleet. While these are not directly comparable to the RH/S cap on the mackerel fishery, if these

fisheries that target mackerel achieve these levels of coverage, overall RH/S cap estimates for the mackerel fishery’s RH/S cap would likely be in a reasonably level of precision.

The revised SBRM prioritization procedures determine year to year observer coverage generally based on where discards of federally-managed species most occur, and available funding. In recent years this process has led to fewer midwater trips being observed (but more small mesh bottom trawl trips). The Omnibus Industry-Funded Monitoring Amendment is seeking to supplement SBRM coverage with a focus on improving RH/S incidental catch information through a variety of options. The following tables were developed for the Industry-Funded Monitoring Amendment and describe planned and realized coverage levels for the relevant fleets as pertaining to RH/S caps.

Table 17. 2012-2013 NEFOP Sea Days

Fleet	Region	Sea Days allocated for April 2014 to March 2015	Observed sea days, July 2012 to June 2013	VTR sea days, July 2012 to June 2013	Observed trips, July 2012 to June 2013	VTR trips, July 2012 to June 2013
Small Mesh Bottom Trawl	MA	1,289	631	7,003	263	3,569
Small Mesh Bottom Trawl	NE	1,604	463	7,315	171	3,315
Purse seine	MA	12	0	447	0	441
Purse seine	NE	20	71	699	31	319
Midwater Trawl (Pair and Single)	MA	0	7	72	1	10
Midwater Trawl (Pair and Single)	NE	45	638	1,389	146	394

Source: NEFOP/GARFO Proposed Seaday Allocation for 2014 (Appendix C); Wigley et al., 2014 (Appendix D).

Table 18. 2014-2015 NEFOP Sea Days

Fleet	Region	Proposed sea days for April 2016 to March 2017	Observed sea days, July 2014 to June 2015	VTR sea days, July 2014 to June 2015	Observed trips, July 2014 to June 2015	VTR trips, July 2014 to June 2015
Small Mesh Bottom Trawl	MA	1,171	997	6,761	360	3,088
Small Mesh Bottom Trawl	NE	798	933	8,847	319	3,381
Purse seine	MA	6	0	174	0	172
Purse seine	NE	19	29	661	13	315
Midwater Trawl (Pair and Single)	MA	30	8	134	1	26
Midwater Trawl (Pair and Single)	NE	440	160	1,189	43	363

Source: 2016 Discard Estimation, Precision, and Sample Size Analyses for 14 Federally Managed Species Groups in the Waters off the Northeastern United States; Wigley et al., 2016 (included in Appendix 4).

5.3.4 Predictability of time and area overlap between RHS and the sea herring and mackerel fisheries (env. Modeling work)

NMFS Greater Atlantic Region funded a Northeast Fisheries Science Center (NEFSC) project to use environmental data collected as part of the NEFSC bottom trawl survey to model marine habitat preferences for alewife, blueback herring, Atlantic herring, and Atlantic mackerel. Habitat preferences were associated with bottom temperature, bottom salinity, depth, solar position, and region of the Northwest Atlantic Ocean:

<http://icesjms.oxfordjournals.org/content/early/2015/09/15/icesjms.fsv166.abstract>

Turner et al 2015 used generalized additive models (GAMs) to describe habitat associations of Alewife, Blueback Herring, Atlantic Herring, and Atlantic Mackerel. Bottom temperature, bottom depth, bottom salinity, solar azimuth and elevation, and region of the Northeast U.S. continental shelf were all significant in the habitat models; GAMs explained 25.2, 16.9, 18.9, and 20.6% of the deviance observed for the presence/absence of Alewife, Blueback Herring, Atlantic Herring, and Atlantic Mackerel. A subset of the data was omitted from the model and the probability of presence was compared with observations; 66–77% of observations were correctly predicted. The individual probabilities of presence were used to quantify and evaluate the accuracy of modelled overlap of Alewife and Blueback Herring with Atlantic Herring (68–72% correct predictions) and Alewife and Blueback Herring with Atlantic Mackerel (57–69% correct predictions). The findings indicate that environmental gradients influence the distributions and overlap of Alewife, Blueback Herring, Atlantic Herring, and Atlantic Mackerel, and with further testing and refinement these models could be developed into a tool to aid industry in reducing incidental catches of river herring.

The models will be coupled with oceanographic forecast models, and model accuracy will be evaluated through directed sampling with the cooperative research fleet. The ultimate project goal is to develop a river herring/ Atlantic herring/Atlantic mackerel overlap forecast tool for use by the Atlantic herring and Atlantic mackerel fisheries to minimize incidental river herring catches.

5.3.5 Impacts of incidental fisheries on Mid-Atlantic stocks

It is not currently possible to currently know what the impact of incidental catches of RH/S are on Mid-Atlantic RH/S stocks. Given the RH/S cap performance, it appears that catches of RH/S related to mackerel fishing have been minimal, at least compared to the historical landings of RH/S. Part of this undoubtedly has to do with the low catches of mackerel in recent years, and there is certainly some uncertainty given the low observer coverage, but even if catches were double what was estimated in the highest year of the catch (38,400 pounds X 2 = 76,800 pounds), such catch would appear to be trivial compared to historical landings (e.g. 40-60 million pounds of just domestic landings of river herring alone each year in the 1950s and 1960s). The current low observer coverage rates in the mid-water trawl fishery continue to be a concern related to the uncertainty in estimates, though the Councils may address this in the upcoming Industry-Funded Monitoring Amendment. The uncertainty could lead to under estimating or over estimating RH/S catch.

5.4. DESCRIPTION OF RECENT/CURRENT RH/S MANAGEMENT

5.4.1 States/ASMFC

Shad and river herring are managed under Amendment 3 to the Interstate Fishery Management Plan for Shad and River Herring (American Shad Management) and Amendment 2 to the Interstate Fishery Management Plan for Shad and River Herring (River Herring Management), respectively. Amendment 2 prohibits state waters commercial and recreational fisheries beginning January 1, 2012, unless a state or jurisdiction has a sustainable management plan reviewed by the Technical Committee and approved by the Management Board (see below for links to the approved plans). In February 2010, the Shad and River Herring Management Board approved Amendment 3, which revised American shad regulatory and monitoring programs. The Amendment was developed in response to the 2007 American shad stock assessment, which found that most American shad stocks were at all-time lows and did not appear to be recovering. The Amendment requires similar management and monitoring as developed in Amendment 2. Specifically, Amendment 3 prohibits state waters commercial and recreational fisheries beginning January 1, 2013, unless a state or jurisdiction has a sustainable management reviewed by the Technical Committee and approved by the Management Board.

Amendment 3 also requires states and jurisdictions to submit a habitat plan regardless of whether their commercial fishery would remain open. The habitat plans outline current and historical spawning and nursery habitat, threats to those habitats, and habitat restoration programs in each of the river systems. The purpose of the habitat plans is to provide a record of the major threats facing American shad to aid in future management efforts. The habitat plans provide a comprehensive picture of threats to American shad in each state and include collaboration with other state and federal agencies (e.g., state inland fish and wildlife agencies, water quality agencies, U.S Army Corps of Engineers).

The two largest threats identified in the habitat plans were barriers to migration and a lack of information on the consequences of climate change. A key benefit of the habitat plans is that each river system relevant to shad now has its threats characterized. The habitat plans will be filed with the Federal Energy Regulatory Commission to ensure that shad habitat is considered when hydropower dams are licensed. They will also be shared with inland fisheries divisions to aid in habitat monitoring and restoration efforts. In February 2014, the Board approved habitat plans for the majority of states and jurisdictions. It is anticipated that habitat plans will be updated every five years.

The following states/areas have approved sustainability plans, which are available at:
<http://www.asmfc.org/species/shad-river-herring>.

Shad Sustainable Fishery Management Plans – Connecticut, Delaware River Basin, Potomac River Fisheries Commission, North Carolina, South Carolina, Georgia, Florida

River Herring Sustainable Fishery Management Plans – Maine, New Hampshire, New York, North Carolina, South Carolina

5.4.2 ESA/NMFS

In 2013 NMFS completed a review of the status of river herring (alewife and blueback herring) in response to a petition submitted by the Natural Resources Defense Council (NRDC) requesting that alewife and blueback herring be listed as threatened under the Endangered Species Act (ESA) throughout all or a significant portion of their range or as specific distinct population segments (DPS) identified in the petition. The ASMFC stock assessment contained much of the information necessary to make an ESA listing determination for both species; however, any deficiencies were addressed through focused workshops and working group meetings and review of additional sources of information. NMFS determined that listing alewife or blueback herring as threatened or endangered under the ESA was not warranted at that time.

NMFS concluded that while neither species was currently endangered or threatened, both species are at low abundance compared to historical levels, and monitoring both species is warranted. Given the uncertainties and data deficiencies for both species, NMFS committed to revisiting both species in 3 to 5 years, which would be 2016-2018. NMFS determined that this is an appropriate timeframe as a 3- to 5-year timeframe equates to approximately one generation time for each species, and it was unlikely that a detrimental impact to either species could occur within this period. Additionally, it allows for time to complete ongoing scientific studies (e.g., genetic analyses, ocean migration patterns, climate change impacts) and for the results to be fully considered. NMFS also declared its intent to coordinate with ASMFC on a strategy to develop a long-term and dynamic conservation plan (e.g., priority activities and areas) for river herring considering the full range of both species and with the goal of addressing many of the high priority data gaps for river herring, which it has implemented via the TEWG (see below). The full listing determination is available at

<http://www.greateratlantic.fisheries.noaa.gov/regs/2013/August/13riverherringlistingesanoticefr.pdf>.

5.4.3 Technical Expert Working Group (TEWG)

Since initiating the TEWG in 2013, the National Marine Fisheries Service (NMFS) and the ASMFC have worked collaboratively with other partners to make progress on a variety of goals specified in a conservation plan

(<http://www.greateratlantic.fisheries.noaa.gov/protected/riverherring/conserv/index.html>)

including:

1. Identify key research needs for assessment and conservation;
2. Increase coordination of river herring research and conservation;
3. Identify funding sources for river herring research and conservation;
4. Identify conservation actions to address threats;
5. Cultivate research groups to address key topics;
6. Improve information to be used in the next assessment;
7. Improve information used in conservation efforts;
8. Further conservation efforts to address threats; and,
9. Increase outreach about river herring

The TEWG recently released an update on progress, which identified the following key areas of progress:

- Coordination was increased with partners through establishment of the TEWG, including six subgroups (Climate change, Fisheries, Genetics, Habitat, Species Interactions, and Stock Status) and one integration committee. Subgroups:
<http://www.greateratlantic.fisheries.noaa.gov/protected/riverherring/tewg/subgroups.html>
- Two projects were funded through a Plan Request for Proposal process to further information on river herring populations (~\$243,659). See
http://www.greateratlantic.fisheries.noaa.gov/protected/riverherring/tewg/rfp/rh_cons_proposal_abstracts_vs4.pdf for details on projects.
- A dynamic and comprehensive plan for advancing research, coordination, conservation and outreach was developed by NMFS and ASMFC. The Plan considers the information compiled by the TEWG and will be further refined based on TEWG and public input.
- Conducted an ASMFC 2015 River Herring Data Collection Standardization Meeting to discuss standardized approaches to data collection with funding from NMFS:
http://www.asmfc.org/uploads/file/56fc3c6dRH_DataCollectionStandardizationWorkshopSummary_March2016.pdf.
- NMFS Greater Atlantic Region funded a Northeast Fisheries Science Center project to develop a river herring/ Atlantic herring / Atlantic mackerel overlap forecast tool for use by the Atlantic herring and Atlantic mackerel fisheries to minimize incidental catch of river herring (see Turner et al 2015 above).
- Funding was provided to the Atlantic Salmon Federation and St. Croix International Waterway Commission to continue river herring counts at the Milltown Dam fishway in the St. Croix watershed by NMFS (via ASMFC) and the U.S. Fish and Wildlife Service (USFWS).
- A coastwide social science survey to document fishermen's observations of river herring in commercial, recreational, and subsistence fisheries was conducted through NOAA:
http://www.greateratlantic.fisheries.noaa.gov/protected/riverherring/conserv/plancomp/traditional/coast-wide-survey-final_report_5-2015.pdf.
- The Penobscot River in Maine and the Choptank River in Maryland were selected as Habitat Focus Areas under NOAA's **Habitat Blueprint**, targeting financial resources and technical assistance to support habitat conservation and restoration efforts in these high-priority watersheds including removing passage barriers and restoring unimpeded river herring passage and spawning and rearing habitats.
- Information provided by the Passamaquoddy Tribe, Pleasant Point, on the cultural importance of river herring to the Tribe was incorporated into the Plan:
<http://www.greateratlantic.fisheries.noaa.gov/protected/riverherring/conserv/plancomp/traditional/index.html>.
- Development of a life history-based model to inform the setting of quantitative-supported performance standards for survival and passage of American shad and river herring at hydropower projects is being supported by NMFS:
http://www.greateratlantic.fisheries.noaa.gov/protected/riverherring/tewg/stich_tewg_2016.pdf
- Collaboration between NOAA and ASMFC and partners on climate change assessments related to river herring (see below).

- Continued active partnership within the Atlantic Coastal Fish Habitat Partnership by ASMFC and NOAA.
- NEFMC and MAFMC have or are considering including river herring research needs into their research planning processes (i.e., MAFMC Collaborative Research Priorities, NEFMC 2017-2022 Research Priorities, MAFMC Comprehensive Five Year (2016-2020) Research Plan) upon the encouragement of NMFS.
- Collaboration with NMFS and partners to: 1) study the long-term benefits of restoring riverine habitat along the Atlantic Coast; and 2) conduct ecosystem research on river herring.

5.4.4 Councils (caps, coordination issues, IFM etc.)

Since 2014 the Mid-Atlantic and New England Councils have set caps on the fisheries associated with the most RH/S catch: the Atlantic herring and Atlantic mackerel fisheries. The fisheries have generally stayed within their caps, though the 2015 Southern New England Bottom Trawl herring cap went slightly above its cap (see above). Council staff who work on the relevant plans are in frequent contact, and there are Council members who serve across Councils on the relevant Committees. These interactions serve to keep the Council informed of coordination issues. There remains some concern about the coordination of the caps. Given the degree of alignment created by the current estimation procedures and the potential for the Councils to disagree on year to year cap amounts even if a joint framework was established, it is not clear to staff that there likely would be substantial gains from moving from the status quo cap setting procedures to a fully linked cap. If a cap was based on a biologically-derived amount, then more explicitly aligning the caps may be more important from an accounting perspective, but the mixed nature of the Atlantic herring and mackerel fisheries was accounted for in the development of the caps, and herring catch on mackerel trips is used to extrapolate RH/S catch in the mackerel fishery, and mackerel catch on herring trips is used to extrapolate RH/S catch in the herring fishery. See previous memo on this topic at http://www.mafmc.org/s/Tab16_ED-Report.pdf for additional background. The Councils continue to work on the Joint Omnibus Industry-Funded Monitoring Amendment, which could lead to a range of increased monitoring in the mackerel fishery, as described in the table below (MWT – Mid-Water Trawl; SMBT = Small mesh bottom trawl, SBRM = base level of coverage through SBRM, NEFOP = Monitoring by observers from Northeast Fisheries Observer Program, ASM = At Sea Monitors, EM = Electronic Monitoring). Action is expected on this Amendment in early 2017.

Table 19. IFM Amendment Options for Mackerel Fishery

Gear Type	MWT	SMBT	SMBT	SMBT
Permit Categories	All Tiers	Tier 1	Tier 2	Tier 3
Mackerel Alternative 1: No Coverage Target for IFM Program (No Action)	SBRM			
Mackerel Alternative 2: Coverage Target for IFM Program	Includes Sub-Options: 1) Waiver Allowed, 2) Wing Vessel Exemption, 3) 2 Year Sunset, 4) 2 Year Re-evaluation, and 5) 25 mt Threshold			
Mackerel Alternative 2.1: NEFOP-Level Coverage	100% NEFOP-Level Observer		50% NEFOP-Level Observer	25% NEFOP-Level Observer
Mackerel Alternative 2.2: ASM Coverage	25%, 50%, 75%, or 100% ASM		SBRM (No Action)	
Mackerel Alternative 2.3: Combination Coverage	50% or 100% EM/Portside	25%, 50%, 75%, or 100% ASM	SBRM (No Action)	
Mackerel Alternative 2.4: EM and Portside Coverage	50% or 100% EM/Portside	SBRM (No Action)		
Mackerel Alternative 2.5: AMS Coverage on MWT Vessels, then Vessels may choose either ASM or EM/Portside Coverage	25%, 50%, 75% or 100% ASM or EM/Portside	SBRM (No Action)		
MWT indicates midwater trawl and SMBT indicates small mesh bottom trawl vessels.				
Mackerel Alternatives would only apply to trips that land greater than 20,000 lb of mackerel. Sub-Options could apply to any of the alternatives.				

5.4.5 Voluntary – shore-side monitoring/bycatch avoidance program(s) results; study fleet + environmental modeling work

Massachusetts-SMAST - <http://www.umassd.edu/smast/bycatch/>

This collaborative project between mid-water trawl fishermen, Rhode Island bottom trawl fishermen, the Massachusetts Division of Marine Fisheries, and SMAST seeks to reduce river herring and shad bycatch independent of management action; aiding in the effort to rebuild river herring and providing fishermen with a tool to avoid area closures.

The project involves increasing portside sampling, a near real-time information system on the location bycatch events, and testing if oceanographic features can be used to indicate areas with a high probability of bycatch. Portside sampling through the Massachusetts Division of Marine Fisheries, which samples about 50% of all landings in Massachusetts, is the main information source for the project. Several other institutions contribute to the project to increase the number of trips monitored. All observations from the Northeast Fisheries Observer Program are reported in near real-time, while the vessels are at-sea via map grids (see figure below). NOAA Study Fleet and the Maine Department of Marine Resource provide additional samples when the vessels land. The project was started in 2010, with funding from the National Fish and Wildlife

foundation. It is now sustained by The Nature Conservancy and the Atlantic herring Research Set Aside (RSA) program.

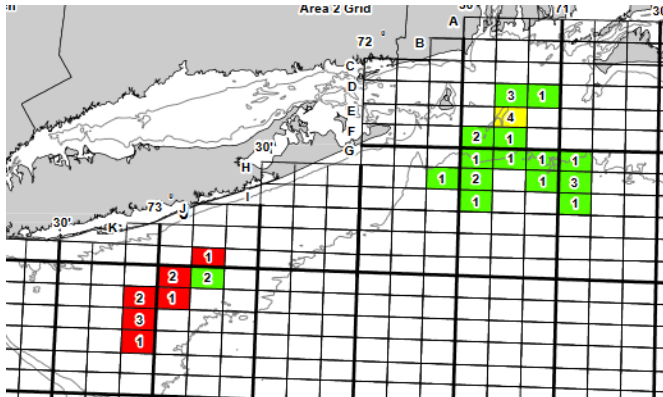


Figure 22. Sample SMAST Avoidance Grid

It is not possible to quantify the effects of the SMAST program in terms of pounds of RH/S avoided because one does not know what catch would have been without the program. However, besides sustained participation from the relevant vessels, there is evidence for intra-annual bycatch reduction in RI bottom trawl fishery in that cells classified as “high” were generally avoided. However, re-entries into a “high” cell still resulted in some of the highest bycatch events. For 2016-2018, the program intends to:

1. Portside sample at least 50% of mid-water trawl trips landed in Massachusetts
2. Continue the river herring avoidance program with mid-water trawlers
3. Advance the avoidance program through habitat forecasts
4. Comprehensive evaluation of program including
 1. Total river herring and shad bycatch
 2. Bycatch rates
 3. Frequency of high bycatch events
 4. Fishing patterns
 5. Context of target species and river herring abundance, distribution, and catchability (in relation to the environment and regulations)

Cornell Cooperative Extension’s Fisheries Program in New York also maintain a voluntary bycatch avoidance program for the longfin squid fishery – see <http://www.squidtrawlnetwork.com/river-herring-avoidance-maps/>. While analyses have not suggested that the longfin squid fishery is a key catcher of river herrings, it does catch shad and some river herrings, and fishermen are aware that if analysis indicates they are interacting with RH/S they could be subject to a RH/S cap in the future (the Council has made such a cap frameworkable).

5.4.6 Dam removals & passage improvements

The NMFS ESA listing determination found that river passage is the single largest issue facing river herring. For example, studies from Maine show that dams have reduced accessible habitat to a fraction of historical levels, 5 percent for alewives and 20 percent for blueback herring (Hall et al., 2011). The 2007 ASMFC shad stock assessment cited overfishing, habitat loss from dam construction, dredge and fill operations, as well as habitat degradation (pollution) among the primary causes of shad declines.

The organization American Rivers maintains a database of dam removals (<https://www.americanrivers.org/threats-solutions/restoring-damaged-rivers/dam-removal-map/>). Their database, which is considered to be a conservative estimate and the best database for this information, includes the total number of dams removed in Mid-Atlantic states from 1973-2015 as 428 (there are also 11 undated dams in the Mid-Atlantic database). As shown in the figure below, the pace of dam removal appears to be increasing over time.

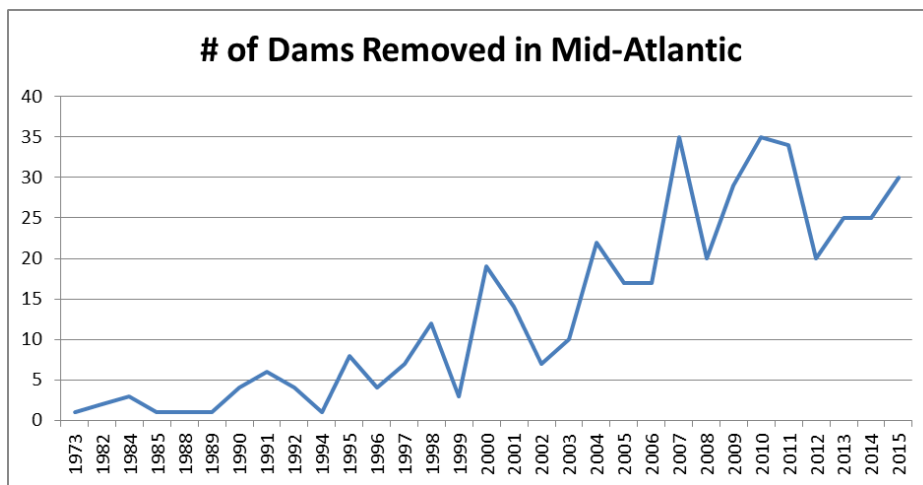


Figure 23. Number of Dams Removed in Mid-Atlantic

When it comes to river miles opened up, American Rivers has data for 150 dams. Since 1973, they estimate dam removals in the Mid-Atlantic have opened up a minimum of 2,340 river miles from those 150 removals. There is some variability in how this data is reported, but this estimate may be low considering that 278 dams in the Mid-Atlantic do not have river mile data.

Some gains from dam removal over this timeframe may be offset by development and agricultural expansion that has resulted in substantial wetland loss and use of culverts that may cause substantial passage issues when viewed on a watershed scale (pers com Jessie Thomas-Blate, American Rivers, NMFS RH listing determination).

The removal of dams, opening up spawning habitat to some degree, has coincided with continued declines in landings/abundance, suggesting that other factors have been influential, perhaps related to at-sea catch, environmental changes, increases in impervious surfaces (see Limburg and Schmidt 1990), other water quality/quantity issues, predation, or other factors influencing natural mortality.

States, various entities, and private citizens have also spent substantial resources on fish passage around dams, whether by construction/improvement of fishways or transporting fish (manually, by truck, or fish lift). A state by state evaluation is beyond the scope of this paper, but for example, the Pennsylvania Fish and Boat Commission estimated that \$145 to \$160 million has been spent just on shad management and restoration construction costs (no operating costs were included) within the Susquehanna and Delaware basins to date, and that an additional \$168 to \$352 million may be spent on fish passage improvements over the next 40 to 50 years (pers com Joshua D. Tryniewski).

Susquehanna River Basin:

- Construction of three fish lifts (two at Conowingo, and one at each Holtwood and Safe Harbor dams) and one vertical slot fishway (at York Haven Dam) on the main-stem Susquehanna River totaled some \$75 to \$85 million (all completed and operational before or by 2000).
- Fish passage upgrades at Holtwood Dam (completed in 2015) are estimated at \$50 million plus.
- Pennsylvania Fish and Boat Commission anadromous fish restoration program (includes annual hatchery operation, bio-monitoring, etc.) estimated at \$10 million over the past 40 years.
- Fish passage projects on major tributaries to the Susquehanna River with relevance to shad
 - West Branch Susquehanna River, denil fishway at approximately \$1 million.
 - Five fishways on several Lower Susquehanna River tributaries, cost of more than \$1 million.
 - Some 23 dam removals on several Lower Susquehanna River tributaries cost more than \$1.5 million.
- Proposed Nature-Like Fishway at the confluence of the West Branch and Susquehanna rivers is estimated to cost some \$6.5 million (construction is yet to be determined).
- Conowingo Dam estimates that their new Federal Energy Regulatory Commission operating license will cost between \$155 and \$339 million in fish passage improvements over the 45 to 50 year license term (new FERC license yet to be issued).
- York Haven Dam will build a Nature-Like Fishway by 2021 at an estimated cost of \$6.3 million.

Delaware River Basin:

- Seven fishways (two denil and five vertical slot) between the Schuylkill and Lehigh rivers cost an estimated \$7 to \$12 million dollars.

Preliminary analysis of data associated with NOAA's Restoration Atlas (<https://restoration.atlas.noaa.gov/src/html/index.html>) also indicate approximately \$77 million in NOAA contributions and \$31 million in state/partner matching contributions for other restoration and fish-passage projects (fishways/lifts, dam removals, etc.) from VA-ME that were supported by NOAA Habitat Restoration and likely to benefit RH/S (approximately 1,400 miles opened). These data were initially passed to Council staff from NOAA via Joseph Gordon of The PEW Charitable Trusts. Staff spot-checked the data against the NOAA Restoration Atlas but staff was not able to fully validate all project numbers due to time constraints.

5.5. CONSIDER ROLE OF CLIMATE CHANGE

By considering species' sensitivity and exposure to climate changes, a fisheries climate vulnerability assessment has found river herrings and American shad to be very highly vulnerable to climate change – Hare et al 2016:

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0146756>. Nye et al. 2012 investigated climate-related mechanisms in the marine habitat of the United States that may impact river herring. Their preliminary results indicate the following: (1) A shift in northern ocean distribution for both blueback herring and alewife depending on the season; (2) decrease in ocean habitat within the preferred temperature for alewife and blueback herring in the spring; and (3) effects of climate change on river herring populations may depend on the current condition (e.g., abundance and health) of the population, assumptions, and temperature tolerances (e.g., blueback herring have a higher temperature tolerance than alewife). Specific findings include the following:

- Alewife: At low population size, coast-wide abundance is projected to decrease with less suitable habitat and patchy areas of high density in the Gulf of Maine and Georges Bank in 2060–2100. At high population size, abundance is projected to increase slightly from 2020–2060 (+4.64 percent) but is projected to decrease (−39.14 percent) and become more patchy in 2060–2100.

- Blueback herring: Abundance is projected to increase at both high and low population size throughout the Northeast United States, especially in the mid-Atlantic and Georges Bank. However, at low abundance the increase is minimal and remains at a level below the 40-year mean. The percentage change due to climate change (factoring only temperature) is +29.93 percent for the time period 2020–2060 and +55.81 percent from 2060–2100.

Lynch et al 2015 (<http://icesjms.oxfordjournals.org/content/72/2/374>) projected potential effects of ocean warming along the US Atlantic coast on river herring in two seasons (spring and fall), and two future periods (2020–2060 and 2060–2100) by linking species distribution models to projected temperature changes from global climate models. Their analyses indicated that climate change will likely result in reductions in total suitable habitat across the study region, which will alter the marine distribution of river herring. They also projected that density will likely decrease for both species in fall, but may increase in spring. Finally, they demonstrated that river herring may have increased sensitivity to climate change under a low abundance scenario and noted that this result could be an important consideration for resource managers when planning for climate change because establishing effective conservation efforts in the near term may improve population resiliency and provide lasting benefits to river herring populations.

6.0 THE KINDS OF ALTERNATIVES THAT RESULT FROM THE REQUIRED AND DISCRETIONARY MSA FMP CONTENTS

It is difficult to predict the full suite of alternatives that would result from FMP implementation. However, based on other Council FMPs and the requirements of the MSA, certain elements would be likely, as described below.

Management Unit

Options would be considered to define the stocks/populations to be managed and their management unit. The stocks considered would likely be tied to the Council's representative states (NC-NY) or utilize the broader populations segments identified in recent genetic analyses (see above). Given the at-sea movement of RH/S, the management unit could be all East Coast waters for the stocks the Council decided to manage.

Status Determination Criteria (SDCs)

The Council has recently built provisions into its plans to automatically incorporate SDCs from the most recent accepted assessment. Without or until such an assessment, proxies for SDCs can be utilized, and the Council's Scientific and Statistical Committee (SSC) can be consulted in the development of proxies and has utilized a variety of approaches to develop ABCs when necessary (catch-based approaches, management strategy evaluations, etc). Examples of possible proxies for data-poor species like RH/S could include survey abundance triggers and proportions of historical catches. The Council's risk policy also has provisions for the SSC when determining acceptable biological catches in cases where there is very high uncertainty related to establishment of an overfishing level or proxy thereof. National Standard 1 guidelines indicate that approval of SDCs will be based on consideration of whether the proposal:

- (A) Has sufficient scientific merit;
- (B) Contains the elements described in paragraph (e)(2)(ii) of this section;
- (C) Provides a basis for objective measurement of the status of the stock or stock complex against the criteria; and
- (D) Is operationally feasible.

Paragraph (e)(2)(ii) states:

In specifying SDC, a Council must provide an analysis of how the SDC were chosen and how they relate to reproductive potential. Each FMP must specify, to the extent possible, objective and measurable SDC as follows:

(A) SDC to determine overfishing status. Each FMP must describe which of the following two methods will be used for each stock or stock complex to determine an overfishing status.

(1) Fishing mortality rate exceeds MFMT. Exceeding the MFMT for a pe-

riod of 1 year or more constitutes overfishing. The MFMT or reasonable proxy may be expressed either as a single number (a fishing mortality rate or F value), or as a function of spawning biomass or other measure of reproductive potential.

(2) Catch exceeds the OFL. Should the annual catch exceed the annual OFL for 1 year or more, the stock or stock complex is considered subject to overfishing.

(B)

SDC to determine overfished status. The MSST or reasonable proxy must be expressed in terms of spawning biomass or other measure of reproductive potential. To the extent possible, the MSST should equal whichever of the following is greater: One-half the MSY stock size, or the minimum stock size at which rebuilding to the MSY level would be expected to occur within 10 years, if the stock or stock complex were exploited at the MFMT specified under paragraph (e)(2)(ii)(A)(1) of this section. Should the estimated size of the stock or stock complex in a given year fall below this threshold, the stock or stock complex is considered overfished.

Permitting and Reporting

The Council typically requires permitting and trip reporting for commercial and for-hire vessels. Federally-permitted vessels are required to sell to Federally-permitted dealers, who most also report catches.

Framework Actions

To increase flexibility, previously-considered actions that do not involve a major departure from existing measures are allowed to be implemented through a streamlines process.

Specifications and Acceptable Biological Catch (ABC) Process

The Council would develop a process for its SSC to set ABCs via annual or multi-year specifications for whatever stocks were to be added. It is likely that the current control rule and risk policy would be utilized. The risk policy guides the SSC in terms of the Council's risk tolerance for overfishing, and the control rule guides how uncertainty is handled. Additional measures that are generally used by the Council during annual specifications include specifying overfishing levels (OFLs), Acceptable Biological Catches (ABC), Annual Catch Limits (ACLs), Annual Catch Targets (ACTs), discard set-asides, total allowable landings (TALs), commercial and recreational quotas, trip limits, bag limits, seasons, size limits, retention requirements, and/or any measure needed to ensure that the specifications are not exceeded. Time/area restrictions are typically considered through amendments or framework actions. The initial implementing Amendment would likely consider a range of options for these kinds of measures which are geared toward avoiding ABC/ACL overages.

Allocations

The Council may consider if allocations are appropriate, for example between the recreational and commercial sectors.

Essential Fish Habitat (EFH)

The Council would consider options for the designation of EFH and of the impacts on EFH from fishing and non-fishing activities.

Designating essential fish habitat (EFH) for river herrings and shads would increase NMFS's authority but not necessarily NMFS's ability to conserve habitats used by these anadromous species, especially freshwater habitats used for spawning and as juvenile nursery areas that are most affected by a wide range of human activities.

Currently, acting under the authority of the Magnuson-Stevens Act, there is a mandatory requirement that NMFS must designate essential fish habitat for managed species and issue essential fish habitat conservation recommendations to federal agencies for activities proposed, funded, permitted, or undertaken by those agencies. Designation of essential fish habitat for river herrings and shads would expand the geographic boundaries where mandatory consultations would be required including most coastal rivers and their watersheds on the Atlantic coast.

EFH Consultations (summary from <http://www.nero.noaa.gov/hcd/appguide1.html>)

Federal agencies which fund, permit, or undertake activities that may adversely affect EFH are required to consult with NMFS regarding the potential effects of their actions on EFH, and respond in writing to NMFS's recommendations. Wherever possible, NMFS is utilizing existing interagency coordination processes to fulfill EFH consultations with federal agencies. These existing coordination procedures include the National Environmental Policy Act (NEPA), Endangered Species Act, Clean Water Act, and Fish and Wildlife Coordination Act. Use of these existing processes allows for efficient project review by NMFS and the other federal agencies.

Although the federal action agency is ultimately responsible for complying with the EFH Consultation requirements of the Magnuson-Stevens Act, the agency may designate a non-federal representative to conduct an abbreviated consultation or prepare an EFH Assessment. Generally this means that a permit applicant or consultant prepares the required EFH Assessment.

There are basically two types of consultations, abbreviated and expanded. The type of consultation necessary depends upon the magnitude of the adverse effect on EFH. Abbreviated consultations are used when a proposed project will have a less than substantial adverse impact on EFH. Expanded consultations are used when the adverse impact on EFH may be substantial. Regardless of consultation type, there are four required components to consultations:

1. Notification - The federal agency must notify NMFS regarding a proposed action that may adversely affect EFH. The notification will typically be in the form of a Public Notice, Draft Environmental Assessment (EA), or Draft Environmental Impact Statement (EIS).

2. EFH Assessment - This is a written assessment of the effects of the action on EFH. The EFH Assessment will typically be incorporated within the notification document (Public Notice or Environmental Assessment) or submitted as a separate document in cases where an expanded consultation is required.

An EFH Assessment must contain the following four sections:

- A description of the proposed action.
- An analysis of the potential adverse effects of the action on EFH, and managed species.
- The federal agency's conclusions regarding the effects of the action on EFH, and the managed species. The agency's views will usually determine the type of consultation. Examples of agency determinations are as follows: A) no adverse effect to EFH (no consultation required); B) minimal adverse effect or less than substantial adverse effect to EFH (abbreviated consultation can be conducted); or C) substantial adverse effect to EFH (expanded consultation required).
- Proposed mitigation, if applicable.

Other information may also be appropriate to include in the assessment such as: the results of an on-site inspection to evaluate habitat and site-specific effects of the project; the views of recognized experts on the habitat or species that may be affected; a review of pertinent literature and relevant information; an analysis of alternatives to the proposed action including those alternatives that avoid or minimize the adverse effects on EFH. The level of detail contained within the EFH Assessment should be commensurate with the degree of adverse impact to EFH.

3. EFH Conservation Recommendations - After receipt of the completed EFH Assessment, NMFS will provide EFH Conservation Recommendations to the federal agency detailing measures that can be taken by that agency to conserve EFH.

4. Agency Response - Within 30 days of receiving NMFS' recommendations, the federal agency must provide a detailed written response to NMFS. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case where a response is inconsistent with NMFS' recommendations, the federal agency must explain (and only explain) its reasons for not following the recommendations, including the scientific justification for any disagreements with NMFS over the anticipated effects of the proposed action and the measures needed to minimize, mitigate or offset such effects.

The Magnuson-Stevens Act also states that Councils "shall comment on and make recommendations to the Secretary and any Federal or State agency concerning any such activity that, in the view of the Council, is likely to substantially affect the habitat, including essential fish habitat, of an anadromous fishery resource under its authority." While the Council's resources would likely preclude comment on every activity, this could be a component of Council coordination. However, other entities have no obligations regarding the Council's recommendations unless they prompt NMFS recommendations in the above-described consultation process.

To summarize, EFH designations provide NMFS the authority to recommend mitigation measures for proposed actions and permitting. NMFS does make such recommendations with other species' EFH and often does secure some level of mitigation. However, the agency may lack the resources to effectively implement the necessary actions related to river herrings and/or shads

Accountability Measures (AMs)

The Council would consider options for appropriate AMs, which ensure that ACLs are not exceeded, or that if they are exceeded corrective measures are taken to avoid future overages. Examples can include in-season closures and paybacks for overages.

Observer Coverage

RH/S would enter into SBRM allocation algorithms, but analysis by NMFS has previously indicated little change in observer placements would occur (see above).

6.1 How would all these work together with the ASMFC and NEFMC?

ASMFC

Coordination with the ASMFC would have to be developed as part of the development of an action that added RH/S as Council-managed stocks. However, the Council and the ASMFC engage on joint/complementary management of several species that are caught in state and Federal waters. While Commission/Council coordination for river herring and shad issues has been extensive in the last 5 years (primarily via the TEWG), the ramifications of ACLs would likely lead to additional collaboration. The Council would likely engage in complementary management with the Commission and ACLs or other catch quotas for federal management would be based on ABCs provided by its Scientific and Statistical Committee and would have to account for any state fishing mortality beyond the control of the Council. The Council and Commission would likely negotiate (via a joint meeting) how to utilize the ABC provided by the Scientific and Statistical Committee. While the Council and Commission may come to an agreement, the Council would be bound to enact measures that keep catch at or below the ABC regardless. This could mean closing other federal directed fisheries quite earlier than would otherwise occur if state-waters catch approached (or was expected to approach) the ABC. The exact accountability measures would be developed during implementation if that is the chosen path. Since the states are not bound by the Scientific and Statistical Committee's decision, substantial catch historically occurred in state waters, and an ABC could be quite low, impacts on federal fisheries like Atlantic herring and mackerel that catch river herrings and/or shads could be substantial. Mortality caps for federal fisheries could be part of the accountability measures that are used, but they would have to be set low enough such that state waters catch plus any mortality caps were expected to restrain catch at or below the ABC. While the Council could be unable to totally control all mortality because of state fisheries and discards in state waters, mortality in federal waters would be limited. The Council can limit catches in state waters as a condition of a federal permit, but cannot affect state-only vessels.

The Council and ASMFC have different processes for amending fishery management plans, and some concern has been expressed that ASMFC-based management is subject to less oversight than Council management and could be “undone” more easily. While this may be true procedurally, the ASMFC currently appears very committed to sustainable RH/S management through the use of its sustainability plans.

NEFMC

Staff sees two primary ways to coordinate with the NEFMC if the MAFMC adds RH/S as Council-managed stocks. One is that the MAFMC could enter into joint management with the NEFMC to manage RH/S stocks all along the coast, similarly to how monkfish and dogfish are managed. The Councils would either need to agree on how to utilize RH/S ABCs or specify a process for NMFS to implement measures in cases where the Councils cannot agree.

Alternatively, the MAFMC could identify stocks originating from the Mid-Atlantic as the management unit, and then have sole or joint management responsibility for those stocks and develop measures to ensure that catch throughout the range of the stock does not exceed the applicable ABCs. If sole responsibility is chosen then Council staff and liaisons would keep the other Council informed of relevant actions. For any managed species, the Council can develop management measures that apply throughout the range of the species even if that range crosses Council boundaries or impacts other fisheries. The best available science would have to be used to apportion catch by stock area, and techniques have been developed to determine the origin of RH at a relatively fine scale. New England could take a similar approach for RH/S originating in its waters, and MAFMC fisheries could then be impacted depending on ABC levels and the degree to which MAFMC fisheries interacted with New England RH/S.

7.0 ENVIRONMENTAL ANALYSIS (DIRECT, INDIRECT, AND CUMULATIVE) OF IMMEDIATELY ADDING VS NOT ADDING RIVER HERRING AND SHAD TO A FISHERY AND MANAGING IT BY USE OF PROXIES.

7.1 DESCRIBE NO-ACTION IMPACTS, INCLUDING:

Introduction

Under the no action alternative, it is presumed that state fisheries would continue to be limited subject to approved state sustainability plans, and catch in federal fisheries would continue to be limited subject to the current RH/S caps set by Amendment 14 for the Atlantic mackerel and Atlantic herring fisheries. Also, the various collaborative efforts of the TEWG would be expected to continue, as would the efforts of various other entities that engage in RH/S

conservation, such as watershed associations. The impacts of Council management of RH/S versus no action are described below. While an actual action by the Council would typically examine direct, indirect, and cumulative impacts on the managed species, other non-targets, habitat, protected resources, and human communities, this white paper focuses on the impacts for RH/S, their habitat, and related human communities. If the Council decides to proceed with an FMP/FMP Amendment then those other impact areas (protected resources and other non-targets species) would be examined in greater detail, but the impacts to other non-targets and protected resources are simply the impacts of effort, and if effort is reduced then impacts to other non-targets and protected resources are also reduced, indirectly benefiting those species. The protected resources and other non-target species impacted by the MSB fisheries are described in the annual specifications documents for those species, which are available at the NMFS GARFO website <https://www.greateratlantic.fisheries.noaa.gov/>. Including these resources would only involve repeating this concept multiple times below. Based on the assumption that at least in the short term the only RH/S fisheries in Federal waters would be incidental, recent MSB and Atlantic herring specifications can be consulted for relevant protected resource and other non-target impacts. Since observer coverage is not expected to be different regardless of whether or not RH/S are Council-managed stocks (see above) this issue is not further discussed in the impacts section.

The previous white paper documented the various positive benefits that could accrue from RH/S restoration, including several types of value such as commercial, recreational, ecological, existence, and cultural. These are not necessarily the only types of value, but the descriptions of these benefits below re-establishes that these fisheries likely have, or at least could have if revived, substantial importance to the nation. To the degree that RH/S stocks are improved, gains would be expected under all of these types of benefits. Subsequent sections consider whether Council management would likely achieve improved RH/S abundances – this section describes the impacts that could result from higher abundances.

First, while the historical peak commercial river herring and shad catches were likely unsustainable, these species have supported substantial commercial fisheries in the past that were, and could be important to their regional economies. Benefits of potential higher future harvests would accrue to producers in the form of profits (revenues minus costs) and to consumers in the form of higher consumer surplus (the difference between consumers willingness to pay and what they actually had to pay). Because of the lack of information about what level of harvest would actually be sustainable (as well as unknown economic factors such as production costs), it is not possible to quantify the *economic value* of these potential landings. However, given the available price data in recent river herring and shad Commission plan amendments (ASMFC 2009, ASMFC 2010), if sustainable landings of 4,000 mt (about 8.6 million pounds) of river herrings and 2,000 mt (about 4.3 million pounds) shads were possible, and if an average ex-vessel price of \$0.27/Lb. and \$1.09/Lb. is used for river herring and shad, respectively (these values were reported by Commission staff, K. Taylor, for 2012 fisheries), this example would result in about \$7 million dollars per year in ex-vessel revenues (1 mt equals about 2204.6 pounds). Based on historic landings these levels seem not unreasonable, but it is important to note that higher landings may result in lower prices per pound so the ex-vessel value of a higher quantity of fish may be lower. Ex-vessel revenues generally have multiplier effects in terms of generating economic activity, and consumers also benefit for the surplus value they derive from the transaction of consuming fish. While historical high levels of landings may have been unsustainably high, RH/S fisheries had combined landings in the 20,000 mt to 30,000 mt

range throughout the 1950s and 1960s ranging from Maine to South Carolina, so higher amounts/benefits may also be possible.

Second, there is economic value in recreational fishing and subsistence fishing, which can be important to local and regional economies. Presumably each fishing trip provides some value to each angler, whether in the form of recreation or food. If fish runs increase, there can be benefits related to higher angler satisfaction from higher catch each trip and/or related to taking more trips. For river herring, recreational benefits primarily accrue related to their use as bait for other, larger fish but there is still definite value in that respect (some fishermen pay \$1-\$3 per fish for similar live baits depending on local conditions, based on personal communication with Kate Taylor (ASMFC) and staff observations at local tackle stores). For shad, they are often the primary target but may also be used as bait. Recreational catch data on these species is poor since recreational catch primarily takes place out of the geographical scope of the NMFS recreational surveys, but harvest is currently relatively low due to the moratoria and other recreational restrictions. The general literature on the value of recreational fishing is well developed, though little information is available specific to river herring and/or shad fishing. One study did estimate an annual aggregate "willingness to pay" (value) of \$3.2 million dollars for Delaware River shad fishing in 1986 (based on 63,000 angler days and a per angler day value of \$50 - Lupine and Miller 1987), which is equivalent to \$6.5 million in 2012 dollars. Additional reference documents on the general economic value of saltwater recreational fishing in the Mid-Atlantic may be accessed at http://www.st.nmfs.noaa.gov/st5/RecFishEcon_pubs.html. An econometric analysis is beyond the scope of this document, but based on the large existing body of recreational-demand literature, there are often substantial socio-economic benefits related to improved recreational fisheries and there is no reason to conclude that this would not be the case with river herrings and shads.

Third, there could be indirect ecological value related to recreational activities. This comes from river herrings' and shads' role as forage species for higher trophic level predators such as striped bass or whales. Higher forage populations could indirectly help predator populations, which could support better recreation such as fishing (including other Council-managed species) or whale-watching. From this perspective the ecological benefits of healthy populations indirectly create recreational benefits, as described above. There are ways to measure these benefits but not within the scope of this paper as they are not directly measured for RH/S. The important point is that recreational benefits could be direct (catching RH/S) or indirect in that RH/S are forage species for higher trophic level predators that people enjoy catching (e.g. striped bass) or watching (e.g. dolphins).

Fourth, there are non-market existence values (i.e., value gained by individuals related to the knowledge that these species are being conserved successfully) that can result from successful management, especially given these species role as forage. Public interest in this issue demonstrates that a segment of the general public holds a certain value for the knowledge that these fisheries are being sustainably managed, and even if each individual's value is small the total value may be quite large when many people are involved. While there are not existing studies related to non-use benefits from river herring and shad, there are many non-use studies on other environmental issues documenting the occurrence of such values. As described in Section 5.2, there are a wide variety of predatory animals that could benefit from higher RH/S populations.

Finally there is cultural value, which may be thought of as a separate type of existence value. River herring and shad runs are or have been important culturally for many communities (just Google “Shad Festival” or “Herring Festival”) and there can also be cultural value beyond food value related to subsistence fishing (e.g. Mashpee Wampanoag Indian Tribe on Cape Cod, Massachusetts (ASMFC 2011)). While difficult to quantify, this is another potential benefit related to river herring and shad conservation that contributes toward its importance to the Nation. The recent Commission Shad and River Herring Plans also describe that river herring and shad festivals can be important sources of regional economic activity. If the related economic activity is lost, replacement activities will mitigate the net loss, but there is still some loss of net value and certainly local or regional distributional consequences in terms of jobs.

In summary, healthier river herring and shad runs and fisheries would likely constitute substantial value to the Nation, but it is beyond the scope of this paper to estimate exactly what that value might be. This paper does consider below whether Council management would be likely to improve RH/S abundances, which drives the potential benefits described above.

7.1.1 Full consideration of the impacts of the earlier decision by the full Council to not add River Herring and Shad into an FMP in Amendment 14

Most portions of Amendment 14 became effective in early 2014. Given the additional steps that would have been required to integrate RH/S into an FMP, it is unlikely that implementation could have occurred before January 1, 2015 at the earliest. Thus at most the requirements of an FMP would have been in effect for approximately 18 months. It is likely that the only substantial difference in RH/S over those months would have been that the Council’s SSC would have set an ABC for RH/S stocks in the management unit(s) selected by the Council and the Council would have set specifications accordingly (other possibly longer-term impacts are described below related to future decisions). Depending on the ABC set by the Council, this could have led to either higher or lower catches than have occurred. Qualitatively, higher or lower catches could have negatively or positively impacted RH/S, respectively. However, it is not clear that the scale of catches that have been occurring in recent years are substantially contributing to the current low RH/S population levels, and recent catches represent a very small fraction compared to historical catches. It is also not clear that Council action would have impacted state actions and state catches. The most likely impacts would have been for the Atlantic herring and mackerel fisheries, which are already subject to relatively low incidental catch caps. To the degree that the caps have encouraged fishermen to avoid RH/S, if Amendment 14 had been delayed (delaying the caps) then there could have been negative impacts for RH/S. However assuming implementation, with low enough ABCs the Atlantic herring and mackerel fisheries could have been more limited, which qualitatively could have had a positive impact on RH/S but the extent is unclear as described above.

Taking also into consideration the relatively high NEFSC and NEAMAP indices in the most recent years, the mixed state indices in the most recent years, and relatively low incidental catch in recent years, it appears likely that overall the earlier decision by the full Council to not add RH/S into an FMP in Amendment 14 has had minimal if any impacts on RH/S populations to date related to the short timeframe and other measures already in place. Likewise, there would

also have been minimal impacts in terms of the various potential commercial, recreational, ecological, existence, and cultural benefits described above that should accrue from higher RH/S populations.

7.1.2 Review success criteria and progress updates to determine course of RH/S situation over last 3 years

7.1.2.A Are RHS stocks improving?

It is uncertain whether RH/S stocks have changed from October 2013 to now. There are some indications that the overall numbers of RH/S may have increased since 2013 based on the NMFS and NEAMAP survey data described above, but state surveys appear more mixed.

7.1.2.B Any evidence that incidental catch in federal fisheries has been limited and/or reduced?

A review of cap performance

(http://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/Mackerel_RHS/Mackerel_RHS.htm) indicates that a relatively small percentage of the RH/S cap was caught in 2014, 2015, or 2016 to date. There have been no closures related to the RH/S cap so far. Low mackerel landings have contributed to the low RH/S estimates. Due to the overlap in the Atl. Herring and mackerel fisheries, their RH/S cap catches cannot be added together to produce a total catch across caps - RH/S on a trip with both Atl. herring and mackerel can count against both the Atl. herring and mackerel RH/S caps. Because the cap amounts were set considering this circumstance, double counting is not a problem for monitoring. The Monitoring Committee has not found any operational issues with the cap, other than noting that the recent low observer coverage and high RH/S catch variability means precision may be low, which means that the RH/S cap may be substantially under or overestimated in some years. The Industry-Funded Monitoring Amendment has analyzed precision in the 2014/2015 mackerel RH/S caps:

Table 20. RH/S Cap CV Performance 2014-2015

Catch Cap	Fishing Year ¹ : CV (Observer Coverage)	
	2014	2015 ³
RHS-Mackerel	48.9% (37.8%)	22.7% (7.3%) ³

Source: GARFO Quota Monitoring Database as of 5/22/2016

¹Catch cap fishing year: river herring/shad = calendar year; haddock = May-April

³Fishing Year 2015 data are PRELIMINARY

Somewhat counterintuitively, the Coefficient of Variation (CV – a measure of relative precision) for 2015 was better than 2014 despite substantially lower observer coverage in 2015. CV is dependent on both coverage and the underlying data - the RH/S catches in 2015 were more similar to each other on the few 2015 observed mackerel trips compared to 2014, resulting in better CVs despite the lower coverage.

It is not clear if the cap has led to lower RH/S catches, though RH/S catches as estimated via observer data have been relatively low in recent years (see Appendix 2). On one hand RH/S catches have appeared low in the mackerel fishery, and perhaps the cap has provided an incentive to avoid RH/S. On the other hand, the mackerel fishery has not been very active, and that could be the main driver of cap performance. If either the mackerel fishery improves or RH/S abundance increases, the RH/S cap will limit RH/S catch in the mackerel fishery. The same would be true of the Atlantic herring fishery and there have been times of substantially higher MSB and Atlantic Herring landings (see Figure below).

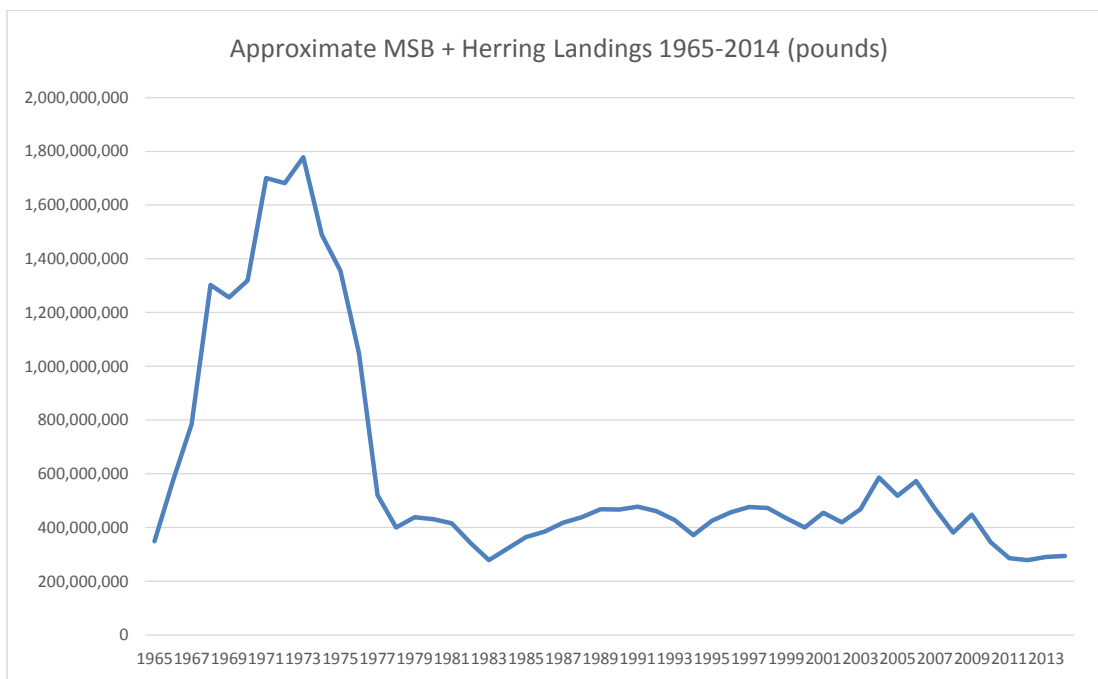


Figure 24. Approximate MSB + Herring Landings 1965-2014 (pounds).

As described above there is also some evidence that the voluntary bycatch avoidance networks (SMAST) have led fishermen to avoid high RH/S areas to some degree - as illustrated in Appendix 2 incidental catches on RH/S appear relatively low in recent years.

Slippage

MSB Amendment 15 and MSB Framework 9 should substantially reduce the occurrence of slippage on MSB vessels, and similar provisions have been passed for the Atlantic Herring fishery. Given the limited activity from the Atlantic mackerel fishery in recent years, slippage data through 2013 from the Atlantic Herring fishery is provided below. Council staff expects to have an update for 2014 and 2015 slippage information by the October Council meeting.

Table 21. Slippage Summary Atlantic Herring 2010-2013

Year	# Hauls Observed (% coverage)	# Hauls with Slippage (% of obs hauls)	Reasons for Slippage (# of slipped hauls)	Mean Weight Slipped Hauls (lbs)	# Hauls with Operational Discards (% of obs hauls)	Mean Weight Operational Discards (lbs)
2010*	929 (30-40%)	30 (3.2%)	<ul style="list-style-type: none"> • Not Specified (15) • Fell Out of Gear (7) • No Market Value (2) • Vessel Capacity Filled (6) 	8,071	297 (32%)	367
2011*	1,140 (~30%)	78 (6.8%)	<ul style="list-style-type: none"> • Not Specified (41) • Fell Out of Gear (5) • No Market Value (8) • Vessel Capacity Filled (19) 	7,902	198 (17.4%)	155
2012 and 2013**	1,126 (20-30%)	95 (8.4%)	<ul style="list-style-type: none"> • Not Specified/Other • Spiny Dogfish Clogging Pump (8) • No Market Value (7) • Vessel Capacity Filled (24) 	8,230	343 (30.5%)	198

*In 2010-2011, a few (5-7) additional hauls were observed to release fish due to gear damage.

**In 2012-2013, there were two events in which gear damage prevented the catch from being brought on board. The estimated weight of catch not brought on board for these two events was 400,000 pounds.

7.1.2.C Has scientific information about RH/S improved (life history, abundance, etc.)?

There have been several advancements in RH/S science in recent years due in part to the attention brought to RH/S through the Council's considerations regarding RH/S. The advancements primarily concern RH related to the resources attracted by TEWG activities. The first is the data standardization workshop the Commission organized with funding support from NOAA Fisheries. If states can better align their data collection and reporting methodologies, future assessments (RH and Shad) will benefit. Another major advancement is the genetics work done on river herring, which both has better defined the natal spatial characteristics of RH as well as providing information on how bycatch may be impacting different natal areas. Recent research on assessing demographic effects of dams on diadromous fish (Nieland et al 2015) also holds promise on assessing impacts to RH/S populations under various scenarios of harvest. The work described above on environmental modeling may also offer options for avoiding RH/S in the mackerel and Atl. herring fisheries. Finally, all of the TEWG subgroups have established data gap documents, which should continue to stimulate research on RH/S, though most TEWG efforts are focused on RH.

7.1.2.D Has coordination between the entities that are involved in RHS management improved?

The primary work from staff over the last year that could affect RH/S involves the TEWG and the Joint Omnibus Industry-Funded Monitoring (IFM) Amendment. Both of these efforts involve substantial collaboration and coordination. The IFM Amendment, which could result in

additional monitoring of the mackerel fishery, has led to extensive work between NMFS, MAFMC, and NEFMC staff to develop monitoring options for the Atl. herring and mackerel fisheries. The TEWG incorporates those entities plus the ASMFC and a wide variety of other management partners, interested parties, and researchers. Through the TEWG, it is relatively easy to identify the key issues and data needs for river herring, and appropriate contacts. Shad lags somewhat in this area, but most of the TEWG participants are familiar with Shad as well, and data collection activities that benefit river herring are likely to transfer to shads as well.

7.1.3 Full consideration of the future impacts of failing now to include River Herring and Shad in the fishery

These are the impacts of maintaining the status quo into the future. Again, under the no action alternative, it is presumed that state fisheries would continue to be limited subject to approved state sustainability plans, and catch in federal fisheries would continue to be limited subject to the current RH/S caps set for the Atlantic mackerel and Atlantic herring fisheries. Also, the various collaborative efforts of the TEWG would be expected to continue, as would the efforts of various other entities that engage in RH/S conservation, such as watershed associations.

Two critical things will not get done under the status quo that could impact RH/S. First, Council-developed status determination criteria (SDCs or reference points) will not be set (nor resulting ABCs/ACLs/AMs), and EFH will not be designated. Each is considered separately.

Status Determination Criteria (SDCs or Reference Points) and ABCs/ACLs/AMs

SDCs lead to ABCs/ACLs/AMs which lead to other catch controls, so they may be considered together – it is really the SDCs and ABCs that matter – the other measures just operationalize the ABCs. This holds true for administrative aspects of management as well in terms of having additional staff considering RH/S issues and developing information for any annual specifications processes.

The available evidence suggests that not setting SDCs will not have a substantial negative impact on RH/S. This is due to several factors. First, it is not clear that recent/current catches are having substantial impacts on RH/S populations as they are already a very small fraction of historical catches. Second, RH/S are already being actively managed by the ASMFC and state catches are already strictly limited within the context of approved state sustainability plans.

The states, through the Commission and its Interstate FMP for Shad and River Herring, appear to have effectively controlled directed harvest of river herrings and shads in state waters. The Commission also has a stock assessment process in place that effectively integrates data from the states, though there are a variety of data gaps. The Commission peer-reviewed stock assessment process integrates data from both the states' and federal waters and the stock assessment committee has both NMFS and U.S. Fish and Wildlife Service representatives.

The Magnuson Stevens Act precludes federal regulation of a fishery in state waters unless the fishery occurs predominantly in federal waters. 16 U.S.C. § 1856(3)(b). All river herring and American shad state fisheries that have not been designated by the Commission as sustainable

were closed by January 1, 2013. The Commission has communicated to the Council (Dec 5, 2012 letter, attached) that it will take 3-5 years to determine the effect of these measures. In the same letter, the Commission encouraged exploration of the concept of Council management but also indicated a preference that the Commission would retain authority to manage in-river state-water fisheries. The Council would not have the authority to manage in-river state-water fisheries, and the potential consequences of this on annual catch limits and accountability measures are described above.

It is not clear that states/the Commission have effectively controlled discards in state waters, but they could and would be in a better position to do this given the Council's limited authorities in state waters. State regulations also appear likely to avoid redevelopment of directed ocean fisheries for river herrings and shads since outside of approved state-specific sustainable FMPs, possession is either banned or only allowed as limited incidental catch related to directed landings of other species.

When combined with the caps that are in place at the Councils to achieve a relatively low level of incidental catch and the voluntary avoidance practices of the fishery, the current management systems already in place appear likely to have a reasonable likelihood of having positive impacts moving forward even if previous management has led to a depleted condition. The existing measures also do not appear to be ephemeral. The positive impacts would extend to the various potential commercial, recreational, ecological, existence, and cultural benefits described above that should accrue from higher RH/S populations.

The previous white paper suggested that there might be more stock assessment progress if RH/S became a Council-managed species, through additional involvement of NMFS assessment personnel. This indirectly ties to the SDCs because additional science resources could theoretically lead to more useful SDCs that would effectively guide management, regardless of the lead entity. However, given the activities of the TEWG, and the engagement by NMFS assessment staff in the TEWG and in the last river herring assessment, continued progress on RH/S science also appears likely under the no action alternative (TEWG activities are further described above). The positive impacts would extend to the various potential commercial, recreational, ecological, existence, and cultural benefits described above that should accrue from higher RH/S populations. The ASMFC also requires states to implement fisheries-dependent and independent monitoring programs to provide data for use in future stock assessments. Descriptions of the ASMFC and NEFSC assessment processes are described below:

ASMFC

<http://www.asmfc.org/fisheries-science/stock-assessments>,
http://www.asmfc.org/files/Science/TechnicalGuidanceDocument_Feb2016.pdf

The Commission conducts stock assessments on the majority of Commission-managed species in order to determine the health and status of the fish stock and to provide scientific advice to fisheries managers. The Commission also works closely with the National Marine Fisheries Service's Science Centers and Regional Fishery Management Councils on the assessments for jointly or cooperatively managed species, such as Atlantic herring, summer flounder and Spanish mackerel.

Generally, the Commission conducts two types of stock assessments (1) a benchmark stock assessment and (2) a stock assessment update. A benchmark stock assessment is a full analysis

and review of the stock condition, focusing on the consideration of new data sources and newer or improved assessment models. This assessment is generally conducted every three to five years and undergoes a formal peer review by a panel of independent fisheries scientists who evaluate whether the data and methods used to produce the assessment are scientifically sound and appropriate for management use (peer-reviewed stock assessment). A stock assessment update incorporates data from the most recent years into the peer-reviewed assessment model to determine current stock status (abundance and overfishing level).

Upon the request of a board/section, Technical Committees (TC) nominate individuals with appropriate expertise in stock assessment and fish population dynamics to a species stock assessment subcommittee (SAS), which will report to the TC. SAS nominations are approved by the board/section and shall continue in existence as long as the board/section requires. Membership of a species SAS will be comprised of TC members with appropriate knowledge and experience in stock assessment and biology of the species being assessed. Individuals from outside the TC with expertise in stock assessment or biology of the species may also be nominated and appointed, if necessary. Like the SAW/SARC process there is typically a data workshop, assessment/modeling workshop, and review workshop sequence.

In order to ensure the quality and credibility of its stock assessments for management use, the Commission oversees a formal peer review process to evaluate the accuracy of all benchmark assessments. The Commission's stock assessment peer review process includes regional programs coordinated by the National Marine Fisheries Service - the Northeast Stock Assessment Workshop/Stock Assessment Review Committee (SAW/SARC) and the Southeast Data and Assessment Review (SEDAR). The Commission also periodically conducts independent external peer reviews following a similar process.

NEFSC - Northeast Regional Stock Assessment Workshop (SAW)

[\(http://www.nefsc.noaa.gov/saw/](http://www.nefsc.noaa.gov/saw/),

[http://www.nefsc.noaa.gov/saw/pdfs/SAW_WG_participation_and_function_FINAL.pdf\)](http://www.nefsc.noaa.gov/saw/pdfs/SAW_WG_participation_and_function_FINAL.pdf)

The Northeast Regional Stock Assessment Workshop or "SAW" is a formal scientific peer-review process for evaluating and presenting stock assessment results to managers. The SAW protocol is used to prepare and review assessments for fish and invertebrate stocks in the offshore US waters of the northwest Atlantic. Assessments are prepared by SAW working groups (federally led assessments) or Atlantic States Maine Fisheries Commission technical assessment committees (state led assessments) and peer reviewed by an independent panel of stock assessment experts called the Stock Assessment Review Committee or "SARC". The SAW/SARC process began in 1985.

Other than the Chair and the lead stock assessment scientist, SAW Workgroup members must apply via a questionnaire. A selection committee comprised of Deputies from each of the NRCC organizations (NMFS-NEFSC, NMFS-GARFO, MAFMC, NEFMC, ASMFC) reviews applicants and makes a final decision regarding approval of each candidate. SAW Workgroups strive for consensus, defined professionally as an acceptable resolution, one that can be supported by the WG members, even if not the "favorite" of each individual. Typically the lead stock assessment scientist is developing and running statistical models with input/consensus from the workgroup on data, model selection, and model configuration. Most assessments

process through a data workshop, assessment/modeling workshop, and review workshop sequence.

The SARC is asked to determine the adequacy of the assessments in providing a scientific basis for management. The SARC panel may accept or reject an assessment. Following the peer review meeting, each SARC panelist provides a written review and the panel provides an overall written summary of the proceedings. SARC panelist reports are typically completed about five weeks after the peer review meeting.

Final SAW documents include a Stock Assessment Report, a Stock Assessment Summary Report and the SARC panelist reports. After the peer review takes place, final SAW assessment reports are published by the Northeast Fisheries Science Center and all final documents are made available online. Final published SAW reports reflect the written decisions and conclusions of the SARC panel regarding each of the assessment Terms of Reference.

There appear to be two primary differences between the NEFSC and ASMFC assessment processes. First, the NEFSC uses the Center for Independent Experts for peer reviewers who are theoretically more removed from fisheries assessment and management on the East Coast than ASMFC peer reviewers (who may have more connections to those directly involved in the assessment). This independence may be a strength in terms of freedom to critique but also means that those reviewers may have less background knowledge about the fishery to draw from. Second, the ASMFC timeline is slightly more flexible than the NEFSC process, which can allow for incorporation of late-developing information, but can also delay finalizing assessments. Overall it is not clear that there is tremendous advantage in having an assessment be “home-based” within the NEFSC or ASMFC process, especially since with RH/S, scientists from the NEFSC are already involved with the ASMFC assessment processes.

Essential Fish Habitat (EFH)/Habitat

If RH/S are not added as Council-managed stocks, no EFH would be designated. However, as discussed in the previous white paper: A) states are already independently acting to improve riverine habitats B) NMFS has ongoing consultations with upstream dam removal/riverine habitat improvement projects (as well as funding them), and C) NMFS has already been successful in mitigating impacts to some habitats (tidal riverine waters) used by river herrings and shads because they are forage species for other federally-managed fish species (e.g., bluefish), and are, therefore, considered a component of essential fish habitat for those predatory species. River herrings, shads, and Atlantic salmon utilize the same areas for in-river dependent life stages however (where impacts are more likely due to water passage and water quality issues), and the in-river geographic range in which river herring may benefit from the designation of Atlantic salmon EFH extends from Connecticut to the Maine/Canada border. Habitat protections for sturgeon would also be likely to benefit RH/S indirectly. In addition to the state sustainability plan mandate, the ASMFC makes recommendations to states for the conservation, restoration, and protection of habitat. States are involved in many habitat improvement projects. These efforts at improving RH/S habitat would continue under the no action alternative and should have positive impacts for RH/S. The positive impacts would

extend to the various potential commercial, recreational, ecological, existence, and cultural benefits described above that should accrue from higher RH/S populations.

7.2. FULLY DESCRIBE THE LIKELY IMPACTS OF IMMEDIATELY ADDING RH/S AS TYPICALLY-MANAGED COUNCIL STOCKS THROUGH THE USE OF PROXY REFERENCE POINTS

7.2.1 Describe likely and/or potential impacts from FMP provisions

RH/S

As described above, it is really the Status Determination Criteria (SDCs) and Acceptable Biological Catches (ABCs) that matter for impacts to RH/S – the other measures just operationalize the ABCs. Managing RH/S through the use of Council-specified SDCs (proxies or other) is expected to have a minimal impact on RH/S and likewise for the various potential commercial, recreational, ecological, existence, and cultural benefits described above that should accrue from higher RH/S populations. First, it is not clear that recent/current catches are having substantial impacts on RH/S populations as they are already a very small fraction of historical catches. Second, RH/S are already being actively managed by the ASMFC and state catches are already strictly limited within the context of approved state sustainability plans. In addition, compared to the status quo, given the uncertainty that could be involved with any proxy that the Council would enact, it is possible that such a proxy would not inform the Council appropriately about whether rebuilding was necessary or about what catch should occur. When combined with the caps that are in place (at the Councils) to achieve a relatively low level of incidental catch, and the voluntary avoidance practices of the fishery, the result of implementing Council FMP management appears unlikely to result in a substantially different outcome for RH/S compared to the status quo. One way that Council-management could allow for some additional control of catch of RH/S originating from the Mid-Atlantic is that the Council could develop ABCs for RH/S that originate in the Mid-Atlantic, and develop accountability measures to ensure that the ABCs for those fish were not exceeded. Such accountability measures could extend geographically throughout the range of the fish, which could allow the Council to develop measures to limit catch of Mid-Atlantic originating RH/S in New England waters, i.e. the southern New England Atlantic herring fishery. Currently the southern New England herring fishery is limited by the RH/S cap set by the New England Fishery Management Council.

While current incidental catch in Council-managed fisheries is a very small fraction of historical catches, it is possible that such catch could impact individual runs if fish stay with their natal group at sea. Ongoing finer-scale genetic research may shed light on this potential issue. The last river herring assessment (ASMFC 2012) did note that incidental marine catch estimates came close to or exceeded total reported commercial catches in 6 out of 22 years 1989-2010 (see figure below) with midwater trawl incidental catch only included from 2005 onward.

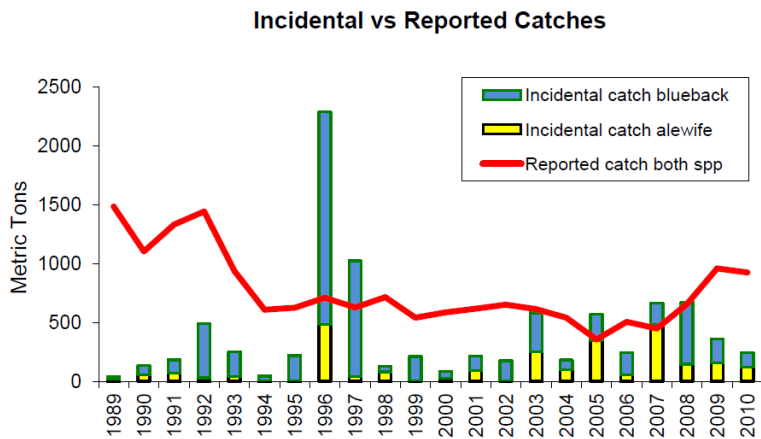


Figure 25. Incidental catches of blueback herring and alewife, all gears and fleets reported by NEFOP observers, compared to total reported catches, 1989-2010. CVs not shown. Midwater trawl bycatch only included from 2005 onward.

The 2012 assessment also noted that for both alewife and blueback herring, large proportions of immature individuals were captured at sea and that this is cause for concern (see figure below). Length information from fish sampled on mackerel RH/S cap trips have not been analyzed, but given the few mackerel trips that have been observed during the cap years (2014-2016), the 2005-2010 data likely provides a more useful description of the size of river herring that are being or might be encountered in the fishery.

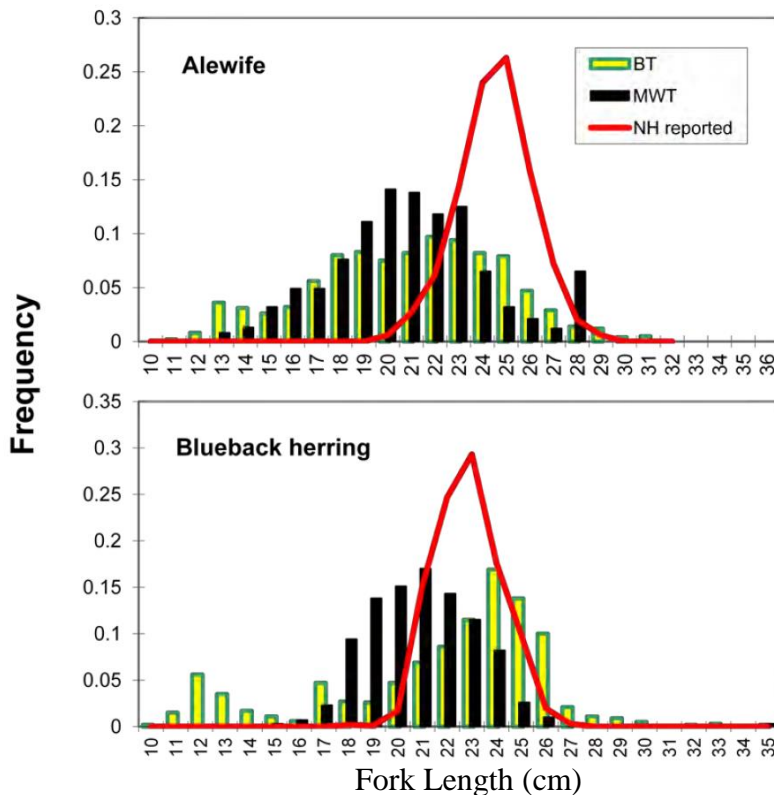


Figure 26. Length frequency distributions of alewife and blueback herring captured in bottom trawls (BT), midwater trawls (MWT), and compared to the spawner length frequency in New Hampshire. Data are from 2005-2010 added together.

Given the ongoing efforts stimulated by the TEWG, it is also unlikely that adding RH/S as directly managed species would bring in substantially more scientific resources for assessing the stocks than will occur under the status quo. Continued progress on RH/S assessment science is likely to be similar under the status quo or if they are added as Council-managed species.

Essential Fish Habitat (EFH)

If RH/S become Council-managed stocks, EFH would be designated in both state and Federal waters. EFH designations provide NMFS the authority to recommend mitigation measures for proposed actions and permitting. NMFS does make such recommendations with other species' EFH and often does secure some level of mitigation. Designation of EFH for RH/S would expand the geographic boundaries where mandatory consultations would be required including most coastal rivers and their watersheds on the Atlantic coast. However, the agency may lack the resources to effectively implement the necessary actions related to river herrings and/or shads. Limited resources (staff and funding) already restrict the agency's ability to effectively manage essential fish habitat for Atlantic salmon and there is no reason to believe that this situation will be different for river herrings and shads if they became federally-managed species.

It is unclear if substantial and tangible habitat benefits would accrue beyond those already being pursued for river herring (and other species that utilize similar habitat) by the states, NMFS, and other federal agencies, especially given current funding limitations. In addition, almost all East Coast coastal and shelf waters are already designated as EFH for other species, so habitat consultations for projects in the relevant Federal waters already apply. Thus compared to the status quo, there do not appear to be substantial benefits that would accrue to RH/S from the identification of EFH and likewise for the various potential commercial, recreational, ecological, existence, and cultural benefits described above that should accrue from higher RH/S populations.

Since A) states are already independently acting to improve riverine habitats B) NOAA has ongoing consultations with upstream dam removal/riverine habitat improvement projects, and C) NMFS has already been successful mitigating impacts to some habitats (tidal riverine waters) used by RH/S because they are forage species for other federally-managed fish species (e.g., bluefish), and are, therefore, considered a component of EFH for these predatory species, it is unclear exactly what the marginal added function of NOAA EFH efforts would be.

Given the minimal impacts compared to the status quo alternative, significant cumulative impacts would not be expected, but the possibility would be fully analyzed if the Council decides to move forward with an action in October.

8.0 OTHER RELEVANT LAWS

Table 19 summarizes how many MSA requirements are or can be addressed by existing authorities. Additional details on several authorities developed for the previous white paper are provided below.

Federal Power Act (16 U.S.C. 791-828) and Amendments

The Federal Power Act, as amended, provides for protecting, mitigating damages to, and enhancing fish and wildlife resources (including anadromous fish) impacted by hydroelectric facilities regulated by the Federal Energy and Regulatory Commission (FERC). Applicants must consult with state and Federal resource agencies who review proposed hydroelectric projects and make recommendations to FERC concerning fish and wildlife and their habitat, e.g., including spawning habitat, wetlands, instream flows (timing, quality, quantity), reservoir establishment and regulation, project construction and operation, fish entrainment and mortality, and recreational access. Section 10(j) of the Federal Power Act provides that licenses issued by FERC contain conditions to protect, mitigate damages to, and enhance fish and wildlife based on recommendations received from state and Federal agencies during the licensing process. With regard to fish passage, Section 18 requires a FERC licensee to construct, maintain, and operate fishways prescribed by the Secretary of the Interior or the Secretary of Commerce. Under the Federal Power Act, others may review proposed projects and make timely recommendations to FERC to represent additional interests. Interested parties may intervene in the FERC proceeding for any project to receive pertinent documentation and to appeal an adverse decision by FERC.

While the construction of hydroelectric dams contributed to historical losses of spawning habitat, only a few new dams have been constructed in the range of these species in the last 50 years. In some areas, successful fish passage has been created; thus, restoring access to many habitats once blocked. Thus, river herring and shad may often benefit from Federal Power Act fishway requirements when prescriptions are made to address anadromous fish passage and during the re-licensing of existing hydroelectric dams when anadromous species are considered.

Anadromous Fish Conservation Act (16 U.S.C. 757a-757f) as Amended

This law authorizes the Secretaries of Interior and Commerce to enter into cost sharing with states and other non-Federal interests for the conservation, development, and enhancement of the nation's anadromous fish. Investigations, engineering, biological surveys, and research, as well as the construction, maintenance, and operations of hatcheries, are authorized. This Act was last authorized in 2002, which provided 5 million dollars for the fiscal years 2005 and 2006 (Pub. L. 107-372). There was an attempt to reauthorize the Act in 2012; however, this action has not yet been authorized.

Fish and Wildlife Coordination Act (FWCA) (16 U.S.C. 661-666)

The Fish and Wildlife Coordination Act is the primary law providing for consideration of fish and wildlife habitat values in conjunction with Federal water development activities. Under this law, the Secretaries of Interior and Commerce may investigate and advise on the effects of Federal water development projects on fish and wildlife habitat. Such reports and recommendations, which require concurrence of the state fish and wildlife agency(ies) involved, must accompany the construction agency's request for congressional authorization, although the construction agency is not bound by the recommendations.

The Fish and Wildlife Coordination Act applies to water-related activities proposed by non-Federal entities for which a Federal permit or license is required. The most significant permits or licenses required are Section 404 and discharge permits under the Clean Water Act and Section 10 permits under the Rivers and Harbors Act. The U.S. Fish and Wildlife Service and NMFS may review the proposed permit action and make recommendations to the permitting agencies to avoid or mitigate any potential adverse effects on fish and wildlife habitat. These recommendations must be given full consideration by the permitting agency, but are not binding. Federal Water Pollution Control Act, and amendments (FWPCA) (33 U.S.C. 1251-1376)

Also called the "Clean Water Act," the FWPCA mandates Federal protection of water quality. The law also provides for assessment of injury, destruction, or loss of natural resources caused by discharge of pollutants.

Of major significance is Section 404 of the FWPCA, which prohibits the discharge of dredged or fill material into navigable waters without a permit. Navigable waters are defined under the FWPCA to include all waters of the United States, including the territorial seas and wetlands adjacent to such waters. The permit program is administered by the Army Corps of Engineers (Corps). The Environmental Protection Agency (EPA) may approve delegation of Section 404 permit authority for certain waters (not including traditional navigable waters) to a state agency; however, the EPA retains the authority to prohibit or deny a proposed discharge under Section 404 of the FWPCA.

The FWPCA (Section 401) also authorizes programs to remove or limit the entry of various types of pollutants into the nation's waters. A point source permit system was established by the EPA and is now being administered at the state level in most states. This system, referred to as the National Pollutant Discharge Elimination System (NPDES), sets specific limits on discharge of various types of pollutants from point source outfalls. A non-point source control program focuses primarily on the reduction of agricultural siltation and chemical pollution resulting from

rain runoff into the nation's streams. This effort currently relies on the use of land management practices to reduce surface runoff through programs administered primarily by the Department of Agriculture.

Like the Fish and Wildlife Coordination and River and Harbors Acts, Sections 401 and 404 of the FWPCA have played a role in reducing discharges of pollutants, restricting the timing and location of dredge and fill operations, and affecting other changes that have improved river herring and shad habitat in many rivers and estuaries over the last several decades. Examples include reductions in sewage discharges into the Hudson River (A. Kahnle, New York State, Pers. comm. 1998) and nutrient reduction strategies implemented in the Chesapeake Bay.

Rivers and Harbors Act of 1899

Section 10 of the Rivers and Harbors Act requires a permit from the Corps to place structures in navigable waters of the United States or modify a navigable stream by excavation or filling activities. The permitting then requires EFH Consultation.

National Environmental Policy Act of 1969 (NEPA) (42 U.S.C. 4321-4347)

The National Environmental Policy Act requires an environmental review process of all Federal actions. This includes preparation of an environmental impact statement for major Federal actions that may affect the quality of the human environment. Less rigorous environmental assessments are reviewed for most other actions, while some actions are categorically excluded from formal review. These reviews provide an opportunity for the agency and the public to comment on projects that may impact fish and wildlife habitat.

Coastal Zone Management Act (16 U.S.C. 1451-1464) and Estuarine Areas Act

Congress passed policy on values of estuaries and coastal areas through these Acts. Comprehensive planning programs, to be carried out at the state level, were established to enhance, protect, and utilize coastal resources. Federal activities must comply with the individual state programs. Habitat may be protected by planning and regulating development that could cause damage to sensitive coastal habitats.

Federal Land Management and Other Protective Designations

Protection and good stewardship of lands and waters managed by Federal agencies, such as the Departments of Defense, Energy and Interior (National Parks and National Wildlife Refuges, as well as state-protected park, wildlife and other natural areas), contributes to the health of nearby aquatic systems that support important river herring and shad spawning and nursery habitats. Relevant examples include the Great Bay, Rachel Carson's and Corps Basin National Estuarine Research Reserves, Department of Defense properties in the Chesapeake Bay, and many National Wildlife Refuges.

Marine Protection, Research and Sanctuaries Act of 1972 (MPRSA), Titles I and III and the Shore Protection Act of 1988 (SPA)

The Marine Protection, Research and Sanctuaries Act protects fish habitat through establishment and maintenance of marine sanctuaries. The Marine Protection, Research and Sanctuaries Act and the Shore Protection Act regulate ocean transportation and dumping of dredge materials, sewage sludge, and other materials. Criteria that the Corps uses for issuing permits include considering the effects dumping has on the marine environment, ecological systems and fisheries resources. NMFS must be consulted per its EFH responsibilities.

Endangered Species Act Determination - River Herring

http://www.nero.noaa.gov/prot_res/candidatespeciesprogram/RiverHerringSOC.htm

Subsequent to NMFS's findings that river herring are not endangered, NMFS also announced a variety of measures that it will be undertaking to assist river herring conservation. The agency has provided funding to the Atlantic States Marine Fisheries Commission and will be working with the Commission and other partners to implement a coordinated coastwide effort to continue to address data gaps and proactively conserve river herring and their habitat.

NMFS intends to establish a technical working group and to continue to work closely with the Commission and others to develop a long-term and dynamic conservation plan for river herring throughout both species' range from Canada to Florida. This group will attempt to quantify the impact of ongoing restoration and conservation efforts and new fisheries management measures that are being developed (e.g., mortality caps in two federal fisheries), which should benefit the species, review any new information produced from ongoing scientific studies (e.g., genetic analyses, ocean migration patterns, climate change impacts) that are completed in the next 3-5 years, and assess available data to determine whether recent reports of higher river counts in many areas along the coast in the last two years represent sustained trends. During this time, NMFS is also committed to working with partners and tribal governments to continue implementing important conservation efforts and fund needed research for river herring. NMFS intends to revisit the status of river herring within the next five years. Council staff will likely be involved in these efforts.

Endangered Species Act Listing - Sturgeon

<http://www.nero.noaa.gov/stories/2013/riverherringlistingfrnotice.pdf>

In 2012, five distinct population segments of Atlantic sturgeon were listed under the Endangered Species Act. The Chesapeake Bay, New York Bight, Carolina, and South Atlantic Distinct Population Segments of Atlantic sturgeon are listed as endangered, while the Gulf of Maine Distinct Population Segment is listed as threatened. Measures to improve habitats and reduce impacts to Atlantic sturgeon may directly or indirectly benefit river herring. Atlantic sturgeon critical habitat will be specified in the next year. Like river herrings and shad, Atlantic sturgeon are anadromous; adults spawn in freshwater in the spring and early summer and migrate into estuarine and marine waters where they spend most of their lives. As with Atlantic salmon, many of the habitats that Atlantic sturgeon occupy are also habitats that river herring use for spawning, migration and juvenile rearing. The geographic range in which river herring may benefit from Atlantic sturgeon Endangered Species Act protections extends from the

Maine/Canada border to Florida. Therefore, any protection measures within this range such as improved fish passage or a reduction of water withdrawals may also provide a benefit to river herring. River herrings and/or shads travel further upriver than sturgeon to spawn so the overlap would not be complete. Rivers in which sturgeon are found and which are likely to receive critical habitat designation may be found at:

<http://www.nmfs.noaa.gov/pr/species/fish/atlanticsturgeon.htm>.

Endangered Species Act Listing - Atlantic salmon & Critical Habitat Designation

In 2009, the Gulf of Maine Distinct Population Segment of Atlantic salmon was listed as endangered under the Endangered Species Act (74 FR 29344). The Gulf of Maine Distinct Population Segment includes all anadromous Atlantic salmon whose freshwater range occurs in the watersheds from the Androscoggin River northward along the Maine coast to the Dennys River. Concurrently in 2009, critical habitat was designated for the Atlantic salmon Gulf of Maine Distinct Population Segment pursuant to section 4(b)(2) of the Endangered Species Act (74 FR 29300; August 10, 2009). The critical habitat designation includes 45 specific areas occupied by Atlantic salmon at the time of listing, and includes approximately 12,160 miles (19,600 km) of perennial river, stream, and estuary habitat and 308 square miles (495 sq km) of lake habitat within the range of the Gulf of Maine Distinct Population Segment in the State of Maine.

Measures to improve habitats and reduce impacts to Atlantic salmon as a result of the Endangered Species Act listing may directly or indirectly benefit river herrings and shads. Atlantic salmon are anadromous and spend a portion of their life in freshwater and the remaining portion in the marine environment. River herring occupy a lot of the same habitats as listed Atlantic salmon for spawning, breeding, feeding, growth and maturity. Therefore, protection measures such as improved fish passage or reduced discharge permits may benefit river herrings and shads.

The critical habitat designation provides additional protections beyond classifying a species as endangered by preserving the physical and biological features essential for the conservation of the species in designated waters in Maine. One of the biological features identified in the critical habitat designation for Atlantic salmon was freshwater and estuary migration sites with abundant, diverse native fish communities to serve as a protective buffer against predation. Co-evolved diadromous fish species are included in this native fish community.

The U.S. Fish and Wildlife Service and NOAA are also engaged in general riverine habitat issues with a focus on dam removal and fish passage improvement. They work in cooperation with other agencies and non-governmental agencies.

The efforts described above in this section (that will be ongoing regardless of the Council's decision regarding an FMP for river herring and/or shad) mean that many of the management activities that would normally be stimulated by management within an FMP are, or could be addressed by existing management programs and authorities. While there are some gaps that might be filled (see Section 3.2 above), this is not a case where there is a complete void of existing management.

Table 22. Magnuson-Stevens Act Required Plan Provisions and How They May be Addressed by Existing Authorities.

Provision	Current measures using existing authority
Measures 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	<ul style="list-style-type: none"> • Commission Amendments 2 and 3 to the Commission Plan for Shad and River Herring, which requires states to close their waters to recreational and commercial river herring harvest unless they have an approved sustainable plan in place that will “not diminish the potential future stock reproduction and recruitment.” Currently ME, NH, RI, NY, NC and SC have approved plans for river herring; DE River Basin, Potomac River Fisheries Commission, NC, SC, GA and FL have plans for shad (Atlantic Coastal Fisheries Cooperative Management Act - ACFCMA). • Proposed catch caps in the Atlantic mackerel and Atlantic herring fisheries will address incidental catch (Magnuson-Stevens Act, through existing FMPs).
Description of the fishery	<ul style="list-style-type: none"> • Amendments 2 and 3 to the Commission Plan for Shad and River herring describe commercial/recreational fisheries in state waters (ACFCMA). • Atlantic herring and MSB actions that relate to river herring and shad, most recently Amendments 5 and 14, describe river herring and shad catch in federal waters (Magnuson-Stevens Act, through existing FMPs).
Assessment and specification of present and probable future condition of, and the maximum sustainable yield and optimum yield from the fishery.	<ul style="list-style-type: none"> • Present condition of the fishery is described in recent Commission stock assessment. • Trend analysis for river herring included in recent Endangered Species Act decision.
Assessment and specification of domestic harvesting and processing capacities	<ul style="list-style-type: none"> • U.S. fishing vessels are capable of, and expected to, harvest the optimum yield from the river herring and shad fisheries. U.S. processors are also expected to process the harvest of U.S. fishing vessels. None of the optimum yield from this fishery can be made available to foreign fishing.
Specification of the pertinent fishery data that shall be submitted to NMFS	<ul style="list-style-type: none"> • Amendments 2 and 3 to the River Herring and Shad Commission Plan specify fishery dependent and fishery independent monitoring requirements (ACFCMA). • At-sea monitors and port-side samplers collect species composition and biological information related to river herring and shad (Magnuson-Stevens Act, related to existing FMPs).
Provision of temporary adjustments to fishery access because of weather or other ocean conditions affecting the safe conduct of the fishery	<ul style="list-style-type: none"> • Could be provided to states on an as needed basis.

Provision	Current measures using existing authority
Description and identification of essential fish habitat, and minimization to the extent practicable adverse effects on such habitat caused by fishing	<ul style="list-style-type: none"> • Amendments 2 and 3 to the River Herring and Shad Commission Plan require states to identify, categorize and prioritize important existing and historic shad and river herring and shad habitat within its area of jurisdiction, establish periodic monitoring to ensure the long-term health and viability of the habitat, and develop plans to restore access to rivers (ACFCMA). • EFH consultations for currently managed species, including Atlantic salmon, Atlantic herring, and Atlantic mackerel could benefit river herring and shad where their habitats overlap (Magnuson-Stevens Act). • Critical habitat consultations for Atlantic salmon and Atlantic sturgeon could benefit river herring and shad where their habitats overlap (Endangered Species Act). • Consultations related to hydroelectric projects could benefit river herring and shad (Federal Power Act). • Federal protection of water quality is afforded through the Federal Water Pollution Control Act (also called the “Clean Water Act”). This act has played a role in reducing discharges of pollutants, restricting the timing and location of dredge and fill operations, and affecting other changes that have improved river herring and shad habitat in many rivers and estuaries. • Other state and federal habitat restoration activities (as described in this document).
Specification of the nature and extent of scientific data which is needed for effective implementation of the plan	<ul style="list-style-type: none"> • Current research needs were identified in Amendments 2 and 3 to the River Herring and Shad Commission Plan, and the most recent assessments for river herring and shad (ACFCMA).
Description of the likely effects of management measures on fishery participants and fishing communities	<ul style="list-style-type: none"> • National Environmental Policy Act (NEPA) analyses are conducted for all federal actions (not just fishery management measures) to evaluate the impacts of the federal action on fishery participants and fishing communities.
Specification of objective and measurable criteria for identifying when the fishery to which the plan applies is overfished and conservation and management measures to prevent overfishing, end overfishing, and rebuild the fishery as appropriate	<ul style="list-style-type: none"> • KEY POTENTIAL BENEFIT of Magnuson-Stevens Act; this would be required in a Federal FMP. • No definition currently for river herring in Amendment 2 to the Shad and River Herring Commission Plan. • The most recent stock assessment (ASMFC 2007) concluded that the definition of overfishing in Amendment 1 to the Shad and River Herring Commission plan that focused only on directed fishing mortality (F) was no longer valid for American shad stocks because shad are affected by several sources of human-induced mortality, including directed fishing (F), fish passage mortality at dams, mortality from pollution, and bycatch and discard mortality in indirect fisheries activity.
Assessment of the amount and type of bycatch occurring in the fishery and minimize bycatch to the extent practicable	<ul style="list-style-type: none"> • Adjustments to federal monitoring programs can be made to assess river herring and shad bycatch in federal fisheries (Magnuson-Stevens Act, through existing FMPs). • Proposed catch caps to minimize bycatch in Atlantic herring and Atlantic mackerel fisheries (Magnuson-Stevens Act, through existing FMPs).
Assessment of recreational release mortality and minimization of such mortality to the extent practicable	<ul style="list-style-type: none"> • States and jurisdictions must monitor recreational catch and effort within certain specified rivers under Amendments 2 and 3 of the Shad and River Herring Commission Plan. Techniques used to gather this data may include creel surveys, surveys of license/permit holders, Marine Recreational Fisheries Statistical Survey (MRFSS) / Marine Recreational Information Program (MRIP) and reporting requirements for obtaining/maintaining license or permit (ACFCMA).

Provision	Current measures using existing authority
	<ul style="list-style-type: none"> • Amendments 2 and 3 to the Commission Plan for Shad and River Herring, which requires states to close their waters to recreational and commercial river herring harvest unless they have an approved sustainable plan in place that will “not diminish the potential future stock reproduction and recruitment.” Currently ME, NH, RI, NY, NC and SC have approved plans for river herring; DE River Basin, Potomac River Fisheries Commission, NC, SC, GA and FL have plans for shad (ACFCMA).
Allocation of harvest restrictions or recovery benefits fairly and equitably among the commercial, recreational, and charter fishing sectors	<ul style="list-style-type: none"> • Could be coordinated through Councils and Commission.
Establishment annual catch limits, and measures to ensure accountability.	<ul style="list-style-type: none"> • KEY POTENTIAL BENEFIT OF Magnuson-Stevens Act; this would be required in a Federal FMP. • Catch is limited through Amendments 2 and 3 to the Commission Plan for Shad and River Herring, and under the state plans that have already been approved • Federal bycatch limits proposed in Atlantic herring and Atlantic mackerel fisheries; proposed consequence (similar to an accountability measure) is closure of directed fisheries for these species once cap is attained (Magnuson-Stevens Act, existing FMPs).

9.0 CONCLUSION

The information in this document is designed to facilitate Council consideration of whether conservation and management, in the form of an FMP or FMP amendment, are needed for RH/S. Because the proposed revisions to the General National Standard Guidelines subsume and clarify the question at hand they are briefly revisited here:

Not every fishery requires Federal management. Any stocks that are predominately caught in Federal waters and are overfished or subject to overfishing, or likely to become overfished or subject to overfishing, are considered to require conservation and management. In addition, the following non-exhaustive list of factors should be used by a Council when deciding whether stocks require conservation and management:

While RH/S may be overfished and/or subject to overfishing, they have not predominantly been caught in Federal waters and are not known to be targeted in Federal waters currently. River herring are predominantly caught in directed fisheries in Maine and shad in North and South Carolina.

(i) The stock is an important component of the marine environment.

RH/S are important components of the marine environment.

(ii) The stock is caught by the fishery.

RH/S are caught incidentally to Atlantic herring, Atlantic mackerel, and other small-mesh fisheries.

(iii) Whether an FMP can improve or maintain the condition of the stocks.

It does not appear that an FMP would substantially improve or maintain the condition of RH/S stocks because existing management authorities are already managing catch at levels that are a small fraction of historical catch, and abundance trends appear to be stable or increasing. Incidental catches in Federal fisheries appear to be decreasing.

(iv) The stock is a target of a fishery.

RH/S are not targeted fisheries in Federal waters or other Council-managed fisheries.

(v) The stock is important to commercial, recreational, or subsistence users.

As described in this document, RH/S are or have been important to some commercial, recreational, or subsistence users, and the general public also has concern for these stocks.

(vi) The fishery is important to the Nation and to the regional economy.

While the RH/S fishery currently operate at small fractions of former levels, the ecological, historical, and cultural importance of RH/S fisheries, as well as their potential to support future commercial and recreational fisheries, make them important to the Nation and regional economies.

(vii) The need to resolve competing interests and conflicts among user groups and whether an FMP can further that resolution.

There is conflict between the Atlantic mackerel/herring fisheries and non-governmental organizations seeking additional monitoring and restrictions for those fisheries. The conflict involves both catch of non-target species like river herrings and shads as well as the optimal amount of directed harvest. The most immediate issue is whether the at-sea catch of river herrings and shads is having a substantial detrimental impact on river herring and shad populations.

Since recreational fisheries have largely lost access to river herring harvest through state moratoria and shad catches are often very restricted as well if not totally banned, a fairness issue has been raised. Specifically, that all parties that catch river herrings and shads should be limited in similar fashions.

Establishing Council management of river herrings and shads via an FMP would not immediately resolve these conflicts, especially because of the lack of absolute abundance estimates.

(viii) The economic condition of a fishery and whether an FMP can produce more efficient utilization.

The RH/S fisheries operate at only a fraction of earlier levels, but those levels may have been unsustainable. There is no information to suggest that an FMP would produce a more efficient utilization of the RH/S resource. However, an FMP could further examine the relative value of river herrings and shads across fishing interests (commercial versus recreational versus ecosystem; directed versus incidental catch) and consider efficiency in that respect.

(ix) The needs of a developing fishery, and whether an FMP can foster orderly growth.

These are not developing fisheries.

(x) The extent to which the fishery could be or is already adequately managed by states, by state/Federal programs, by Federal regulations pursuant to other FMPs or international commissions, or by industry self-regulation, consistent with the policies and standards of the Magnuson-Stevens Act.

This issue is addressed extensively in this document. State RH/S fisheries must abide by state sustainability plans approved by the ASMFC, and the Councils have already taken actions to limit incidental catch in Council-managed fisheries to levels that are a very small proportion

of historical landings. Industry bycatch avoidance programs appear to be allowing the Atlantic herring and Atlantic mackerel fisheries to operate within those limits. This document notes that a variety of entities are already working to improve habitats that are important to RH/S, and the TEWG has identified key data gaps and begun efforts to fill some of those data gaps. It is thus unlikely that FMP management would lead to any substantial improvements in management of RH/S beyond what is already occurring.

10.0 SELECTED REFERENCES

Selected References (others are provided via links in the text)

Atlantic States Marine Fisheries Commission (ASMFC). 2007. American Shad Stock Assessment Report for Peer Review. Stock Assessment Report No. 07-01. Available at: <http://www.asmfc.org/shadRiverHerring.htm>.

Atlantic States Marine Fisheries Commission. 2009. "Amendment 2 to the Interstate Fishery Management Plan for Shad & River Herring: River Herring Management." Available at: <http://www.asmfc.org/shadRiverHerring.htm>.

Atlantic States Marine Fisheries Commission. 2010. "Amendment 3 to the Interstate Fishery Management Plan for Shad & River Herring: River Herring Management." Available at: <http://www.asmfc.org/shadRiverHerring.htm>.

Atlantic States Marine Fisheries Commission. 2011. REVIEW OF THE ASMFC FISHERY MANAGEMENT PLAN FOR SHAD AND RIVER HERRING (*Alosa* spp.). Washington, D.C. Available at: <http://www.asmfc.org/shadRiverHerring.htm>.

Atlantic States Marine Fisheries Commission. 2012. River Herring Benchmark Stock Assessment. Stock Assessment Report No. 12-02. Available at: <http://www.asmfc.org/shadRiverHerring.htm>.

Bassett, E. 2015. Cultural Importance of River Herring to the Passamaquoddy People.

Bethoney, N, et al 2012. Developing a fine scale system to address river herring (*Alosa pseudoharengus*, *A. aestivalis*) and American shad (*A. sapidissima*) bycatch in the U.S. Northwest Atlantic mid-water trawl fishery. Fisheries Research 2012

Bowden, Alison. 2013. Towards a comprehensive strategy to recover river herring on the Atlantic seaboard: lessons from Pacific salmon. ICES Journal of Marine Science. Available at: <http://icesjms.oxfordjournals.org/cgi/reprint/fst130?ijkey=Dh381woe2LvEAsd&keytype=ref>

Brown, J et al. 2013. "Fish and hydropower on the U.S. Atlantic coast: failed fisheries policies from half-way technologies." Conservation Letters - A Journal of the Society for Conservation Biology.

Gerstell, R. 1988. American Shad in the Sesquehana River Basin: A Three-Hundred Year History. Pennsylvania State Univerity Press.

Hanson, N et al. Canadian Journal of Zoology 88(6):546-552 · May 2010.

Limburg, K.E. and R.E. Schmidt (1990). Patterns of fish spawning in Hudson River tributaries: response to an urban gradient? Ecology 71(4): 1238-1245.

Miller, J and Lupine, A. 1987. "Angler Utilization and Economic Survey of the American Shad Fishery in the Delaware River." U.S. Fish and Wildlife Service (Miller) and NJ Division of Fish, Game, and Wildlilfe (Lupine). Funded by Delaware River Shad Fisherman's Association. Also see: <http://www.state.nj.us/drbc/library/documents/SocioeconomicValueDRB-UDEL-FinalRpt.pdf>.

Nieland, J. et al. 2015. Assessing demographic effects of dams on diadromous fish: a case study for Atlantic salmon in the Penobscot River, Maine.

Norris, Katie G., "The Influence of Anadromous Alewife on Maine Lakes and Streams: Using Nutrient Limitation Assays and Stable Isotopes to Track Marine-Derived Nutrients" (2012). Dissertation. Paper 1746

NMFS 2012. RIVER HERRING STOCK STRUCTURE WORKING GROUP REPORT.

Available at:

http://www.nero.noaa.gov/prot_res/candidatespeciesprogram/RiverHerringSOC.htm

NMFS GARFO 2014. Exploratory Effects of Including River Herring and Alosa Species on the 2014 SBRM Sea Day Allocation. Memo and analysis from B. Karp to J. Bullard.

Visel, T. 2006. Native American Brush Traps – South Cove, Old Saybrook, Connecticut And Neighboring Coastal Towns. Connecticut River Museum Shad Program.

APPENDIX 1. NEFSC TRAWL SURVEYS

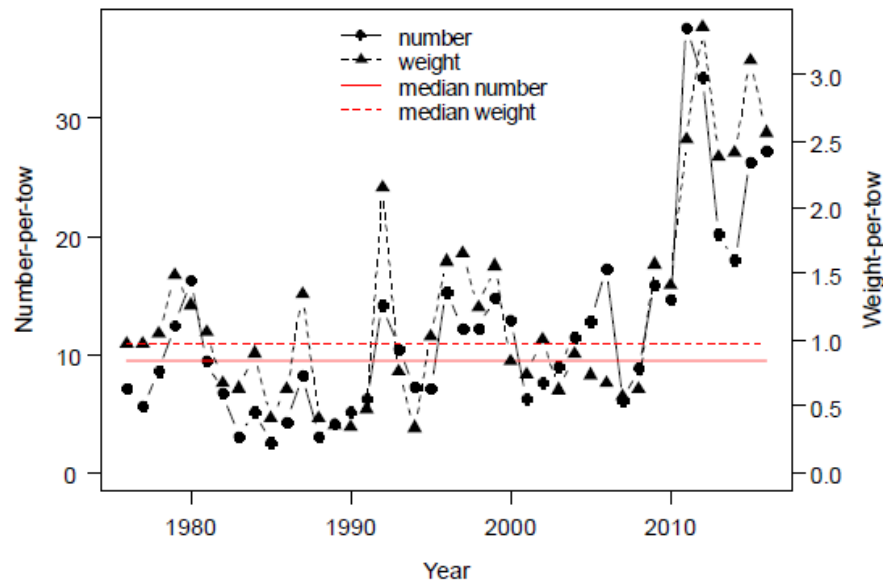
**River herring (alewife and blueback herring) and American shad indices from the NEFSC
spring and fall bottom trawl surveys for fall 1975 – spring 2016**

21 September 2016

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Figure 1: Alewife relative abundance (stratified mean number-per-tow) and biomass (stratified mean kg-per-tow) indices (A) and the proportion of positive tows (B) derived from the NEFSC spring bottom trawl survey for 1976-2016. Indices from 2009-2016 were converted to Albatross units. The median number- and weight-per-tow values represent the median indices over 1976-2016. The full strata set was not sampled in 2014 due to delays in the survey (offshore strata 61-68 south of Maryland were not sampled). Previous comparisons did not show notable differences in survey estimates based on full versus abbreviated strata sets (NEFSC 2015).

A)



B)

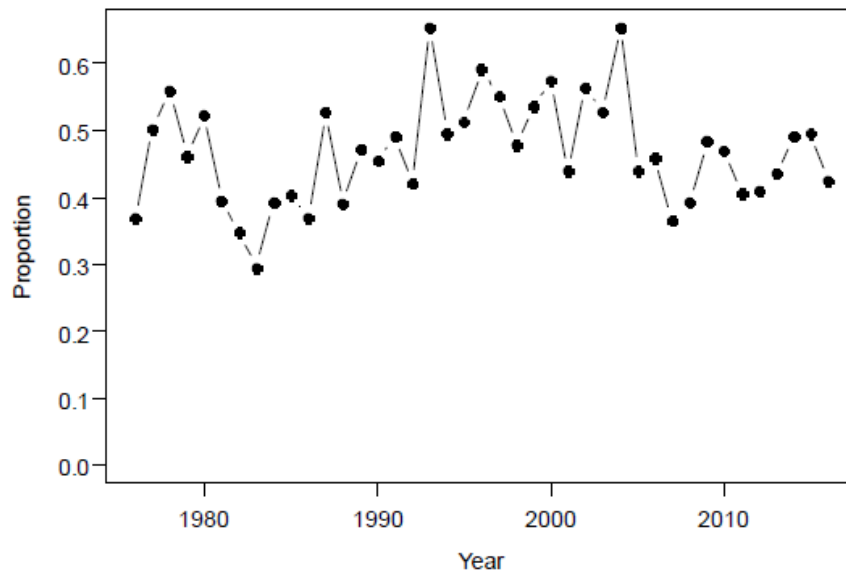
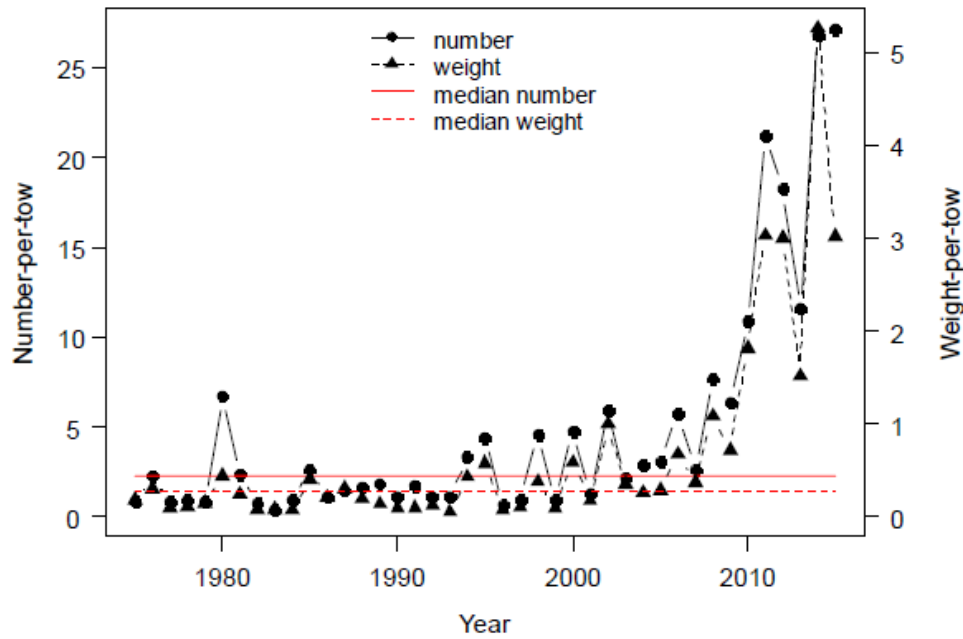


Figure 2: Alewife relative abundance (stratified mean number-per-tow) and biomass (stratified mean kg-per-tow) indices (A) and the proportion of positive tows (B) derived from the NEFSC fall bottom trawl survey for 1975-2015. Indices from 2009-2015 were converted to Albatross units. The median number- and weight-per-tow values represent the median indices over 1975-2015.

A)



B)

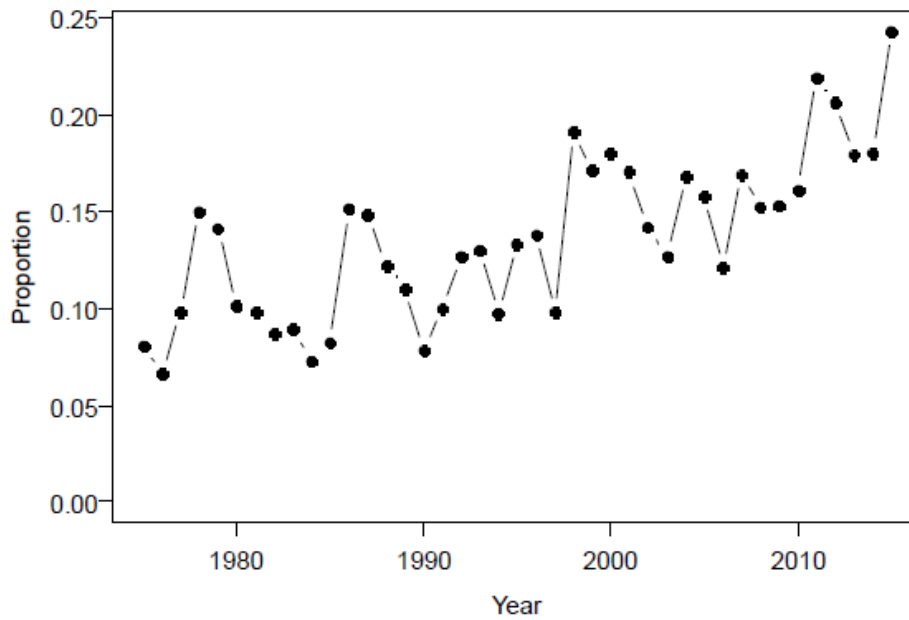
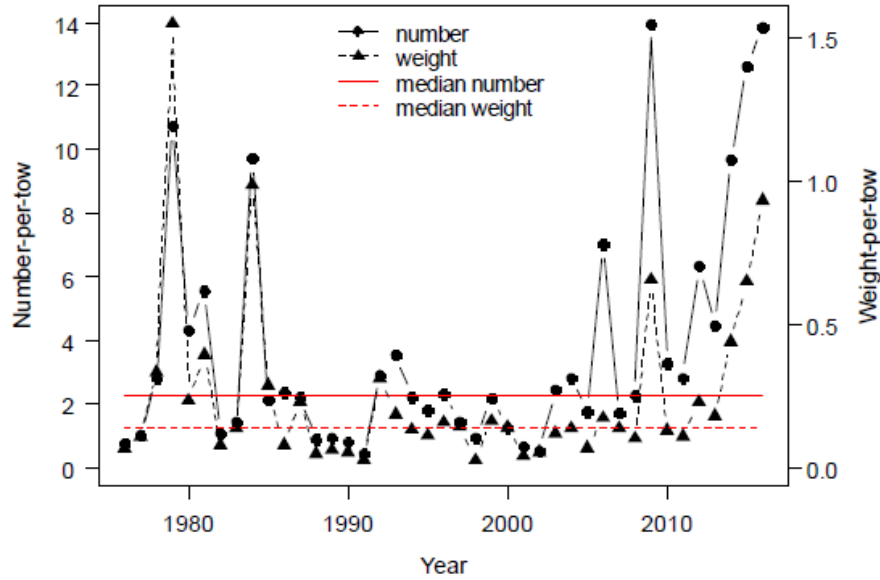


Figure 3: Blueback herring relative abundance (stratified mean number-per-tow) and biomass (stratified mean kg-per-tow) indices (A) and the proportion of positive tows (B) derived from the NEFSC spring bottom trawl survey for 1976-2016. Indices from 2009-2016 were converted to Albatross units. The median number- and weight-per-tow values represent the median indices over 1976-2016. The full strata set was not sampled in 2014 due to delays in the survey (offshore strata 61-68 south of Maryland were not sampled). Previous comparisons did not show notable differences in survey estimates based on full versus abbreviated strata sets (NEFSC 2015).

A)



B)

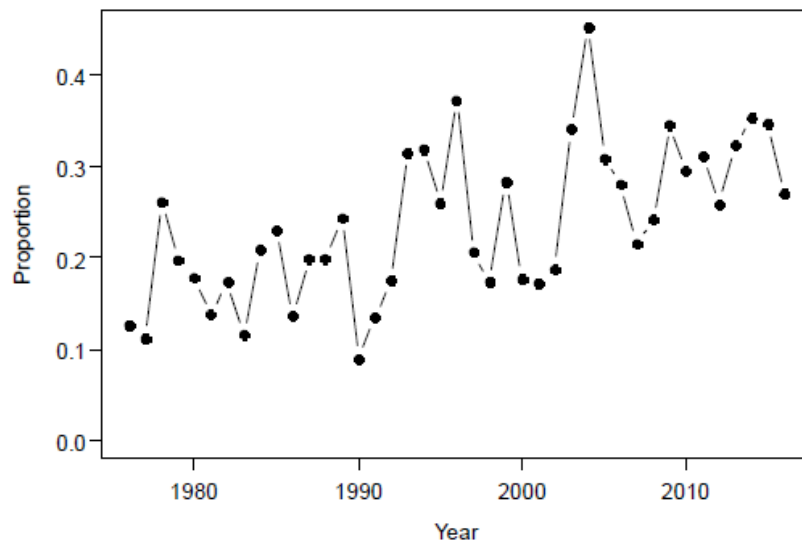
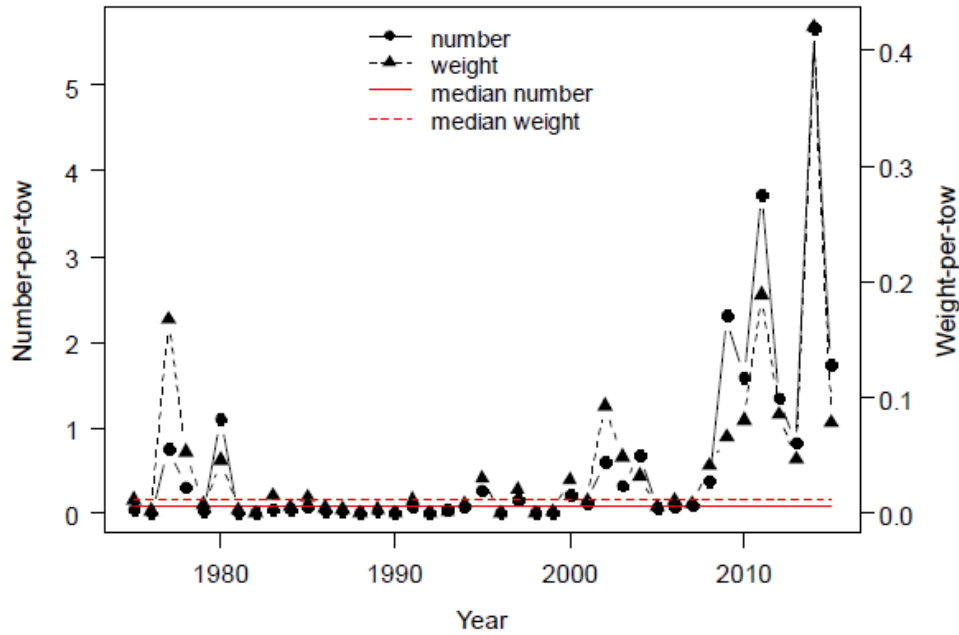


Figure 4: Blueback herring relative abundance (stratified mean number-per-tow) and biomass (stratified mean kg-per-tow) indices (A) and the proportion of positive tows (B) derived from the NEFSC fall bottom trawl survey for 1975-2015. Indices from 2009-2015 were converted to Albatross units. The median number- and weight-per-tow values represent the median indices over 1975-2015.

A)



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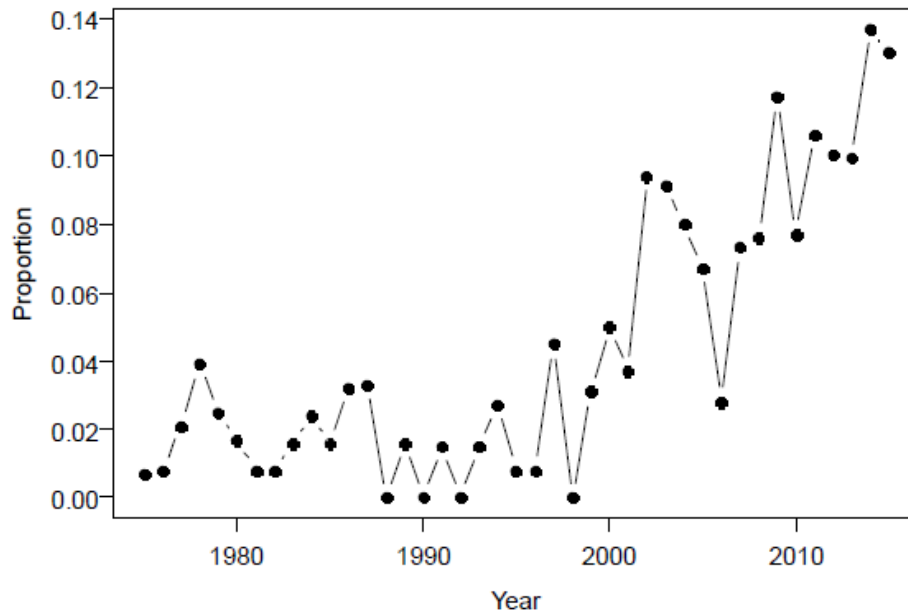
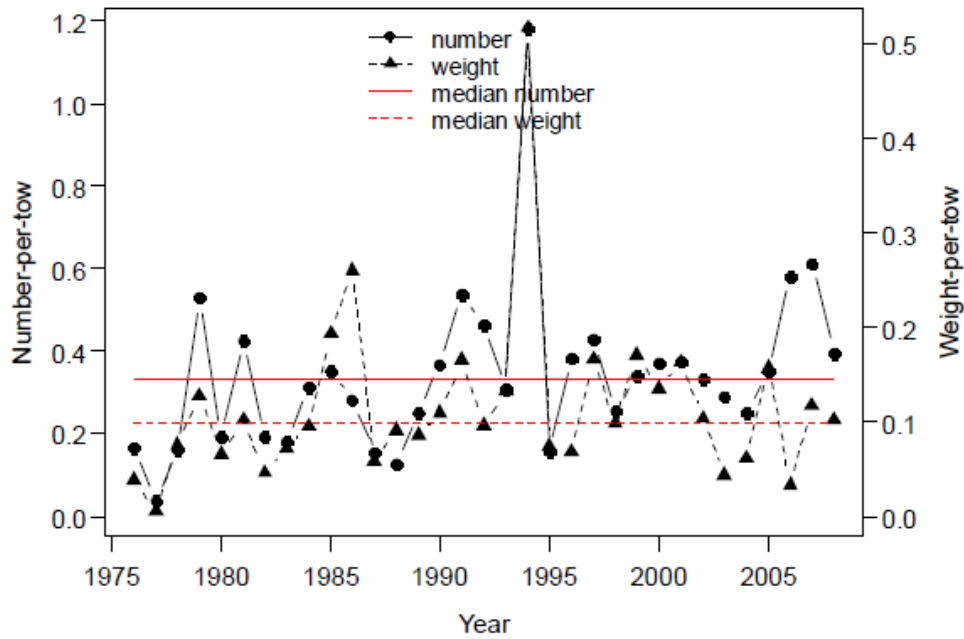


Figure 5: American shad relative abundance (stratified mean number-per-tow) and biomass (stratified mean kg-per-tow) indices (A) and the proportion of positive tows (B) derived from the NEFSC spring bottom trawl survey for 1976-2008. Vessel (Bigelow to Albatross) conversion coefficients were not available for American shad; therefore, the time series was split in 2008. The median number- and weight-per-tow values represent the median indices over 1976-2008.

A)



B)

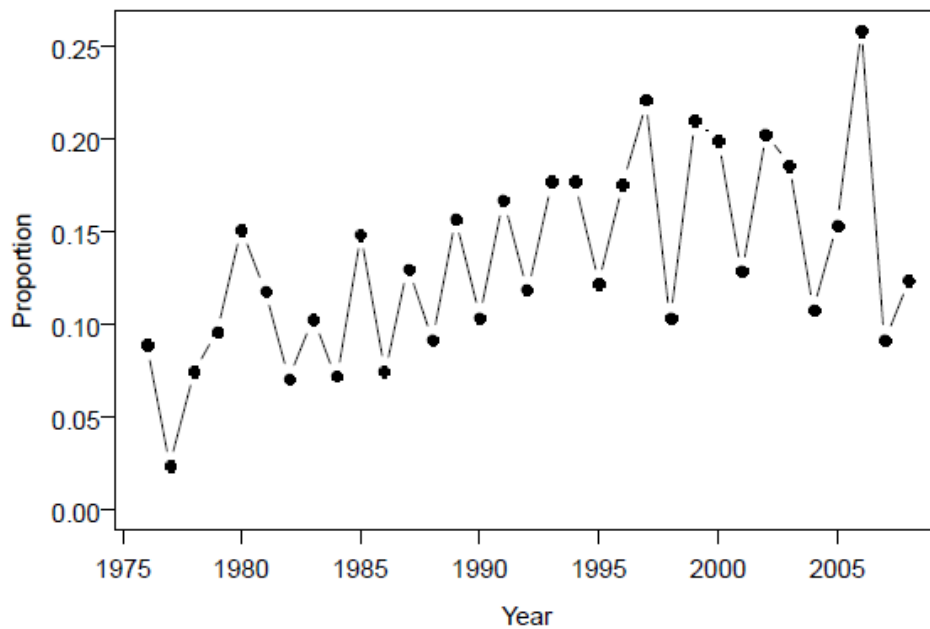
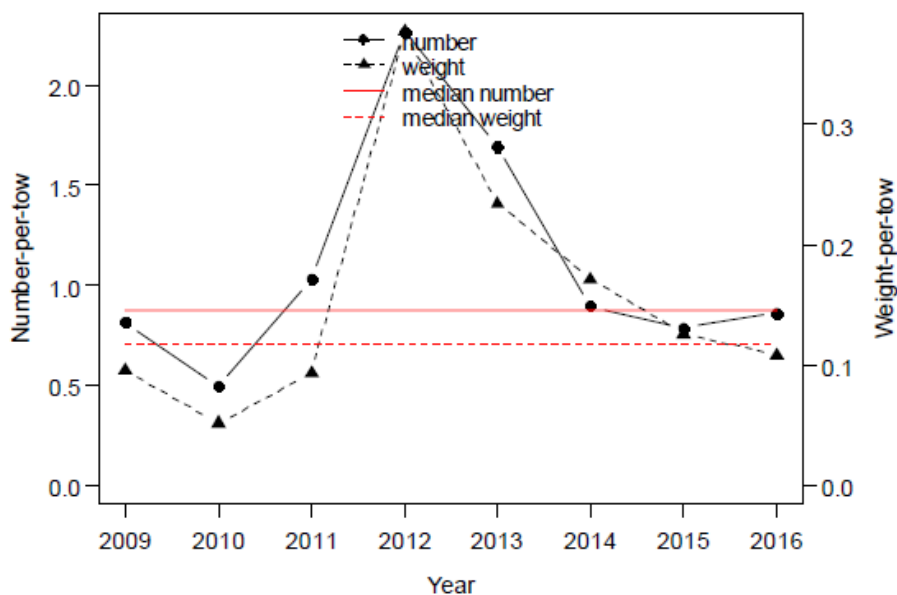


Figure 6: American shad relative abundance (stratified mean number-per-tow) and biomass (stratified mean kg-per-tow) indices (A) and the proportion of positive tows (B) derived from the NEFSC spring bottom trawl survey for 2009-2016 (Bigelow units). The median number- and weight-per-tow values represent the median indices over 2009-2016. The full strata set was not sampled in 2014 due to delays in the survey (offshore strata 61-68 south of Maryland were not sampled). Previous comparisons did not show notable differences in survey estimates based on full versus abbreviated strata sets (NEFSC 2015).

A)



B)

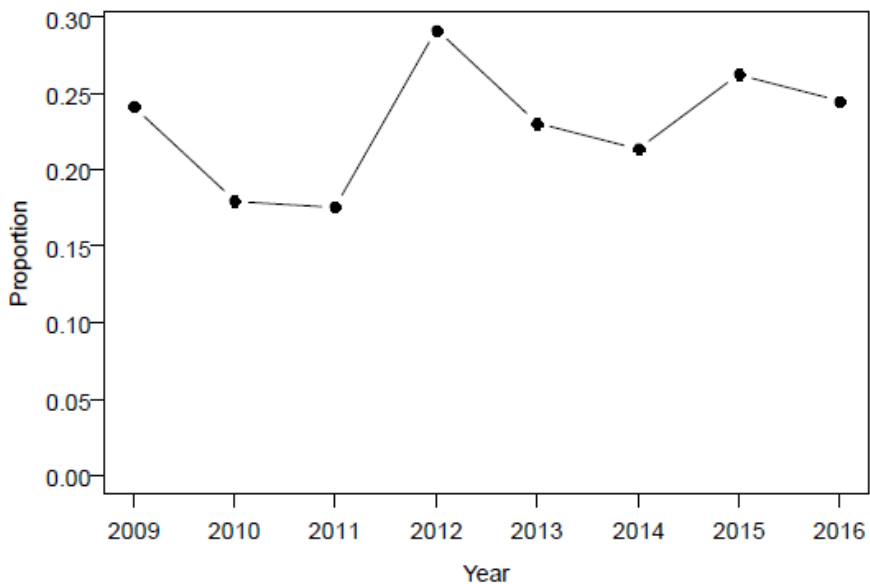
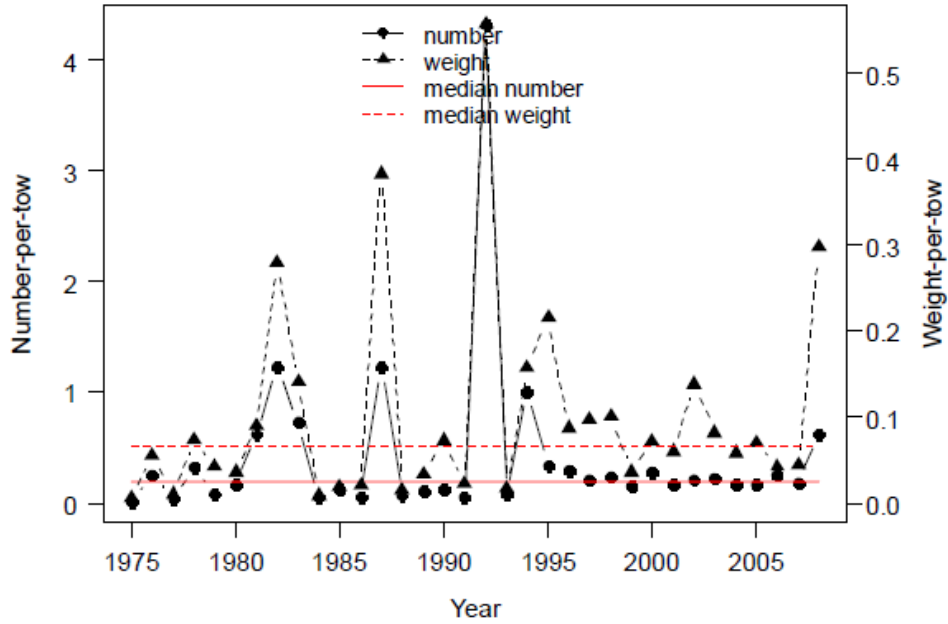


Figure 7: American shad relative abundance (stratified mean number-per-tow) and biomass (stratified mean kg-per-tow) indices (A) and the proportion of positive tows (B) derived from the NEFSC fall bottom trawl survey for 1975-2008. Vessel (Bigelow to Albatross) conversion coefficients were not available for American shad; therefore, the time series was split in 2008. The median number- and weight-per-tow values represent the median indices over 1975-2008.

A)



B)

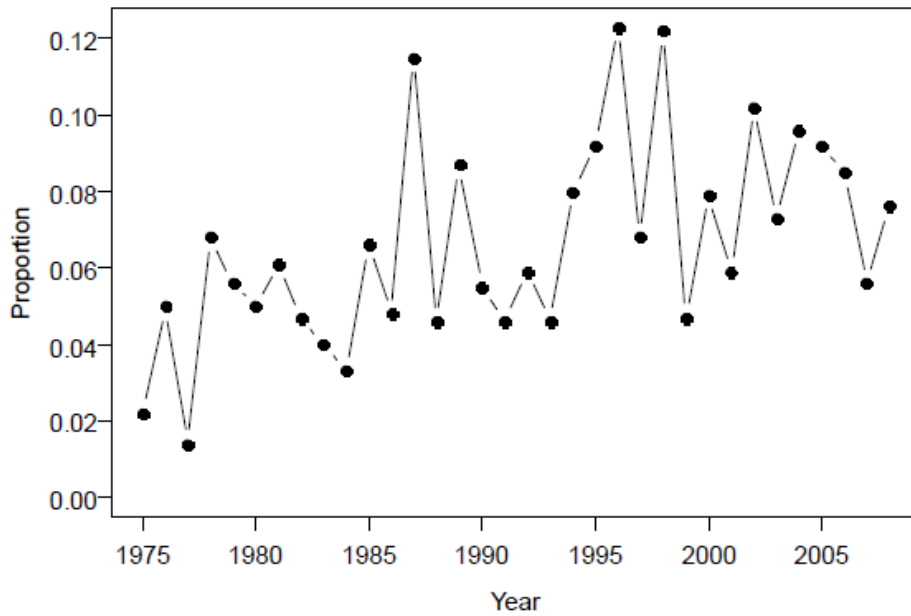
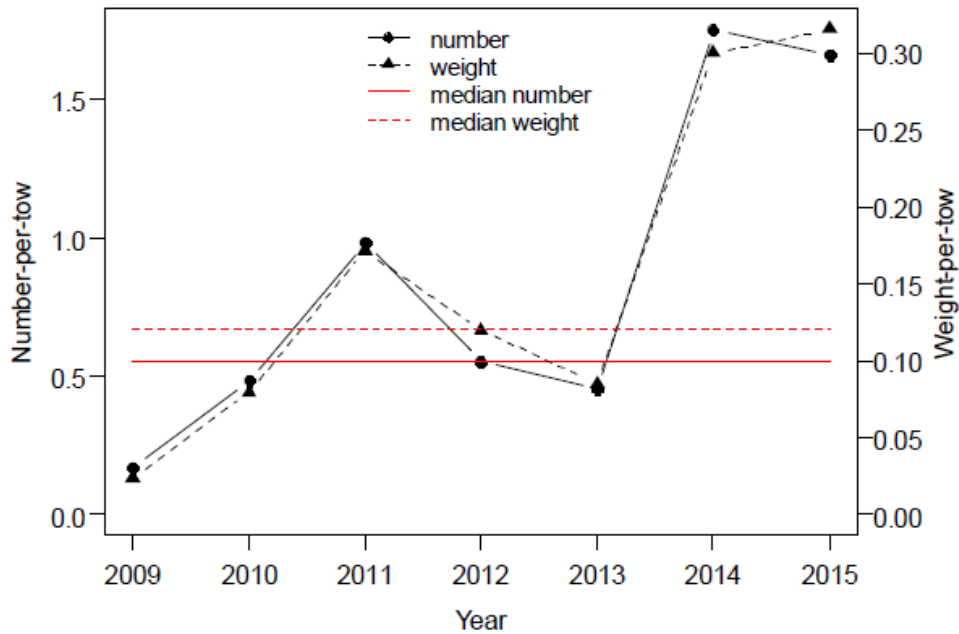
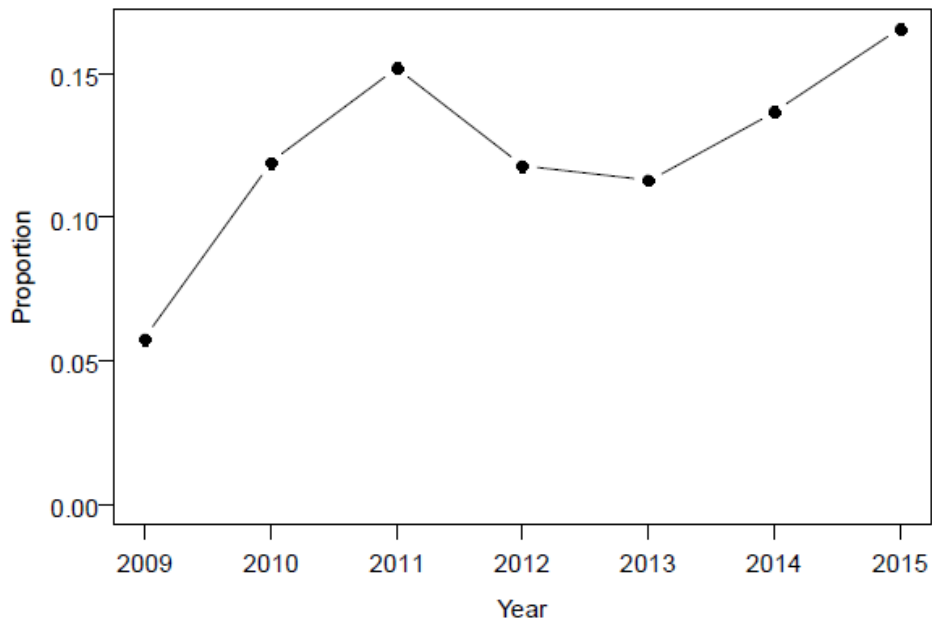


Figure 8: American shad relative abundance (stratified mean number-per-tow) and biomass (stratified mean kg-per-tow) indices (A) and the proportion of positive tows (B) derived from the NEFSC fall bottom trawl survey for 2009-2015 (Bigelow units). The median number- and weight-per-tow values represent the median indices over 2009-2015.

A)



B)



APPENDIX 2. HIGHLIGHTS OF UPDATED RH/S CATCH ANALYSES

These analyses update the RH/S catch analyses performed for Amendment 14, using the Standardized Bycatch Reporting Methodology to extrapolate total catch based on observer and landings data. An Excel spreadsheet with the results has been posted to <http://www.mafmc.org/briefing/october-2016>, and several tables and figures that summarize data from that spreadsheet are included below.

Background

Total catch of river herring (alewife and blueback herring) and hickory and American shad (RHS) was quantified by fleet. Fleets included in the analyses were those sampled by the Northeast Fisheries Observer Program (NEFOP) and were stratified by area fished (Mid-Atlantic versus New England), time (year and quarter), gear group, and mesh size.

Region fished was defined using Statistical Areas for reporting commercial fishery data. The Mid-Atlantic region included Statistical Areas greater than 600, and New England included Statistical Areas 464 through 599.

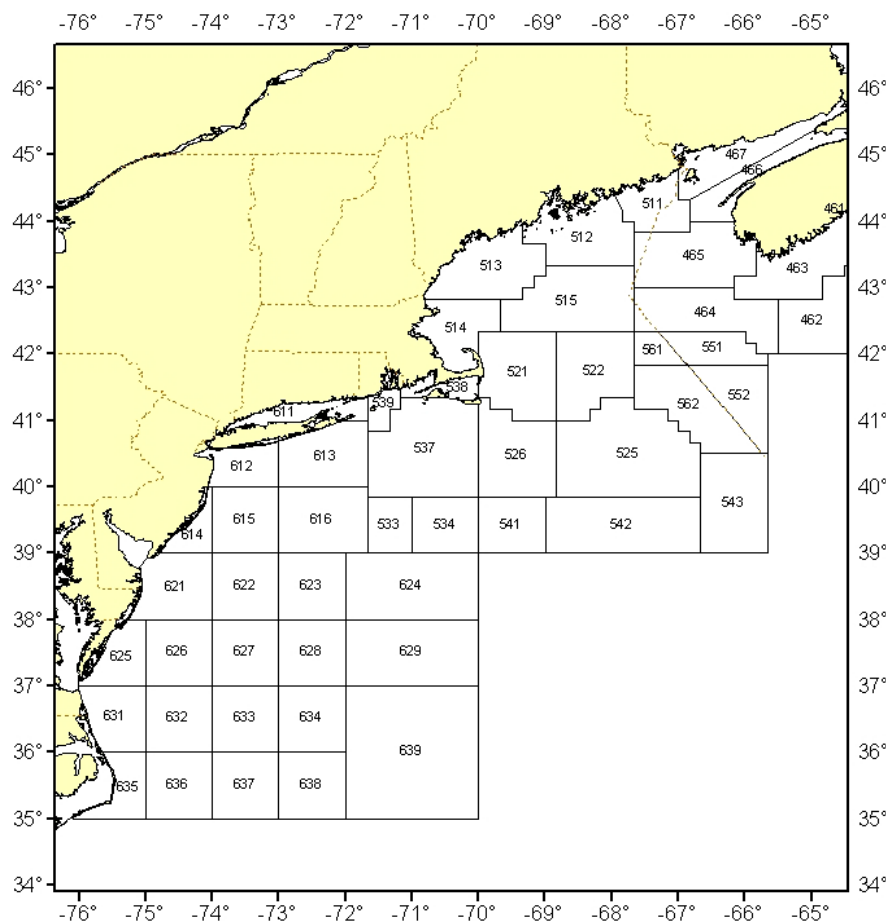


Figure 1. NMFS Statistical Areas.

Gear groups included in the analyses were: bottom trawls, paired midwater trawls, single midwater trawls, gillnets, dredges, handlines, haul seines, longlines, pots/traps, purse seines, scallop trawl/dredge, seines and shrimp trawls. Bottom trawls and gillnets were further stratified into the following mesh categories:

Mesh category	Bottom Trawl	Gillnet
small	mesh \leq 3.5	mesh $<$ 5.5
medium	3.5 $<$ mesh $<$ 5.5	---
large	mesh \geq 5.5	5.5 \leq mesh $<$ 8
x-large	---	mesh \geq 8

SM-BT = Small Mesh Bottom Trawl
MM-BT = Medium Mesh Bottom Trawl
LM-BT = Large Mesh Bottom Trawl
S-MWT = Single Mid-Water Trawl

P-MWT = Paired Mid-Water Trawl
SM-GN = Small Mesh Gillnet
LM-GN = Large Small Mesh Gillnet
XLM-GN = Extra Large Small Mesh Gillnet

For bottom trawl fleets, mesh category was determined for trips with missing mesh information based on the primary species caught. For gillnets, trips with missing mesh information were assumed to come from the large mesh category.

Single and paired midwater trawls were split into separate fleets because the majority of both mackerel and herring landings during 2005-2010 were from paired midwater trawls, and the total catch-to-kept ratios varied between midwater trawl types.

The combined ratio method (Wigley et al 2007) is the standard discard estimation method implemented in NEFSC stock assessments and was used in this analysis to quantify annual RHS incidental catch and the associated precision (CV) across all fleets.

Estimates for the midwater trawl fleets are only provided beginning in 2005 because these estimates are most accurate as a result of improved sampling methodologies.

For each trip, NEFOP data were used to calculate a total catch to kept (t/k) ratio, where t represents the total (retained+discarded) catch of an individual species (e.g., alewife, American shad) and k is the kept weight of all species. The t/k ratios were expanded using a raising factor to quantify total incidental catch. With the exception of the midwater trawl fleets, total landed weight of all species (from the dealer database) was used as the raising factor. VTR data were used as the expansion factor for the MWT fleets.

For additional information on the methodology, please see Appendix II of MSB Amendment 14 (<http://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/53e3d61be4b0e88e72d231f5/1407440411701/AppendicesFEISFinal.pdf>).

Table 1. Percent Observer Coverage of Mid-Atlantic Trips

	Mid-Atlantic Percent Trips Covered								
	SM-BT	MM-BT	LM-BT	S-MWT	P-MWT	SM-GN	LM-GN	XLM-GN	Other
1989	1%	2%	0%	no vtr trips	no vtr trips	0%	0%	no vtr trips	0%
1990	1%	5%	0%	no vtr trips	no vtr trips	0%	0%	0%	0%
1991	2%	6%	0%	no vtr trips	no vtr trips	0%	0%	no vtr trips	0%
1992	1%	4%	0%	no vtr trips	no vtr trips	0%	0%	no vtr trips	0%
1993	0%	7%	0%	no vtr trips	no vtr trips	0%	0%	no vtr trips	0%
1994	0%	5%	0%	2%	68%	97%	2%	85%	0%
1995	1%	1%	1%	0%	66%	74%	5%	25%	0%
1996	1%	2%	0%	0%	0%	43%	3%	10%	0%
1997	1%	1%	0%	0%	0%	25%	1%	11%	0%
1998	1%	1%	0%	0%	0%	15%	2%	5%	0%
1999	1%	1%	0%	0%	0%	5%	0%	1%	0%
2000	1%	1%	0%	3%	1%	4%	0%	1%	0%
2001	1%	1%	1%	0%	0%	4%	0%	1%	1%
2002	0%	2%	1%	0%	1%	3%	0%	1%	1%
2003	1%	7%	0%	0%	3%	3%	0%	1%	1%
2004	5%	23%	2%	2%	3%	1%	0%	3%	2%
2005	5%	23%	1%	5%	5%	1%	0%	5%	2%
2006	4%	7%	1%	11%	3%	2%	0%	2%	1%
2007	4%	19%	3%	1%	2%	2%	0%	2%	1%
2008	3%	12%	2%	47%	5%	1%	0%	2%	2%
2009	7%	19%	2%	19%	12%	1%	0%	3%	2%
2010	8%	46%	5%	27%	15%	1%	1%	6%	2%
2011	10%	26%	4%	133%	50%	1%	0%	3%	1%
2012	5%	15%	3%	11%	18%	0%	0%	3%	1%
2013	10%	21%	5%	2%	6%	1%	0%	2%	1%
2014	11%	25%	7%	2%	0%	2%	1%	5%	2%
2015	10%	25%	5%	6%	4%	14%	3%	9%	2%

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Table 2. Percent Observer Coverage of New England Trips

	New England Percent Trips Covered								
	SM-BT	MM-BT	LM-BT	S-MWT	P-MWT	SM-GN	LM-GN	XLM-GN	Other
1989	1%	3%	0%	no vtr trips	no vtr trips	0%	0%	0%	0%
1990	1%	1%	0%	no vtr trips	no vtr trips	0%	0%	0%	0%
1991	2%	8%	0%	no vtr trips	no vtr trips	0%	0%	0%	0%
1992	1%	1%	0%	no vtr trips	no vtr trips	0%	0%	0%	0%
1993	0%	7%	0%	no vtr trips	no vtr trips	0%	0%	0%	0%
1994	0%	2%	0%	0%	8%	0%	0%	4%	0%
1995	1%	2%	0%	1%	18%	0%	1%	2%	0%
1996	1%	4%	0%	0%	0%	0%	1%	2%	0%
1997	1%	4%	0%	0%	0%	0%	1%	2%	0%
1998	0%	1%	0%	0%	0%	22%	1%	1%	0%
1999	0%	0%	0%	0%	1%	15%	1%	2%	0%
2000	0%	7%	1%	2%	0%	0%	1%	3%	1%
2001	0%	6%	1%	0%	0%	6%	1%	1%	0%
2002	2%	14%	1%	0%	0%	0%	1%	1%	0%
2003	2%	15%	2%	1%	3%	0%	4%	6%	0%
2004	5%	56%	4%	9%	10%	6%	12%	18%	1%
2005	6%	132%	11%	16%	20%	0%	10%	16%	1%
2006	3%	12%	6%	5%	4%	0%	2%	3%	1%
2007	3%	8%	6%	11%	5%	3%	2%	8%	1%
2008	2%	9%	7%	33%	19%	11%	2%	5%	1%
2009	8%	10%	8%	21%	30%	16%	3%	4%	0%
2010	8%	22%	11%	51%	49%	0%	16%	29%	0%
2011	9%	13%	19%	41%	35%	0%	24%	25%	0%
2012	6%	8%	19%	25%	53%	0%	24%	18%	0%
2013	10%	11%	15%	15%	29%	0%	18%	14%	0%
2014	14%	10%	19%	20%	32%	0%	27%	25%	0%
2015	12%	11%	15%	4%	5%	0%	24%	18%	0%

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Table 3. Percent of 2005-2015 incidental catch of **river herring and shad** (alewife, blueback herring, American shad and hickory shad) by region, fleet and quarter for the dominant gears. (Table 3 of Amendment 14 Appendix 2) BT = Bottom Trawl MWT = Mid-Water Trawl

Area fished	Quarter	BT			Gillnet			Paired	Single MWT	Total MWT	Grand Total
		sm	med	lg	sm	lg	xlg				
MA	1	3%	0%	0%	0%	1%	0%	19%	4%	24%	28%
MA	2	2%	0%	0%	0%	1%	0%	1%	0%	2%	4%
MA	3	4%	0%	0%	0%	0%	0%	0%	0%	0%	5%
MA	4	2%	0%	0%	0%	1%	0%	1%	0%	1%	3%
MA		11%	1%	0%	0%	2%	0%	21%	5%	26%	40%
NE	1	8%	0%	1%	0%	1%	0%	3%	1%	4%	13%
NE	2	5%	0%	1%	0%	1%	0%	4%	3%	7%	14%
NE	3	7%	0%	0%	0%	2%	0%	5%	1%	6%	15%
NE	4	5%	0%	0%	0%	1%	0%	9%	2%	11%	18%
NE		25%	0%	2%	0%	5%	0%	20%	7%	28%	60%
Total		36%	1%	2%	0%	7%	0%	41%	12%	54%	100%

Table 4. Percent of 2005-2015 incidental catch of American and hickory **shad** by region, fleet and quarter for the dominant gears. (Table 4 of Amendment 14 Appendix 2)

Area fished	Quarter	BT			Gillnet			Paired	Single MWT	Total MWT	Grand Total
		sm	med	lg	sm	lg	xlg				
MA	1	4%	1%	0%	0%	4%	0%	5%	1%	5%	14%
MA	2	3%	0%	0%	0%	3%	0%	0%	0%	0%	7%
MA	3	7%	0%	0%	0%	2%	0%	0%	0%	0%	9%
MA	4	2%	1%	0%	0%	3%	0%	0%	0%	0%	6%
MA		16%	2%	1%	1%	11%	0%	5%	1%	6%	37%
NE	1	5%	0%	2%	0%	3%	0%	1%	0%	1%	11%
NE	2	4%	0%	2%	0%	5%	0%	2%	1%	2%	13%
NE	3	5%	0%	1%	0%	11%	0%	2%	1%	3%	21%
NE	4	4%	0%	2%	0%	7%	0%	4%	1%	5%	18%
NE		18%	0%	7%	0%	26%	0%	8%	3%	12%	63%
Total		34%	2%	8%	1%	38%	0%	14%	4%	17%	100%

Table 5. Percent of 2005-2015 incidental catch of **river herring** (alewife and blueback herring) by region, fleet and quarter for the dominant gears. (Table 5 of Amendment 14 Appendix 2)

Area fished	Quarter	BT			Gillnet			Paired	Single MWT	Total MWT	Grand Total
		sm	med	lg	sm	lg	xlg				
MA	1	3%	0%	0%	0%	0%	0%	23%	5%	28%	31%
MA	2	2%	0%	0%	0%	0%	0%	1%	1%	2%	3%
MA	3	4%	0%	0%	0%	0%	0%	0%	0%	0%	4%
MA	4	2%	0%	0%	0%	0%	0%	1%	0%	1%	3%
MA		10%	0%	0%	0%	0%	0%	25%	6%	31%	41%
NE	1	9%	0%	0%	0%	0%	0%	3%	1%	4%	14%
NE	2	5%	0%	0%	0%	0%	0%	5%	4%	9%	14%
NE	3	7%	0%	0%	0%	0%	0%	5%	1%	6%	14%
NE	4	6%	0%	0%	0%	0%	0%	10%	2%	12%	18%
NE		27%	0%	1%	0%	0%	0%	23%	8%	31%	59%
Total		37%	0%	1%	0%	0%	0%	48%	14%	62%	100%

Table 6. Species-specific total annual incidental catch (mt) and the associated coefficient of variation across all fleets and regions. Midwater trawl estimates were only included beginning in 2005. Total RHS represents the sum of the four river herring and shad species (alewife, American shad, blueback herring and hickory shad). (Table A1 of Amendment 14 Appendix 2)

	Alewife		American shad		Blueback herring		Herring NK		Hickory shad		Total RHS	
	Catch	CV	Catch	CV	Catch	CV	Catch	CV	Catch	CV	Catch	CV
1989	44	0.49	229	0.98	38	0.42	18	1.13	0		311	0.73
1990	102	0.85	45	0.34	170	0.45	681	0.59	0		317	0.37
1991	149	0.44	176	0.25	285	0.40	266	0.51	39	0.00	649	0.23
1992	66	0.43	169	0.28	1,191	0.42	786	0.39	0		1,426	0.36
1993	381	2.42	211	1.00	746	0.28	136	4.83	0		1,338	0.76
1994	6	0.30	110	0.64	240	0.87	58	0.47	1	0.82	357	0.53
1995	8	0.61	127	0.38	348	0.44	100	1.23	1	0.64	485	0.34
1996	704	1.14	65	0.39	2,800	2.09	451	0.39	222	1.04	3,791	1.75
1997	49	1.36	66	0.61	1,594	0.69	90	5.09	21	1.25	1,730	0.64
1998	146	1.47	161	0.23	77	1.52	228	2.08	480	0.72	863	0.55
1999	6	1.16	82	0.41	359	0.60	3,457	0.74	209	0.94	656	0.44
2000	113	0.81	264	0.77	110	0.45	71	0.78	2	0.76	490	0.47
2001	190	0.84	68	0.39	310	0.32	3	0.44	330	0.27	898	0.30
2002	4	3.35	44	0.40	269	0.33	124	1.88	2	0.83	319	0.28
2003	388	1.43	60	0.54	527	0.56	26	1.17	19	0.85	994	0.63
2004	163	0.64	53	0.36	232	0.46	237	0.74	402	1.13	850	0.57
2005	404	0.40	94	0.28	255	0.34	29	0.58	27	0.34	781	0.27
2006	79	0.83	78	9.73	191	0.66	268	1.10	25	0.78	373	2.08
2007	544	0.71	79	0.56	188	1.42	357	0.91	17	0.90	827	0.79
2008	159	0.42	74	0.29	539	0.56	1,669	0.50	6	0.80	778	0.40
2009	154	0.26	107	1.99	195	0.30	352	0.66	12	0.79	468	0.50
2010	135	0.19	61	0.16	132	0.20	107	0.32	1	0.59	329	0.15
2011	97	0.34	103	0.12	28	0.30	126	0.28	0	0.77	228	0.16
2012	174	0.24	77	0.16	249	0.31	92	0.30	1	0.55	500	0.21
2013	239	0.33	73	0.41	29	0.46	75	0.69	0	0.76	342	0.26
2014	84	0.14	63	0.19	30	0.25	77	0.44	1	0.39	177	0.11
2015	124	0.31	46	0.15	82	0.48	40	0.75	2	0.77	255	0.23

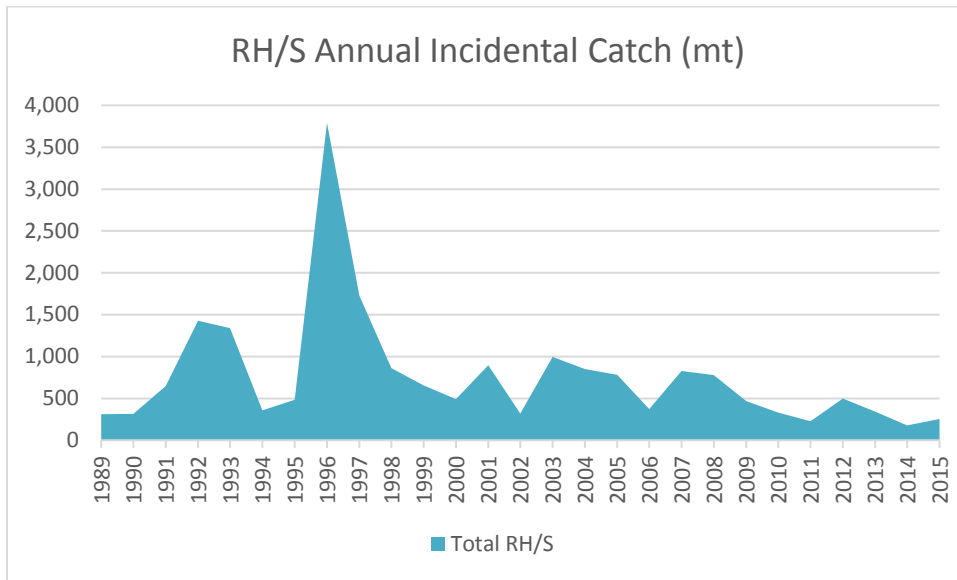


Figure 2. Annual RH/S All Dominant Gears/Areas

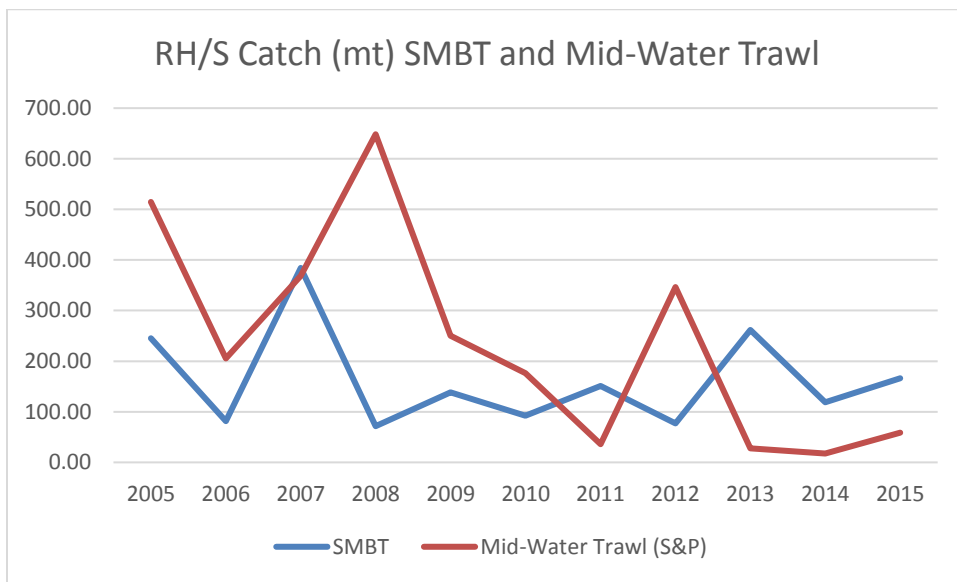


Figure 3. RH/S Catch (mt) by Small Mesh Bottom Trawl (SMBT) and Mid-Water Trawl (Pair and Single)

September 20, 2016

Jason T. Didden
Fishery Management Specialist
Mid-Atlantic Fishery Management Council
800 North State Street, Suite 201,
Dover, DE 19901

Re: 2016 Draft Decision Document and White Paper regarding “River Herring and Shad – Potential Management by the Mid-Atlantic Fishery Management Council”

Dear Mr. Didden:

We are writing on behalf of our clients in *Anglers Conservation Network v. Pritzker* to provide comments on the revisions intended for the referenced Draft Decision Document and White Paper. Our clients appreciate the time and resources spent updating the information necessary to support the Mid-Atlantic Fishery Management Councils’ October (2016) decision “whether to develop an amendment to add RH/S as Council-managed stocks.”¹ We attended the September 15 River Herring/Shad Committee Meeting (“Webinar”), and reviewed the August 18, 2016 Committee Meeting Summary outlining the intended revisions and supplements for the Draft Decision Document.² We also reviewed the Webinar recording and are providing for reference: (1) our understanding of the commitments made for revisions and supplements to the Draft Decision Document; and (2) some additional recommendations that in our view would facilitate and improve the information available for Council’s decision making, with specific suggestions for revisions to the legal and technical analysis contained in Table 19 of the White Paper attached to this letter.

The following changes were committed to on the RH/S Webinar/Summary (listed in the approximate order discussed):

1. Amendment 14, its history, and prior Council decisions related to RH/S will be discussed;

¹ See MAFMC agenda, available at: <http://www.mafmc.org/newsfeed/2016/october-2016-council-meeting-agenda>.

² See *Anglers Conservation Network v. Pritzker*, Civ. No. 1:14-cv-509 (GK). We understand that NOAA General Counsel interpreted Judge Kessler’s first (ECF No. 53) and second (ECF No.58) order to mean that the White Paper is a stand-alone document that was due August 1, 2016 and cannot be changed. As the Court noted, the availability of a separate, accessible document prior to the October decision is important to plaintiffs, *see* ECF No. 58 at 2, however, it is important that this document accurately reflect the current and revised information. During the Webinar, Committee members, NMFS, and the public noted potential flaws and areas for improvement of the White Paper, especially where the analysis was carried over to the Draft Decision Document. Defendants met their requirement to complete the White Paper by August 1, 2016; now the White Paper must be updated along with the Decision Document in order to maintain consistency between the documents and to ensure the white paper analysis supports the information contained in the Draft Decision Document.

2. The essential fish habitat (EFH) discussion will clarify that EFH will be designated for RH/S if federally managed species. EFH designation discussion will be expanded to include potential offshore EFH in federal waters;
3. The effect that improved mackerel status (increased effort) and/or improved RH/S status (increased incidental catch) could have on current RH/S catch in the herring and mackerel fisheries will be discussed;
4. Causes of uncertainty and underestimates of RH/S catch will be discussed. Among other things this will include the effect of low observer coverage on catch cap estimates and the problems associated with the operation of current catch caps due to uncertainty, as well as SBRM limitations;
5. Additional information on RH/S interactions in other small-mesh fisheries (e.g., herring, squid, butterfish, and whiting) will be provided and the importance of recent catch in these fisheries given the depleted status of RH/S will be discussed;
6. Additional updated gear-based catch estimates by species will be provided similar to the analysis performed in Amendment 14 (split out by species, gear type, and region). Trends in catch by gear and species will be discussed;
7. A comparison of RH/S catch in traditional fisheries (separate species) with RH/S catch in current fisheries (mixed with other species) will be discussed;
8. Updated RH/S catch and run information will be obtained from the ASMFC and discussed;
9. The assumption about the impact of fishing on RH/S stock status will be clarified to reflect that however small recent catches are relative to historically high catches, they could still be important, particularly on a run by run basis;
10. Additional environmental impact analysis (direct, indirect, and cumulative) related to (a) managing RH/S immediately as stocks in the fishery (with proxies); and (b) not managing RH/S (No Action), will be included. The Council and GARFO will coordinate to ensure that the documents meet the conditions of the relevant Court orders;
11. Additional detail and discussion of the jurisdictional issues, particularly as they relate to coordination between the Mid-Atlantic and New England Fishery Management Councils will be provided. The benefits of federal management (with an ABC and ACLs), with the ability to regulate catch in other fisheries such as the Atlantic herring fishery, will be discussed;
12. Additional NMFS survey and NEAMAP survey information will be provided - including size and age structure, genetic information, and other scientific information – to clarify assumptions made related to stock status. The extent to which the States perform biological sampling will be discussed;
13. The size and age composition of fish caught in the RH/S catch caps (based on NEFOP observer data) will be discussed;
14. Discussion of the ongoing genetic work to identify where incidental fish come from in terms of the natal stream areas will be expanded. Specifically, the Hasselman et al paper will be more fully discussed. The impacts of harvest in the Atlantic herring fishery in southern New England on Mid-Atlantic stock components will be discussed;
15. The vulnerability of RH/S to climate change will be discussed in the Decision Document. Specifically, the Hare et al paper will be discussed;
16. The threats analysis discussion will be expanded to include all sources of mortality including an expanded discussion of threats from dams and offshore fishing. Trends in

- RH/S abundance relative to dam removals/fish passage and limitations of dam removal, especially as it relates to American shad will be discussed;
17. The discussion of the ecological, social, and economic benefits of successfully rebuilt populations for a range of stakeholders will be expanded;
 18. Estimates of catch in state and federal waters by species will be provided and discussed. Where this information cannot be provided with certainty, the state of existing knowledge will be clarified;
 19. A detailed comparison of the benefits of a NEFSC-led versus an ASMFC-led stock assessment will be provided; and
 20. The effort and resources spent by NOAA Fisheries and their partners on habitat improvement in state waters will be provided and discussed.

* * *

As currently written, the White Paper and Draft Decision Document appear to conclude that because current RH/S catch estimates are relatively low (due to severely depressed population levels and low effort/catch in the depleted mackerel fishery where effort is at an all-time low), federal management would have little impact on RH/S populations. This is flawed for a number of reasons including that catch is underestimated across all fisheries, the potential exists for significant impacts if even reasonable increases in the mackerel fishery and/or RH/S populations occurred, and such reasoning conflicts with the purposes of the Magnuson-Stevens Act by effectively writing off severely depleted stocks, rather than putting them into an FMP and rebuilding them. The revisions noted above will address many of our clients concerns related to this flawed conclusion, and will provide much of the information necessary for the Councils' decision whether to develop an amendment to add RH/S as Council-managed stocks. However, additional revisions and information should be made.

In order to fully examine the environmental impacts of its decision, the following additions and revisions should be included in the revised document(s):

Legal Considerations

1. The discussion of the legal standard applicable to this decision (whether to develop an amendment to add RH/S as Council-managed stocks because they are in need of conservation and management) should clarify that the Magnuson-Stevens Act does not require a species to be overfished, approaching an overfished condition, or “predominantly” caught in federal waters, in order to trigger management in an FMP; and
2. The Magnuson-Stevens Act requirements for rebuilding overfished stocks should be included and discussed. *See* 16 USC § 304(c);
3. The current (and/or proposed) National Standard 1 guidelines related to the use of proxies should be included and discussed. NMFS has provided this technical guidance for use in data poor situations with proxies to measure reproductive potential and guide rebuilding. Related to this, the Council’s use of proxies for management of other MAFMC-managed species (currently or in the past) should be discussed; and
4. As part of the existing legal authorities’ discussion, Table 19 should be revised to reflect limitations of ASMFC and other existing authority. *See* Attachment to this letter.

Rebuilt Population Estimates and Benefits

5. As part of the benefits of rebuilt populations (*see* No. 17 above), the importance of maintaining healthy RH/S populations as prey for other Council-managed species (such as bluefish) should be discussed;
6. Reasonable estimates (or other characterization) of what rebuilt RH/S populations would be (by species if possible), should be calculated and provided. For example, declines in abundance combined with landings data could be used to roughly estimate the size of rebuilt populations;
7. The ability of science-based ACLs to limit catch and spur rebuilding should be discussed. NOAA Fisheries has a long history of successfully rebuilding fisheries. *See* NRDC Report Bringing Back The Fish, available at: <https://www.nrdc.org/sites/default/files/rebuilding-fisheries-report.pdf>;
8. The ecological benefits of anadromous species such as RH/S and the ecological costs associated with their extinction should be discussed. *See e.g.*, Limburg KE, Waldman JR. 2009. Dramatic declines in North Atlantic diadromous fishes. *BioScience*. 59:955–965 (showing that populations of all anadromous fish have declined dramatically (specifically 98 percent for RH and 97 percent for shad) from historical baselines and concluding that the loss of anadromous species has corrupted ecological connections in the North Atlantic ecosystem); and
9. The original Alternative Set 9 benefits section found in the draft environmental impact statement for Amendment 14 should be included. *See* Amendment 14 DEIS at 441-449.

Essential Fish Habitat

10. As part of the EFH discussion (*see* No. 2 above), potential gaps in protection where EFH for currently managed species and/or ESA consultations may not overlap with important RH/S habitat should be identified and discussed; and
11. Assumptions about EFH designations should be further explained. For example assumptions that: (1) NMFS's ability to conserve habitat might not be increased if RH/S were federally managed (*see* DD at 12; WP at 61); and (2) NMFS might lack the resources to effectively carry out its statutory mandate to designate EFH (*see* DD at 14, 23; WP at 63).

Sources of Mortality

12. As part of the threats and mortality discussion (*see* No. 16 above), significant ESA listing determination findings should be included: 1) mid-Atlantic bluebacks are at “moderate-low risk of extinction” 78 Fed. Reg. 48944, 48992 (Aug. 12, 2013); 2) NMFS acknowledged that “current directed commercial and recreational alewife and blueback herring fisheries, as well as commercial fishery incidental catch may continue to pose a threat to these species.” *Id.* at 48961; and c) NMFS acknowledged that incidental catch in small mesh fisheries remains a “substantial source of fishing mortality.” *Id.* at 48964; and
13. The inability of the current RH/S catch caps to limit catch in the mackerel and herring fisheries, and the reasons why, should be fully discussed.

Catch Estimate Adjustments

14. As part of the revised underestimates of catch discussion (*see* No. 4 above), the importance of slippage and the rare but significant bycatch events that occur in this fishery should be included. *See* Amendment 14 DEIS at 314 (slippage on 26% of mackerel trips), 340 (slippage biases data), 145 (“Considerable uncertainty in RH/S catch remains, especially in pair-trawling that targets mackerel and in bottom-trawling primarily because of the rare-event nature of large incidental RH/S catches”);
15. Reasonable estimates of slipped catch should be provided (to the extent it can be calculated);
16. Scientific publications that discuss adequate observer coverage necessary to estimate bycatch should be discussed. *See e.g.*, Babcock, E.A., E.K. Pikitch, and C.G. Hudson. 2003. “How much observer coverage is enough to adequately estimate bycatch?,”³ and
17. The assumptions involved in the conclusion that observer coverage will not increase if RH/S are federally managed species should be identified (including assumptions related to RH/S discard estimates, federal funding, SBRM filters, the 30% CV standard, and any other relevant factors).

Additional Scientific Guidance and Findings

18. The ORCS Paper, “NOAA Technical Memorandum NMFS-NEFSC-616. Calculating Acceptable Biological Catch for Stocks that have Reliable Catch Data Only,” should be discussed, as it is a readily available technical memorandum that could be used to set an ABC (or proxy) for RH/S; and
19. The scientific paper showing that a large proportion of catch in southern NE by the herring and mackerel fishery is juvenile fish and may have a detrimental impact on the ability of RH to rebuild (*see* No. 14 above) should be discussed. *See* N. David Bethoney, Kevin D. E. Stokesbury, Bradley P. Schondelmeier, William S. Hoffman & Michael P. Armstrong (2014) Characterization of River Herring Bycatch in the Northwest Atlantic Midwater Trawl Fisheries, *North American Journal of Fisheries Management*, 34:4, 828-838.

Jurisdictional Issues

20. The jurisdictional issues discussion (*see* No. 11 above), should clarify Staff’s concern about “substantial catch” in state waters. *See* Draft Discussion Document at 15. It would help to explain what would dramatically increase catch in state waters and why the relevant councils and the ASMFC could not reach an agreement on measures that would keep catch below an established ABC; and
21. The management unit discussion should include the geographic range of the management unit for species managed in the MSB FMP: all northwest Atlantic mackerel, longfin squid, *Illex illecebrosus*, and butterfish under U.S. jurisdiction throughout the Atlantic seaboard. Revised documents should note that Amendment 14 expressly contemplated

³ Available at:

http://www.oceana.org/fileadmin/oceana/uploads/dirty_fishing/BabcockPikitchGray2003FinalReport.pdf.

the same for RH/S (“could effectively extend the management unit to include RHSs”).
See Amendment 14 DEIS at 116.

Environmental Impacts

22. As part of the environmental impacts analysis (*see* No. 10 above), it should be discussed that 18 months may not be a long enough timeframe to measure the impacts - the MAFMC took final action in June 2012 and it has been more than four (4) years since that decision; and
23. It should be clarified that under the Council’s “success criteria” discussion it has not made progress under the catch cap in terms of stock status, reducing incidental catch, or coordination between the relevant entities.

State Surveys

24. All state surveys should be included when determining whether the statuses of RH/S stocks are improving. If there are “mixed results” in the state surveys, *see* WP at 67, it would be helpful to understand how the decision to leave certain surveys out was made and discuss what those eliminated showed.

Thank you for this opportunity to comment. If you have any questions please feel free to contact us.

Sincerely,

/s/ Erica Fuller
Erica Fuller
Roger Fleming
Attorneys
Earthjustice

On behalf of their clients

Cc: Dr. Chris Moore, Executive Director
Mr. Michael Luisi, MAFMC Chairman
Mr. Kevin Collins, NOAA General Counsel

Table 19. Magnuson-Stevens Act Required Plan Provisions and How They May be Addressed by Existing Authorities.

Provision	Current measures using existing authority	Comments
<p>Measures 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</p>	<ul style="list-style-type: none"> • Commission Amendments 2 and 3 to the Commission Plan for Shad and River Herring, which requires states to close their waters to recreational and commercial river herring harvest unless they have an approved sustainable plan in place that will “not diminish the potential future stock reproduction and recruitment.” Currently ME, NH, RI, NY, NC and SC have approved plans for river herring; DE River Basin, Potomac River Fisheries Commission, NC, SC, GA and FL have plans for shad (Atlantic Coastal Fisheries Cooperative Management Act - ACFCMA). • Proposed catch caps in the Atlantic mackerel and Atlantic herring fisheries will address incidental catch (Magnuson-Stevens Act, through existing FMPs). 	<p>ASMFC plans cannot prevent overfishing or rebuild overfished stocks because they do not address catch in federal waters.</p> <p>Current catch caps cannot prevent overfishing or rebuild depleted stocks because they are only designed to prevent increases over recent catch, not rebuild stocks.</p>

Provision	Current measures using existing authority	Comments
Description of the fishery	<ul style="list-style-type: none"> • Amendments 2 and 3 to the Commission Plan for Shad and River herring describe commercial/recreational fisheries in state waters (ACFCMA). • Atlantic herring and MSB actions that relate to river herring and shad, most recently Amendments 5 and 14, describe river herring and shad catch in federal waters (Magnuson-Stevens Act, through existing FMPs). 	<p>ASMFC Amendment 2 and 3 describe the fisheries in state waters, not federal waters.</p> <p>Scientific literature published after Amendment 5 and 14 (discussed in the body of the letter) provides further information, including important information on the genetic composition of RH/S catch in federal fisheries.</p>
Assessment and specification of present and probable future condition of, and the maximum sustainable yield and optimum yield from the fishery.	<ul style="list-style-type: none"> • Present condition of the fishery is described in recent Commission stock assessment. • Trend analysis for river herring included in recent Endangered Species Act decision. 	<p>The ASMFC stock assessments do not provide reference points, or assess or specify MSY and/or OY.</p> <p>To the extent that the trend analysis for the Mid-Atlantic blueback herring population is scientifically sound, it determines that Mid-Atlantic populations are “significantly decreasing” and at “moderate-low risk of extinction.” See 78 Fed. Reg. 48944, 48992 (Aug. 12, 2013).</p>

Provision	Current measures using existing authority	Comments
Assessment and specification of domestic harvesting and processing capacities	<ul style="list-style-type: none"> U.S. fishing vessels are capable of, and expected to, harvest the optimum yield from the river herring and shad fisheries. U.S. processors are also expected to process the harvest of U.S. fishing vessels. None of the optimum yield from this fishery can be made available to foreign fishing. 	<p>To our knowledge there is no expectation that U.S. fishing vessels are expected to harvest optimum yield (OY) from the RH/S fisheries because they are not federally managed.</p> <p>To the extent it would apply once federally managed, OY requires rebuilding to maximum sustainable yield as <i>reduced</i> for ecological factors (among others); providing the greatest overall benefit to the Nation (OY) includes recreational opportunities and taking into account the protection of the marine ecosystems. 16 U.S.C. § 1802(33).</p> <p>Rebuilt RH/S populations would increase OY from RH/S fisheries as well as the herring and mackerel fisheries.</p>
Specification of the pertinent fishery data that shall be submitted to NMFS	<ul style="list-style-type: none"> Amendments 2 and 3 to the River Herring and Shad Commission Plan specify fishery dependent and fishery independent monitoring requirements (ACFCMA). 	<p>Amendment 2 and 3 provisions cannot provide accurate estimates of catch under current monitoring requirements.</p> <p>Requests by the ASMFC, MAFMC and NEFMC for increased monitoring in small mesh fisheries were denied by NMFS.</p>
Provision of temporary adjustments to fishery access because of weather or other ocean conditions affecting the safe conduct of the fishery	<ul style="list-style-type: none"> Could be provided to states on an as needed basis. 	
Description and identification of essential fish habitat, and minimization to the extent practicable adverse effects on such habitat caused	<ul style="list-style-type: none"> Amendments 2 and 3 to the River Herring and Shad Commission Plan require states to identify, categorize and prioritize important existing and historic shad and river herring and shad 	<p>ASMFC Amendment 2 and 3 do not identify, or minimize the adverse impacts of fishing on, habitat in federal waters.</p> <p>EFH consultations for currently managed species and/or ESA</p>

Provision	Current measures using existing authority	Comments
by fishing	<p>habitat within its area of jurisdiction, establish periodic monitoring to ensure the long-term health and viability of the habitat, and develop plans to restore access to rivers (ACFCMA).</p> <ul style="list-style-type: none"> • EFH consultations for currently managed species, including Atlantic salmon, Atlantic herring, and Atlantic mackerel could benefit river herring and shad where their habitats overlap (Magnuson-Stevens Act). • Critical habitat consultations for Atlantic salmon and Atlantic sturgeon could benefit river herring and shad where their habitats overlap (Endangered Species Act). • Consultations related to hydroelectric projects could benefit river herring and shad (Federal Power Act). • Federal protection of water quality is afforded through the Federal Water Pollution Control Act (also called the “Clean Water Act”). This act has played a role in reducing discharges of pollutants, restricting the timing and location of dredge and fill operations, and affecting other changes that have improved river herring and shad habitat in many rivers and estuaries. • Other state and federal habitat restoration activities 	<p>consultations may afford RH/S some protection where habitats overlap, however the gaps in the geographic areas currently covered by consultations have not been assessed and such consultations do not account for any unique RH/S habitat needs.</p> <p>None of the other consultations or protections noted would apply in federal waters.</p>

Provision	Current measures using existing authority	Comments
	(as described in this document).	
Specification of the nature and extent of scientific data which is needed for effective implementation of the plan	<ul style="list-style-type: none"> Current research needs were identified in Amendments 2 and 3 to the River Herring and Shad Commission Plan, and the most recent assessments for river herring and shad (ACFCMA). 	The ASMFC has stated that it has limited funding and will not have the data necessary to perform a coastwide stock assessment in 2017.
Description of the likely effects of management measures on fishery participants and fishing communities	<ul style="list-style-type: none"> National Environmental Policy Act (NEPA) analyses are conducted for all federal actions (not just fishery management measures) to evaluate the impacts of the federal action on fishery participants and fishing communities. 	The NEPA analysis described for other (non-fishery) federal actions would not address the likely effects of fishery management measures on fishermen and communities. The NEPA analysis undertaken so far for Am. 14 does not evaluate the direct, indirect, and cumulative impacts of its action and inaction on RH/S participants and/or fishing communities.

Provision	Current measures using existing authority	Comments
<p>Specification of objective and measurable criteria for identifying when the fishery to which the plan applies is overfished and conservation and management measures to prevent overfishing, end overfishing, and rebuild the fishery as appropriate</p>	<ul style="list-style-type: none"> • KEY POTENTIAL BENEFIT of Magnuson-Stevens Act; this would be required in a Federal FMP. • No definition currently for river herring in Amendment 2 to the Shad and River Herring Commission Plan. • The most recent stock assessment (ASMFC 2007) concluded that the definition of overfishing in Amendment 1 to the Shad and River Herring Commission plan that focused only on directed fishing mortality (F) was no longer valid for American shad stocks because shad are affected by several sources of human-induced mortality, including directed fishing (F), fish passage mortality at dams, mortality from pollution, and bycatch and discard mortality in indirect fisheries activity. 	<p>Under ASMFC Amendment 2 and 3 reference points for RH/S have not been established.</p>

Provision	Current measures using existing authority	Comments
<p>Assessment of the amount and type of bycatch occurring in the fishery and minimize bycatch to the extent practicable</p>	<ul style="list-style-type: none"> • Adjustments to federal monitoring programs can be made to assess river herring and shad bycatch in federal fisheries (Magnuson-Stevens Act, through existing FMPs). • Proposed catch caps to minimize bycatch in Atlantic herring and Atlantic mackerel fisheries (Magnuson-Stevens Act, through existing FMPs). 	<p>Current catch caps do not minimize bycatch to the extent practicable because they are based on recent catch levels, thus at most prevent catch from increasing. They are also set too high to threaten to close any fishery, thus provide little incentive to avoid or minimize catch of RH/S. Estimates of all catch including bycatch are underestimates due to low observer coverage.</p> <p>Current measures under existing authorities do not include RH/S as federally managed species under SBRM. If a standard methodology for documenting RH/S catch (retained, landed, or discarded) in federal waters, 16 U.S.C. § 1853(a)(11), were established and a 30% CV were in fact required (Northeast SBRM precision standard) then NMFS would need to significantly increase NEFOP observer coverage in many fisheries. Increased observer coverage would result in additional data/sampling.</p> <p>Moreover, to reduce the uncertainty in catch estimates, a Northeast Fisheries Science Center (NEFSC) led stock assessment could dictate that RH/S be given higher priority in NMFS data collection programs.</p>

Provision	Current measures using existing authority	Comments
<p>Assessment of recreational release mortality and minimization of such mortality to the extent practicable</p>	<ul style="list-style-type: none"> • States and jurisdictions must monitor recreational catch and effort within certain specified rivers under Amendments 2 and 3 of the Shad and River Herring Commission Plan. Techniques used to gather this data may include creel surveys, surveys of license/permit holders, Marine Recreational Fisheries Statistical Survey (MRFSS) / Marine Recreational Information Program (MRIP) and reporting requirements for obtaining/maintaining license or permit (ACFCMA). • Amendments 2 and 3 to the Commission Plan for Shad and River Herring, which requires states to close their waters to recreational and commercial river herring harvest unless they have an approved sustainable plan in place that will “not diminish the potential future stock reproduction and recruitment.” Currently ME, NH, RI, NY, NC and SC have approved plans for river herring; DE River Basin, Potomac River Fisheries Commission, NC, SC, GA and FL have plans for shad (ACFCMA). 	<p>According to the ASMFC website: “Recreational catches of these species remain largely unknown. The Marine Recreational Information Program (MRIP) estimates the numbers of river herring harvested and released by anglers, but estimates are imprecise, show little trend, and are deemed not useful for management purposes.” See http://www.asmfc.org/species/shad-river-herring.</p> <p>The TEWG identified this as an important data gap.</p>

Provision	Current measures using existing authority	Comments
Allocation of harvest restrictions or recovery benefits fairly and equitably among the commercial, recreational, and charter fishing sectors	<ul style="list-style-type: none"> • Could be coordinated through Councils and Commission. 	<p>In most states, recreational fishermen in state waters are not allowed to keep a single fish while small mesh fisheries in federal waters keep millions.</p>
Establishment annual catch limits, and measures to ensure accountability.	<ul style="list-style-type: none"> • KEY POTENTIAL BENEFIT OF Magnuson-Stevens Act; this would be required in a Federal FMP. • Catch is limited through Amendments 2 and 3 to the Commission Plan for Shad and River Herring, and under the state plans that have already been approved • Federal bycatch limits proposed in Atlantic herring and Atlantic mackerel fisheries; proposed consequence (similar to an accountability measure) is closure of directed fisheries for these species once cap is attained (Magnuson-Stevens Act, existing FMPs). 	<p>Catch in federal waters is not limited by the current catch caps. <i>See above.</i> These catch caps are not based on the biology of RH/S and are not designed to rebuild RH/S populations and maintain them at sustainable levels to produce OY, as annual catch limits would.</p> <p>Catch in state waters is primarily limited by moratoria because RH/S populations levels remain severely depleted.</p>

BLUELINE TILEFISH RECREATIONAL MEASURES FRAMEWORK ADJUSTMENT

Discussion Document and Background

October 2016

**Mid-Atlantic Fishery Management Council
in cooperation with
the National Marine Fisheries Service (NMFS)**

Council Address

Mid-Atlantic Fishery Management Council
800 North State Street, Suite 201
Dover, DE 19901

NMFS Address

NMFS Northeast Regional Office
55 Great Republic Drive
Gloucester, MA 01930

First Framework Meeting: October 5, 2016

Second Framework Meeting: February 2017

**Final approved by National Oceanic and Atmospheric Administration
(NOAA): ???**



Purpose of October 2016 Meeting: Review goals and alternatives.

Framework Goal

The goal of this framework is to consider alternative recreational blueline tilefish seasons and trip limits to best meet the needs of the fishery given the constraining Annual Catch Limit (ACL).

Timeline

Oct 2016: Framework Meeting 1 - The Council initiates the framework if desired and directs staff regarding alternative development and analysis.

February 2017: The Council approves alternatives at Framework Meeting 2 to recommend to NMFS.

March 2017: Council staff submits Environmental Assessment

April 2017: Review of Environmental Assessment, document perfection.

May 2017: Proposed Rule publishes

June/July 2017: Final Rule publishes/becomes effective

Relevant Motion From June 2016 Meeting

I move that we initiate a framework to consider recreational blueline tilefish specifications.

Nowalsky/Kaelin (17/1/1) Motion carries

Recreational Measures Set at April 2016 Meeting

For the recreational fishery, the Council recommended an open season from May 1 to October 31. Recreational bag limits would be set at 7 fish per person for inspected for-hire vessels, 5 fish per person for uninspected for-hire vessels, and 3 fish per person for private vessels. In addition, the Council recommended mandatory permitting and reporting of golden and blueline tilefish for both for-hire and private recreational fishing in order to develop better information on recreational tilefish landings in the Mid-Atlantic.

The Council set these measures to restrain the recreational fishery within its allocation of a very limited ACL (63,533 pounds) while acknowledging the dependence of several inspected for-hire vessels that have a relatively high degree of dependence on blueline tilefish. The low ACL, which is equal to the binding Acceptable Biological Catch (ABC)

provided by the Council’s Scientific and Statistical Committee (SSC), provided relatively few options for the Council in terms of viable recreational seasons and bag limits.

Council staff is finalizing the Environmental Assessment that will accompany the implementation of recreational measures for blueline tilefish in the Amendment adopted earlier this year. The range of measures considered in that document are:

Table 1. Recreational Alternatives in Blueline Tilefish Environmental Assessment.

12a - 7 fish per person - emergency action
12b - 5 fish per person
12c - 9 fish per person
12d - 3 extra fish per person for trips greater than 36 hours
12e - Differential 7-5-3 Limit and May-Oct season (preferred)

The differential limit in 12e is the 7-5-3 limit discussed above and selected by the Council. Additional options that have been suggested by constituents after the April 2016 meeting and/or around the June 2016 meeting include (full comments are at the end of this document):

- Uniform trip limits of 3-7 fish per person;
- Longer seasons with lower bag/possession limits;
- Allow party boats to declare their season; May 1 -Oct 31 or Oct 1-March 30,
- Use history to allow each for-hire vessel to fish a certain amount of trips per year or days at sea;
- Allow an additional 3 fish per person for trips lasting over 30 hours, especially if the bag limit is reduced to below 7 fish;
- Group the season with the black sea bass season, i.e. being open May 15 through September 21 and October 22 through December 31.
- Keep waves 1 and 2 closed and close wave 5 but open wave 6 while keeping the bag limit at 7 fish for for-hire inspected vessels.
- Keep uninspected for-hire vessel and inspected for-hire vessel bag limit the same and consider a more moderate approach to the proposed bag limit for recreationally permitted vessels.

If the Council decides to proceed with a framework at this time, given the limited time to analyze options, staff suggests that 3 relatively simple options be selected for additional analysis. For example, the following set of alternatives could be analyzed by February to determine their feasibility and relative impacts:

1. Amendment Preferred: differential 7-5-3 bag limits and May-Oct Season
2. Align blueline tilefish season with black sea bass season (modify differential bag limits if necessary)
3. May-December open season with reduced 3-5 fish uniform bag limit

Fishery Background Information

Due to the limited extent of the recreational blueline tilefish fishery, data are almost totally absent from MRIP, and it is believed that considerable underreporting has occurred in for-hire vessel trip reports (VTRs). To address this, the Council held a facilitated workshop with individuals knowledgeable about the recreational blueline tilefish fishery to develop recreational blueline tilefish catch estimates through an iterative Delphi technique approach. The report from this workshop is available at <http://www.mafmc.org/ssc-meetings/2016/march-15-16>, and it was used to develop the time series analyzed in the blueline tilefish amendment.

Although blueline tilefish catches are very rare in NMFS' recreational survey data, Northeast vessel trip reports (VTRs) for party/charter vessels indicate an increase from an average of about 2,400 fish per year (2002-2011) to between 10,000-16,000 fish per year in 2012-2014. Several for-hire vessels have focused some effort on blueline tilefish in recent years, as evidenced by multiple recent trips landing 10 or more blueline tilefish per person (the highest fish per person averages were from 2014 trips in New Jersey). During this period, there was no permit required for blueline tilefish. Anyone with any Federal party-charter permit should have been reporting all of their catch, including blueline tilefish, and it is likely that most party-charter vessels that fish for blueline tilefish would have other Federal permits (e.g. black sea bass). However, comments during scoping and at Council meetings have revealed that this requirement is neither universally understood nor complied with, so it is likely that the party-charter VTR records are a subset of the total for-hire catch. Nevertheless, the VTR catch information does provide some recreational catch information. As with commercial activity, 2014 appeared to be an above average year for party-charter blueline tilefish activity, and Table 4 demonstrates that blueline tilefish catch report occurrences across the party-charter fleet appear to be on the increase in terms of numbers of vessels with some blueline tilefish catch, though changes in reporting compliance could account for part of any changes. It also appears that outside of 2014, the emergency regulation of 7 blueline tilefish per person should affect only a small portion of trips based on recent activity (Tables 2 and 3).

Table 2. Average Blueline Tilefish Kept per Angler on 2009-2013 Party-Charter Trips*

Trip Size	# Trips	avg # trips/year
≤ 5 fish	386	77
6-7 fish	72	14
8-9 fish	17	3
more than 9 fish	22	4

***Trips Reporting at Least 1 Blueline Tilefish**

Table 3. Average Blueline Tilefish Kept per Angler on 2014 Party-Charter Trips*

Trip Size	# Trips
≤ 5 fish	84
6-7 fish	29
8-9 fish	5
more than 9 fish	23

***Trips Reporting at Least 1 Blueline Tilefish**

Table 4. Numbers of party/charter vessels reporting at least one blueline tilefish 2002-2014.

YEAR	vessels
2002	2
2003	3
2004	1
2005	4
2006	3
2007	17
2008	14
2009	15
2010	16
2011	20
2012	15
2013	22
2014	25

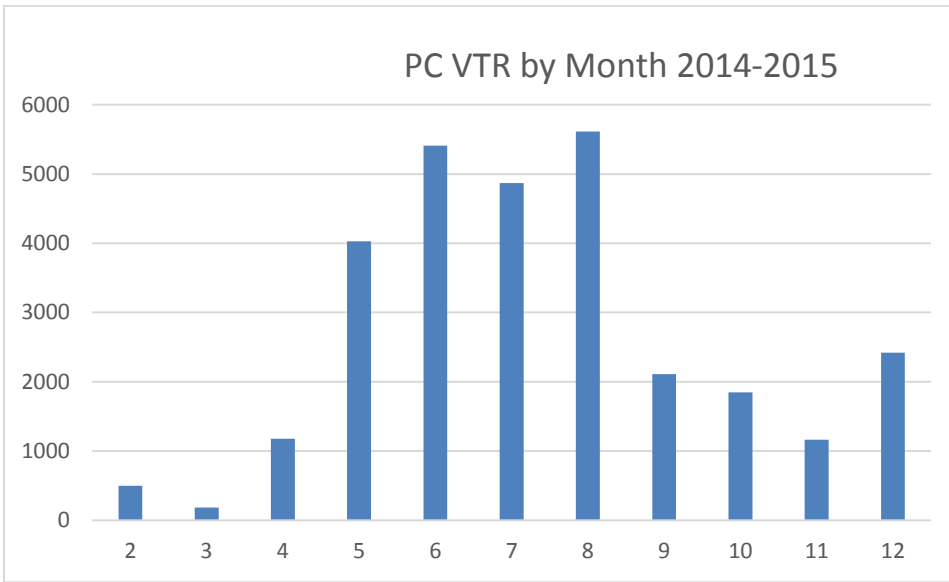


Figure 1. 2014-2015 Party-Charter Bluefish Landings by Month.

THIS PAGE IS THE FINAL PAGE OF THIS DOCUMENT - PUBLIC COMMENTS BY CONSTITUENTS AFTER THE APRIL 2016 MEETING AND/OR AROUND THE JUNE 2016 MEETING FOLLOW.

May 10, 2016

Fred Akers
P.O. Box 395
Newtonville, NJ 08346

Mr. Richard B. Robbins, Chairman
Mid-Atlantic Fisheries Management Council
Sent by email to: richardbrobins@gmail.com

RE: MAFMC Blueline Tilefish Management Amendment Complaint

Dear Chairman Robbins:

Please consider this letter a formal complaint regarding the arbitrary and capricious decision made by the MAFMC under the Blueline Tilefish Amendment to split the recreational fishery into 3 sectors and cut private boat owners access to the fishery by 43% from 7 fish per day to 3 fish per day, while cutting the Party inspected for-hire vessel access to the fishery by 0%, keeping it at 7 fish per day for every angler on their boats.

In addition to the 43% reduction in the daily bag limit for private boat owners to 3 fish, this unfair and discriminatory action will also tend to reduce overall effort by private boat owners as well. During the scoping for this amendment, some party boat owners complained that bag limits less than 7 fish would cause many of their clients to not take trips for blueline tilefish due to the relatively high costs associated with the extended run offshore required for blueline tilefish in their region (PID page 68). 3 fish is a lot lower than 7 fish, so the 3 fish bag limit will significantly reduce private recreational boat effort on a trip basis as well as on a daily basis because of the costs incurred getting out to the tilefish grounds for only 3 fish.

Splitting the blueline tilefish recreational fishery into 3 sectors and unfairly distributing the allocation through different bag limits is arbitrary and capricious because this alternative was not considered, mentioned, discussed or otherwise presented during the entire amendment development process. Furthermore, splitting the recreational fishery into multiple sectors with separate and different management measures is not a customary practice by the MAFMC.

I attended almost every Committee, Council, and Advisory Panel meeting, studied the scoping documents, studied the Public Information Documents, and made written comments on the alternatives communicated to the public under **Alternative Set 12: Recreational bag/possession limits**, and a 7-5-3 recreational split sector bag limit was not proposed until after the public comment period had closed.

Furthermore, if the Council wants to start splitting the recreational sector for FMP species management, then it is very unfair to deny one of the sectors, in this case the private recreational boat owners, a seat on the Advisory Panel to represent that specific interest. I attended the 2/16/16 and 4/5/16 Tilefish AP meetings as an observer, and I observed that private recreational boat owners were targeted by the commercial and for hire AP interests as a big competitive problem for them in the tile

fish fishery, which seems to have ultimately resulted in their lobby to the MAFMC staff for this split sector punishment with a 3 fish bag limit for private recreational boat owners recommended in the 11th hour of the process by Council Staff.

As a private recreational boat owner who targets tilefish, I reported my legal catches of blueline tile for 2015 to the Council, and I was subsequently invited to participate in the Delphi Survey Process to help estimate recreational catch in the Mid-Atlantic Region, which I gladly volunteered to do. However, it now looks like my reward for participating in the Delphi Process and reporting my blueline catch for 2015 as a private recreational boat owner was to be targeted by the Party boat owners and the commercial interests on the tilefish AP as a threat to those special interests and to be punished by a last minute staff recommendation to restrict my access and fair share of a Public Trust Resource, blueline tilefish, and to arbitrarily favor the for hire recreational fishing interests by giving them higher bag limits than private recreational boat owners, like me.

One important management consideration that was excluded in this amendment was the regional economic value of the private recreational boat owners. If you are going to split the recreational sector and designate disproportionate catch limits, you should identify the economic value of each separate sector to inform your decisions based on the economic value of each one.

Private recreational boat owners who fish for tile fish invest hundreds of thousands of dollars in boats, tackle, bait, and fuel to fish for tile fish, and perhaps the cumulative economic value generated by private recreational boat owners to the Mid-Atlantic Region is greater than that of the few for hire boats that fish for blueline tile each year.

I am a public volunteer and interested party who currently serves on the Ecosystem and Ocean Planning Advisory Panel, the River Herring and Shad Advisory Panel, a past volunteer on the Bluefish Advisory Panel, and a general public participant who regularly attends Council meetings and participates with public comments.

Overall I am a very strong supporter of the outstanding, progressive, fair, and inclusive work that the MAFMC has done and continues to do to sustainably manage the fisheries under its jurisdiction, but the Council's recent arbitrary and capricious decision to split the recreational blueline tilefish catch with a 7/5/3 bag limit is a substantial disappointment, and seriously out of character.

I sincerely appreciate your leadership as the Chair of the MAFMC, and I appreciate the opportunity to log this complaint to you. Since the MAFMC has made its formal decision to recommend the 7/5/3 split sector recreational blueline tile fish bag limit to the National Marine Fisheries Service for adoption and implementation, I will provide NMFS with this letter and further comments to NMFS to stop the MAFMC's arbitrary and capricious decision on this fisheries management issue for blueline tilefish.

Respectfully,



Fred Akers, private recreational boat owner and tilefish fisherman from NJ

From: [Avery, Mike](#)
To: [Robins, Rick](#)
Cc: ["O'Leary, Tom"](#); [O'Leary, Joan](#); [DiDomenico, Gregory](#); [Blount, Frank](#); [O'Reilly, Robert](#); [Staff-MAF](#); [Saunders, Jan](#); [Bullard, John](#); [Pentony, Mike](#); ["Stanley Gold"](#)
Subject: RE: FW: MAFMC April 2016 Council Motions
Date: Tuesday, May 03, 2016 6:59:59 PM

Rick,

Much appreciate the response. While I fully understand the response, I don't get any satisfaction from it.

The bag limits and seasons are probably the most important part in the development of an FMP and we feel very misrepresented by the process of zero public input on those key decisions. I still believe it's an overall bad policy to give advantages to certain types of boats no matter how well intentioned. The other issue that I hope was considered by the open/closed season is the continued mis-alignment of species that inhabit the same waters. BSB are often mixed in with bluelines. As it is now, many BSB probably die while BSB is closed from Jan-May while targeting bluelines. Now with bluelines closed 1 Nov-31 Dec while BSB is open, many bluelines will probably die while anglers target BSB in those 2 months. Additionally, with a limit of only 3 bluelines, I wonder how much additional culling will take place among recreational anglers. Now instead of boxing the first 7 bluelines and be done, I wonder how many 3 to 5 lb bluelines will get tossed back in search of the 3 bigger bluelines since that is all they can keep. Many will keep tossing back small bluelines in search of the 10-15 lbers. I'm sure you guys know that most of these fish in 300 plus feet of water will not survive the trip back down if released.

I know the MAFMC has already made the decision so I do desire to participate in the public comment period prior to being published in the federal registry. If anyone has the details on when this will be available it would be appreciated

r/ Mike Avery

From: Richard Robins [mailto:richardbrobins@gmail.com]
Sent: Tuesday, May 03, 2016 10:53 AM
To: Avery, Mike <mike@averys.net>
Cc: O'Leary, Tom <tom.oleary@mcgladrey.com>; Joan <joleary@nefmc.org>; Gregory <gregdi@voicenet.com>; Frank <francesflt@aol.com>; Rob O'Reilly (MRC) <rob.o'reilly@mrc.virginia.gov>; Staff-MAF <Staff-MAF@mafmc.org>; Saunders, Jan <jsaunders@mafmc.org>; JohnBullard - NOAA Federal <John.Bullard@noaa.gov>; Pentony, Mike <michael.pentony@noaa.gov>
Subject: Re: FW: MAFMC April 2016 Council Motions

Mike

Thanks for your earlier email regarding the Council's blueline tilefish amendment. The Council was faced with the impending expiration of existing, emergency measures that would leave the blueline tilefish fishery and resource at least partially exposed to the same type of

unregulated fishing effort that occurred in federal waters in the Mid-Atlantic in 2014. Consequently, we had to take final action at our April meeting in Montauk and we had to make difficult decisions on the technical measures (bag/season) that would achieve a reduction in recreational landings of approximately 50%, relative to the catch estimated in the 2014-2015 period.

We did not have the benefit of knowing the SSC's ABC recommendation when we conducted the public hearings, so the first opportunities we had to discuss the resulting impacts to the technical measures was during the committee meeting on the first day in Montauk, and again on Wednesday during full Council. The quota is extremely low relative to the current fishery, and the Agency indicated they did not expect to be able to implement in-season monitoring of the recreational catch in the first year (2017). Since we do not have an OFL for this stock, the accountability measure in the event of an overage in 2017 would include a payback, which is an outcome we wanted to avoid. Consequently, the Council recommended measures to constrain the recreational landings to the new quota for 2017, and to include measures that would reduce the risk of an overage and the associated negative consequences for the fishery. As constraining as the quota is, I would note that the Delphi workshop that you and others participated in was essential to establishing a characterization of the scale of the recreational fishery in 2015. Without the landings estimates produced by the Delphi workshop, the quota would have likely been a fraction of the ABC that was recommended by the SSC.

This is a starting point for federal management in the Mid-Atlantic, and one that I believe we can improve upon. The SSC highlighted several research priorities, and I anticipate that we will move forward with them as soon as possible. Specifically, they recommended improving the historical time series of the recreational landings, and conducting fisheries independent surveys of the blueline resource in the Mid. The recreational measures that you have expressed concerns about would take effect at the beginning of the 2017 season, on May 1. If the Council is able to develop new information that would be relevant to the specifications, the information can be sent to our SSC for review and, pending any change to the ABC by the SSC, the Council could update the specifications and technical measures to the fishery in the future. Additionally, the specifications will be subject to annual review by the SSC and the Council, which will provide further opportunities to review the tradeoffs associated with specific recreational measures.

If you have further comments specific to the proposed recreational management measures, I would encourage you to send written comments to the Agency when they publish the proposed rule in the Federal Register. Thanks again for your expressed concerns and continued participation in the process as this management plan moves forward.

Best regards,
Rick Robins

On Thu, Apr 21, 2016 at 11:40 AM, Richard Robins <richardbrobins@gmail.com> wrote:

Mike

Thanks for forwarding your concerns regarding the Council's final recommendations on the blueline tilefish amendment. I am in a New England Council meeting and will revert next week.

Best regards,
Rick Robins

On Wed, Apr 20, 2016 at 3:06 PM, Avery, Mike <mike@averys.net> wrote:

Dear MAFMC Council Members,

I am deeply troubled by the motions passed regarding Blueline Tilefish at the April council meeting. I have been involved with MAFMC regarding bluelines for almost a year now attending meetings, taking the time to respond to draft documents including the recent draft FMP. Even taking time off traveling significant distances to be involved. The motions passed, particularly 12a which establishes a bizarre, highly discriminatory, and unprecedented limits of 7 per head boat, 5 per charter boat, and 3 per rec anglers did not appear in any of the documents or discussions the entire year 9 month long process. I fail to see the logic in discriminating between an inspected vessel vs non inspected vessel as it show clear and unjustified favoritism towards head boat operators.

And to add insult to injury the open and closed seasons are not justified as there are so few boats that fish for tile in the winter months there would be very little savings yet punish the few boats that can get a little extra income in the winter as NOAA continues to keep BSB closed and very limited striper opportunities off Virginia results in an almost complete shutout of winter fishing opportunities.

I highly encourage the council to delay the press release and reconsider these motions. I intend to energize all the anglers and Captains that took the time to get involved in this process only to have the rug pulled out from under us at the last minute. I don't know if these actions were deliberately deceptive in nature or just the "good idea grenade" got tossed around at the last minute but inserting such measures without public input is not what is expected of our government officials.

Virginia Saltwater Sportfishing Association (VSSA)
email: ifishva@gmail.com phone: [757-329-5137](tel:757-329-5137)
ifishva.org
joinvssa.org
<https://www.facebook.com/groups/IfishVA/>

From: Avery, Mike [mailto:mike@averys.net]
Sent: Wednesday, April 20, 2016 1:35 PM
To: 'Didden, Jason' <jdidden@mafmc.org>
Subject: RE: MAFMC April 2016 Council Motions

I will be filing complaints with council leadership and HQ NOAA Fishery regarding the process used for the motions in 12a. Not very professional to staff a draft FMP then sneak in new rules the public had no ability to comment on. The 7/5/3 tile per person is bizzare, highly discriminatory, and unprecedented showing

favoritism to head boats for no justification. A paying customer should not be allowed to keep more fish just because the boat is inspected vs not inspected. And the open closed seasons are not justified giving no fishing options for winter fishing.

From: Didden, Jason [<mailto:jdidden@mafmc.org>]
Sent: Wednesday, April 20, 2016 11:40 AM
To: Avery, Mike <mike@averys.net>
Subject: FW: MAFMC April 2016 Council Motions

Motions are attached – a summary press release will be coming out soon...

Jason

From: Saunders, Jan
Sent: Tuesday, April 19, 2016 12:14 PM
To: O'Leary, Joan <joleary@nefmc.org>; DiDomenico, Gregory <gregdi@voicenet.com>; Blount, Frank <francesflt@aol.com>; Leo, Arnold G. <agleo@sover.net>; O'Reilly, Robert <rob.o'reilly@mrc.virginia.gov>; Staff-MAF <Staff-MAF@mafmc.org>
Subject: MAFMC April 2016 Council Motions

Please see attached.

M. Jan Saunders
Mid-Atlantic Fishery Management Council
800 N. State St., Suite 201
Dover, DE 19901
[302-526-5251](tel:302-526-5251)
[302-674-5399](tel:302-674-5399) – fax
jan.saunders@noaa.gov
jsaunders@mafmc.org



From: jjcboats1976@comcast.net
To: [Moore, Christopher](#)
Cc: [Didden, Jason](#); [HD](#); [Feller, Skip](#)
Subject: blueline tile
Date: Saturday, April 30, 2016 7:35:06 AM

Chris thanks in advance for taking the time to read this email. I just received a copy of the proposed blue line tile fish proposal. This new proposal is extremely harmful to two of the three people that provided VTR on tile in the mid Atlantic. Skip Feller and myself catch the bulk of our fish from Nov through April given that the sea bass have been shut down in the winter the only thing we have to fish for are golden tile and blue line tile. We try to target sea bass and golden tile because they create the most interest but the blue line tile we catch with them make the trip. Unfortunately the Blue lines are mixed in with the sea bass and golden tile below 38 degrees where we fish. The depth they are caught in makes it impossible for them to live if we through them back. I personally think the committee for once is headed in the right direction with the separation of the inspected vessels however all private vessels will become charter boats if stopped. I think there should be inspected vessel and uninspected vessels and for the inspected vessels we need the latitude to be able to be able to fish. I believe most of us would rather have a longer season and smaller bag limit if we had to make a choice. I would ask you to reconsider the proposed proposal and please distribute this to the rest of the committee. The handful of head boats left in the business are dying a slow death please help us. Thanks Jim Cicchitti JJC Boats Inc (dba: Starlight Fleet)

From: [Skip Feller](#)
To: [Moore, Christopher](#)
Cc: [Didden, Jason](#); [Robins, Rick](#)
Subject: Blue Line Tile
Date: Tuesday, May 03, 2016 11:16:20 AM

Chris Moore & The Mid Atlantic Council;

To begin with, thank you for taking the time to read this. After receiving a copy of the proposed plan for the Blue Line Tilefish fishery, I can honestly say that these changes are detrimental to the livelihood of many, including myself. As a headboat operator out of Virginia Beach, Virginia my business relies greatly on Blue Line Tilefish and would most likely not survive should the proposed plan be passed. While Seabass are our customer's most desired fish, the Seabass season closures make Blue Line Tilefish what keeps our business afloat during the winter season.

Unfortunately, there are more problems with the proposal than just the possibility of lost business. Another major problem that I see is that these closures are supposed to be helping sustain the fishery, but in turn will cause an inhumane affect on the Tile Fish. Because the Tile Fish are caught in cold, deep water they would not survive being thrown back after being caught. Unfortunately, the Tile Fish presence is still so strong that it would not just be a few being caught and thrown back to die.

While it seems that the council is attempting to do some good by creating a divide between private boats and charter/headboats, the proposal still seems to hurt the headboats who submitted VTR's the most. If these limits and season are to be imposed, the difference in quota numbers should be set between inspected and uninspected vessels as to deter the private boats from becoming charter vessels in order to increase their own bag limits.

It is understood that there needs to be some closures but our hope is that it will remain open November and December and the closure be January through April. Having the season closed January-April means that we will be completely sacrificing 4 months of business and unable to run any sort of trip. One can only imagine what that will do to our business to begin with, but closing the season any longer than those 4 months would undoubtedly sink us altogether. While it is not ideal to drop the bag limit at all, if the toss up was between 6 months of closure and maintaining a 7 fish bag limit or 4 months of closure and decreasing the bag limit to 5 fish we would gladly take the decreased bag limit and 4 month closure.

Again, I want to thank you for taking the time to consider these decisions and

their affect on so many and take my concerns into consideration while deciding on the final plan.

Skip Feller

Rudee Tours

June 10, 2016

Fred Akers
P.O. Box 395
Newtonville, NJ 08346

Mr. Richard B. Robins, Chairman
Mid-Atlantic Fisheries Management Council
Sent by email to: richardbrobins@gmail.com

RE: MAFMC Blueline Tilefish Management Amendment Supplemental Comments

Dear Chairman Robbins:

Thank you very much for your call on May 15 to explain the unusual circumstance that the Council is facing regarding the addition of blueline tilefish as a new managed stock in the fishery with very little fishery dependent and fishery independent data to adequately inform the management science.

I understand that the Council quickly reacted to the discovery of significant landings in 2014 by establishing emergency management measures that could not be extended past June 2016 and then started the process of managing a new fishery to hopefully be completed before the emergency measures expired, very much to its credit.

I also understand that the 50% catch reductions compared to 2014/2015 catch necessary to stay within the recreational total allowable landings of 62,262 pounds became apparent after the public hearing document was created and most of the hearings had occurred, which is not the normal process.

Given these issues with the process and the Council's adoption of different management measures than those that were offered to the public for comment, I sincerely appreciate the Council's current efforts to receive and respond to new public comments, conduct a special listening session on 6/9/16 with your participation along with staff expert Jason Didden, and to schedule time on the Council's agenda on 6/15/16 to further discuss the blueline tilefish management issues.

However, I do not understand how splitting the recreational sector into 3 parts with the 7/5/3 bag limits will actually work to reduce total recreational catch to achieve the total allowable landings goal of 62,262 pounds.

As a private recreational boat owner and a recreational fisherman with great interest in catching and eating blueline tilefish, I think that the 3 fish limit for private recreational boat owners is more of a discriminatory marketing plan for the for hire vessel owners to shift fishing effort from private recreational boat owners to their vessels than to meet the new management goal through catch reductions.

For example, if I actually thought I could catch a 7 fish limit on a for hire inspected vessel or a 5 fish limit on a for hire uninspected vessel, while I would only be allowed 3 fish on my own vessel, that

could be a strong incentive for me to buy \$200+ tickets on for hire vessels and catch more blueline tilefish, not less.

According to the Blueline Tilefish FMAT Summary and Staff Recommendations dated 4/8/16, while the FMAT and Staff recognized the possibility of “effort transfer” from season closures (2nd paragraph page 3 of 6), they did not recognize the possibility of “effort transfer” from one sector to another under the sector separated bag limits, which could result in total catch increases.

In the 2nd paragraph on page 1 of 6 of the Blueline Tilefish FMAT Summary and Staff Recommendations dated 4/8/16, the recommendations state that, ***“assuming that reporting can be obtained from all sectors, there is no information for the FMAT to recommend management uncertainty buffers at this time so the annual catch targets (ACTs) would equal the ACLs.”***

But then in the 3rd paragraph of page 3 of 6, the recommendations state that, ***“The private catch is also least understood given the lack of MRIP data for blueline tilefish, and until more is understood about the private catch, relatively low limits would help minimize the risk of high private catches shutting down the fishery much more quickly than expected.”***

My interpretation of the above statements is that the FMAT and the Staff recommended the post public information document sector separation and 3 fish limit for the private recreational vessels not as a measurable way to reduce the overall catch, but as the imposition of an uncertainty buffer only on the private recreational sector for the benefit of the entire recreational fishery.

Also in the 1st paragraph on page 4 of 6 in the FMAT Summary and Staff Recommendations, it states that, ***“The FMAT was skeptical that reporting compliance could be achieved or that differential per person trip limits by season and segment of the fishery could be effectively communicated”***, and, ***“A universal per person trip limit would be simpler to communicate and enforce, but may place more of a burden from the reduction on the party boat segment of the fishery.”***

The FMAT and the Staff evidently had a very strong bias for the “party boat segment”, which is specifically stated in paragraph 3 on page 3 of 6 as follows, ***“...the lower limit for private anglers was based on a presumption that private anglers also have lower catch rates and that there is more economic dependence on this fishery for party and charter operations (and especially for the 3-4 party boats that specialize in deep-drop fishing).”***

So rather than target the sectors of the recreational blueline tilefish fishery that had the highest catch rates to reduce the catch to achieve the SSC recommendation, the FMAT and Staff recommended to cut the private recreational vessels that had lower catch rates to 3 fish to favor “the 3-4 party boat owners that specialize in deep-drop fishing” with 7 fish to arbitrarily protect them and their economic dependence and not the economic future of the entire fishery and coastal economy.

Given the fact that catch data for private recreational boats is unknown, and that the catch data for the for hire sector is somewhat known, lowering the bag limit of the for hire vessels would provide a more measurable prediction for reducing the catch of blueline tile for 2017, if that is the Council's goal.

If the Council really wants to protect the blueline tilefish through compliance with the SSC's 50% reduction to 62,262 pounds, the Council should enact a 3 fish bag limit across all sectors for 2017.

The South Atlantic Council currently has a 1 fish limit and is about to change that to a 3 fish limit, so a 3 fish limit by the Mid-Atlantic Council would be consistent with that.

Another important measure in the blueline tilefish management amendment is that all recreational tilefish vessels would be required to purchase a permit and report their catch, which I strongly urge the Council and NMFS to implement prior to the 2017 fishing season.

The FMAT and Staff Recommendations address this in item #6 on page 5 of 6 as follows:

“The FMAT discussed a staff recommendation that the HMS system be used to require private anglers to obtain a separate tilefish permit to catch golden or blueline tilefish. This is a hybrid of 6a and 6b. Staff agrees with public comments that a separate private tilefish permit be required rather than just an HMS permit, because this would provide better information on the universe of anglers interested in tilefish fishing. Since many offshore anglers are familiar with the HMS online permit interface, having that site be where tilefish permits are obtained should be relatively convenient. This would likely require that private anglers pay a permit fee to support the system, which is currently \$20.00 for HMS permits. Staff also recommends that reporting of golden/blueline tilefish be required through an ACCSP phone/tablet application before fish are brought off a vessel/water because surveys are unlikely to ever provide precise catch estimates for tilefish, and the only way to check compliance is to require reports to be completed and submitted before fish leave a boat. The FMAT does have concern about how to obtain high compliance and notes that a substantial outreach effort will be necessary. There was no specific FMAT recommendation for these alternatives but NMFS staff may have additional input at the Council meeting.”

While I agree that a separate private recreational vessel tilefish permit be required at a cost to provide better information on the universe of anglers interested in tilefish fishing and that catch reporting be mandatory, I disagree with the staff recommendation that reporting be required through an ACCSP phone/tablet application before fish are brought off a vessel/water.

I agree with the above FMAT/Staff recommendation that the HMS online permit interface should be relatively convenient to be used by private recreational vessel owners to obtain their tilefish fishing permit, but there was no mention or consideration of the “Report Your Fish” application also on the HMS interface <https://hmspermits.noaa.gov/catchReports> for reporting recreational interaction with Bluefin tuna, swordfish, and billfishes within 24hrs.

Given that the existing “Report Your Fish” format already exists, it should be relatively cheap, easy, and fast to create a tilefish version on the HMS “Report Your Fish” interface.

Regarding reporting compliance, I suggest that actual documented reporting be a requirement for a current permit as a condition to obtain a future permit. If a permit is obtained and no tilefish are caught, there should be a requirement to submit a "0" catch report to qualify for a new permit. No report should trigger a closed account at year end.

Again, I strongly urge the Council and NMFS to implement permit and reporting requirements prior to the 2017 fishing season for private recreational vessel owners who direct on tilefish. This will not only establish the universe of recreational tilefish fishing vessels and provide much needed catch data to better and more fairly manage the tilefish fishery, it will also help to stop the mischaracterization, demonization, and discrimination of the private vessel recreational fleet by the for hire vessel owners and the Council. Blueline tilefish, like all wild fish, are a Public Trust Resource owned by everyone.

Respectfully,

A handwritten signature in dark ink that reads "Fred Akers". The signature is written in a cursive, slightly slanted style.

Fred Akers, private recreational boat owner and tilefish fisherman from NJ

From: davearbeitman@comcast.net
To: [Didden, Jason](#)
Subject: Re: Blueline tilefish & upcoming meetings
Date: Sunday, June 12, 2016 2:30:52 PM

Jason,
I would like to offer my comments:

Dear Chairman Robbins,

As you know, I have been an active participant in all aspects of the blueline tilefish FMP. I am not only active participant in this fishery but I am also a member of the recreational fishing industry as a tackle shop owner for the past 34 years. As a recreational fisherman I do all of my tilefishing in the mid Atlantic region on the party boat Voyager from Pt Pleasant Beach, NJ. 55 weeks ago I was able to keep as many blueline tilefish as I wanted and two weeks later I was limited to 7 per trip regardless of the length of the trip. Now one year later, even after the MAFMC voted to continue the 7 fish per person per trip for party boat anglers as part of the new blueline tilefish FMP there is a possibility I might be further restricted to as few as 5 fish per trip regardless of the length of the trip. Reducing me to 5 fish will result in me taking less trips each year. On average each trip costs me about \$900.00. Taking fewer trips will not only have a negative effect on my quality of life but it will also have a negative economic impact on the Captain and crew of the Voyager. As a business owner, further restrictions will result in significantly reduced sales of blueline tilefish tackle, including rods, reels, tilefish rigs and sinkers, line, etc. Between my store and e commerce site, I sell blueline tilefish tackle throughout the entire east coast as well as the Gulf of Mexico. I don't know about the Council members but as for myself, I cannot afford to lose as much as 20% of my yearly income. Anyone involved in this process knows this mess is a direct result of the extremely low ABC recommendation from the MAFMC SSC based on very little data and the same process used to determine the black sea bass ABC rather than using the same methodology used to establish the golden tilefish ABC. For whatever reasons the Council voted to accept this ABC and approve the FMP. Now, after approving the FMP the Council is considering revisiting certain aspects of the plan. It seems unfair that some of the original recommendations were dismissed before due to the ultra conservative ABC but now the Council is considering liberalizing recreational landings without any additional quota. We were told additional landings for multi day trips were not possible due to the low ABC. We were also told a full 12 month season was also no longer possible due to the low ABC and we were also told that the disparity in bag limits among the recreational user groups was the only way to try and keep from exceeding the recreational quota. How is it now possible to tweak these again without gaining more quota and without exceeding the recreational quota? I have a couple of my own suggestions for the Council to consider:

1. Allow the few party boats in this fishery to declare their season; May 1 to Oct 31 or Oct 1 to March 30 and allow a 7 fish daily bag with an additional 3 fish per person for trips lasting over 30 hours.
2. For the rest of the recreational community including 6 pack charter boats continue with a season from May 1 to Oct 31 and a bag limit of 5 per person.

Thanks for the opportunity to comment and "Thank You" Jason for all of your hard work. It is not easy trying to make chicken salad from chicken waste.
David Arbeitman

From: "Jason Didden" <jdidden@mafmc.org>
To: "Jason Didden" <jdidden@mafmc.org>
Sent: Friday, June 3, 2016 1:54:30 PM
Subject: RE: Blueline tilefish & upcoming meetings

Fyi the tilefish briefing docs are available at: <http://www.mafmc.org/briefing/june-2016>.

Jason

From: Didden, Jason
Sent: Tuesday, May 31, 2016 10:42 AM
To: Didden, Jason <jdidden@mafmc.org>
Subject: Blueline tilefish & upcoming meetings

Greetings Tilefish AP members,

Due to concerns recently raised by the public regarding the recreational [blueline tilefish measures recommended by the Council at its last meeting](#), the Council has scheduled time at its [June meeting](#) to potentially reconsider those recommendations. To further facilitate public input, the Council will also be hosting a [public listening session via webinar](#) on June 9 at 7pm. During the webinar, staff will review the rationale for the Council's recommendations and take questions and comments. Public comments will be summarized and provided to the Council.

Please call if you have any questions,

Thanks,
Jason

Jason Didden
jdidden@mafmc.org
www.mafmc.org

(302) 526-5254 (direct)
(302) 397-1131 (cell)
(302) 674-5399 (fax)



JUNE, 8, 2016

TO: MAFMC

FROM: Steve Cannizzo – BROOKLYN VI, Sheepshead Bay, NY

CC: Jason Didden

SUBJECT. “Reconsideration” of Recreational Blueline Tilefish measures

Chris Moore, Richard Robbins, and Council Members;

Thank you for your time in reading my thoughts on MAFMC Memorandum ‘Blueline Tilefish Recreational Specifications’ dated June 2, 2016 which now has been drafted as the MAFMC is being asked at the upcoming June 2016 meeting to reconsider the regulatory measures put into place for the recreational sector.

I find it extremely troubling to see private vessel fishermen mention that the actions taken and motions passed at the April 2016 meeting by the Mid-Atlantic Council are being called “highly discriminatory”, “unprecedented”, “actions were deliberately deceptive in nature”, and worse of all, “arbitrary and capricious decisions.”

Few if any recreational fishermen, whether in the party, charter or private vessel sub-sectors would support the extremely constrained ABC which many council members continually voiced concerns over as a starting point for the FMP as their will be a very high likelihood of reported overages within the following year resulting in accountability measures soon after. As upsetting as we had come to see transpire on Wednesday of this meeting were the motions being passed which whittled down a traditional full year fishery to a now shortened six month open period along with recreational sector separation as far as possession limits allowed for each of the three defined recreational sub-sectors.

I again emphasize, few fishermen who target Blueline Tilefish would support moving from an extremely sustainable year around fishery to one where the season and possession limit is reduced to where it not only causes a direct negative economic impact to fishing businesses, but also will now lead to decreased fishing opportunities for ALL recreational fishermen in the future, this due to the preposterously low ABC that was set.

A number of party, charter and private vessels fishermen have been involved in the process since the Emergency Action was implemented, and we have all done our best to provide the most accurate and unbiased information throughout the scoping process to help in the development of the FMP.

From MAFMC meetings, AP webinars, a Delphi workshop, and seen written within earlier various public comments, we have come to find out that the party boat sub-sector was by far the most compliant in filing accurate VTR data and reporting historical landings over the past decade. The for-hire uninspected charter sector was noted to be less compliant, either due to issues of not reporting or lacking in the knowledge that “6-pack” vessels are required to report Blueline Tilefish landings. Most troubling was the questions concerning the private vessel sub-sector that were voiced throughout the process with great concerns of:

- How many private vessels directly fish for Blueline Tilefish
- The repeated mention during the Q&A in the Delphi Process of most trips for the private vessel sub-sector being mixed between top water and bottom, day and overnight troll/chunk fishing trips
- Lack of ANY MRIP reporting or documented harvest estimates over the past decade (on the MRIP data query)
- Concerns about accurate “if any” reporting by this sub-sector in the near future once the FMP is implemented

Due to these concerns about what occurs onboard private vessels with either little if any oversight and monitoring by the USCG while fishing offshore, lack of state enforcement to check on the compliance of the current regulatory possession limit at the dock, and/or what would be captured through MRIP dockside intercepts or phone survey reporting that had much to do with crafting the motion that passed calling for sector separation and the party/charter/private vessel - 7/5/3 possession limit.

Recreational sector separation is NOT “unprecedented” along the east coast and has been used by a few southern New England and Mid-Atlantic states over the past years in the black sea bass and scup fishery, along with its use for many years in the BFT fishery with the distinction between HMS Charter/Headboat and HMS Angling limits.

As it relates to the economic impact in creating sector separation in the recreational Blueline Tilefish fishery, the impact is most negative for the party boat sub-sector which on average carries from 20 – 45 fishermen on anywhere from a handful up to 25 trips during the calendar year. The negative economic impact of fewer fishing opportunities and less fishermen making these long range offshore trips due to such a constrained possession limit, not only directly impacts the livelihood of the owner, captains and crew members onboard those party boats, along with the secondary effect at the gas dock of thousands of gallons less fuel being sold due to lost trips, fewer cases of bait being purchased and much less terminal tackle being sold to fishermen who fish upon these inspected vessels.

It begs one to wonder when reading the three public comments that are written in the first person, “I”, neglect the vast number of fishermen who do not own “six figure and more” dollar private vessels, or have access to one and rely upon the party boat industry to be taken out safely, offshore fishing on professionally operated and USCG inspected vessel.

The party boat industry has always provided this service to ALL fishermen over the past century, thus no “discrimination” or “direct intention to disenfranchise” any one or any group of fishermen in creating sector separation in this particular fishery. This was a result and the outcome of, and due to the pitiful allowance of Blueline Tilefish that now has to be shared amongst three recreational user groups.

I doubt there would be anyone that attended for two days at the April MAFMC Blueline Tilefish discussion of the FMP that would classify the actions taken by any council member being “deceptive in nature” or “arbitrary and capricious.” Those council members overwhelmingly voiced great worry and concern over both the **“process and implication of their actions”**, and in the end the consensus was that there would be “shared regulatory pain” amongst the three sub-sectors with the loss of fishing opportunities and differential bag limits between the three sub-sectors.

Time and again the discussion came down to providing the greatest access to the fishery, that being during the late spring, summer and early fall period when most recreational fishermen do go fishing, and to the sub-sector that continually has provided the most accurate and reliable data on this fishery, those on party boats.

Again I must thank Jason Didden for his detailed work on this fishery and his outreach in continually keeping us updated on the Blueline Tile fishery.

Best Regards,

Steven Cannizzo

BROOKLYN VI

Sheepshead Bay, NY

From: [Moore, Christopher](#)
To: [COUNCIL - Voting](#); [CouncilNonVoting](#); [Staff-MAF](#)
Subject: FW: Blueline Closures
Date: Friday, June 10, 2016 2:54:14 PM

fyi

From: Didden, Jason
Sent: Friday, June 10, 2016 1:13 PM
To: Moore, Christopher <cmoore@mafmc.org>
Cc: Robins, Rick <richardbrobins@gmail.com>
Subject: FW: Blueline Closures

From: Rudee Angler [<mailto:rudeeangler@gmail.com>]
Sent: Friday, June 10, 2016 1:02 PM
To: Didden, Jason <jdidden@mafmc.org>; Robins, Rick <richardbrobins@gmail.com>
Cc: Feller, Skip <sfeller3@verizon.net>
Subject: Blueline Closures

Council Members,

It has come to my attention that the discussion pertaining to the Blueline Tilefish is still going on, so once again, I would like to request what would make the most sense as far as sustaining the fishery and also the businesses who rely so greatly on these fish.

My request is to group the Tilefish season with the Seabass season, thus meaning being open May 15 through September 21 and October 22 through December 31. Doing so would mean an extra 15 days of closure at the beginning and an extra month of closure at the end.

Having the season closed at this time would enable the headboats to continue with their 7 fish bag limit, while limiting the charter boats to a 5 fish bag limit and the recreational boats to a 3 fish bag limit.

While it is the worst case scenario, the only other option we could potentially sustain business on would be to have the closures as previously stated above; however, to drop the headboat bag limit to 5 fish per person along with the charter boats and to keep the recreational bag limit at 3 per person.

I would like to reiterate the fact that any type of change is going to be detrimental to many businesses so these requests are to allow many of us to simply stay in business.

Skip Feller

June 12, 2016

Mid-Atlantic Fishery Management Council

800 North State Street, Suite 201

Dover, DE 19901

Chairman Robins and Council Members,

I am writing concerning the Council's "revisiting" of both the bag limit and season for Blueline Tile for the 2017 year. My concern is that the council is reopening something that has already been decided. This has been done as a few stakeholders that didn't deem it necessary to attend the Council meeting in Montauk, NY in April subsequently were unhappy with the proposed regulations. I, for one, have attended Emergency Action Webinars, scoping meetings, Delphi Catch Panels, AP Webinars, Public Meetings, AND both the Monday and Wednesday meetings in Montauk in April. While not totally satisfied with the outcome, I understand how we got there and why. This "do-over" seems to fly in the face of all of the above as I do not want to see all that we have worked for get up-ended at the last moment. If that is the case then we should revisit the pathetically low ABC that is putting this fishery on the path to failure.

I know that one of the comments submitted spoke of the 3/5/7 bag limit for private, uninspected for-hire and inspected for-hire vessels as punitive. It was, and still is, my understanding that the bag limit is proportional to the catch information we have on each sub-sector. It is not punitive but cautionary in that there is greater regulatory uncertainty in giving larger bag limits to those we know the least about. I hope the Council understands this and chooses this option.

Pertaining to season closure, I feel that we should keep closed that which is necessary to guarantee the inspected for-hire sector a reasonable bag limit of 7 fish. Going down to 5 fish in the inspected for-hire sector severely limits the appeal of the trip and makes them significantly less sellable causing business to suffer. It should always be noted that head boats, and to a lesser extent, charter boats (6 packs) are the vehicles by which recreational fisherman access this

fishery. Most people are not fortunate enough to be able to buy a \$200,000+ vessel to go fishing on. They go on for-hire boats.

Private vessels and uninspected for-hire vessels can mix and match different fisheries in the same trip, the so called stop and drop. This means dropping for Tile as a fallback on a poor tuna or marlin trip or just adding a different type of table fare to that already caught. This is exceptionally difficult to do in the inspected for-hire sector as people frequently want tile or nothing. I am not looking to disadvantage other recreational sub-sectors but I feel that the inspected for-hire sector has given the best data on an otherwise data non-existent fishery and is being punished for it.

Below are some possible scenarios that I feel the Council should consider if they fail to move ahead with the 3/5/7 bag limit and season of May1-October 31.

1 -If a bag limit of less than 7 fish is selected, please re-open the discussion of option 12d of the management plan. This option was not brought up when the bag limit was going to be 7 fish but should be brought up if the bag limit is to be 5 fish. In the interest of fairness I suggest we look at the Gulf of Mexico Blueline regulations as precedent, to wit;

§ 622.382 Bag and possession limits.

(2) Possession limits. A person who is on a trip that spans more than 24 hours may possess no more than two daily bag limits, provided such trip is on a vessel that is operating as a charter vessel or headboat, the vessel has two licensed operators aboard, and each passenger is issued and has in possession a receipt issued on behalf of the vessel that verifies the length of the trip.

On my boat we have to travel from 100-150 miles each way for good Blueline Tile fishing. These distances require longer trips lasting from 32-46 hours. By example, it is inherently unfair for a person fishing from Virginia Beach, about 50 miles to the fishing grounds, to fish on Monday, go home with a limit, and then fish again on Tuesday catching a second limit when my customers are out there the same 2 days and can only keep half as many fish. Option 12d contemplates a trip longer than 24 hours to insure fairness. My customers are also part of the recreational fishery and, as such, should not be disadvantaged simply because

they live in a Mid-Atlantic state that is further from the fishing grounds than others.

2-Do not pigeonhole inspected for-hire operators to fish during months that do not help them economically. The few operators in this fishery have differing needs and times of year when they fish for Blueline Tile. Allow inspected for-hire vessels to obtain a letter of authorization to fish only those waves/months that they choose within a predetermined number of waves/months. This declaration can be made prior to the fishing year. Please note that we are talking about 3 or maybe 4 boats that are actively involved in the fishery. In the alternative, use history to allow each for-hire vessel to fish a certain amount of trips per year or days at sea so that we can access the fishery at the best time for our particular needs.

3-Keep waves 1 and 2 closed and close wave 5 but open wave 6 while keeping the bag limit at 7 fish for for-hire inspected vessels.

4-Align the Blue Line Tile season with the Federal Sea Bass Season keeping the bag limit at 7 fish for for-hire inspected vessels.

Please take the time to review the possibilities of the above suggestions before making any decision reducing the bag limits on Blueline Tile.

In closing I would like to add that the entire process regarding the Mid Atlantic's management of the Blueline Tilefish fishery has been unbiased, fair, and transparent. I hope that the Council maintains the approach that it voted for at its April meeting.

Thank You,

Jeff Gutman, F/V Voyager

CC: Jason Didden

From: [Moore, Christopher](#)
To: [COUNCIL - Voting](#); [CouncilNonVoting](#); [Staff-MAF](#)
Subject: FW: BLT Listening Session Comment, Keith Neal
Date: Friday, June 10, 2016 2:55:03 PM

fyi

From: Didden, Jason
Sent: Friday, June 10, 2016 12:56 PM
To: Moore, Christopher <cmoore@mafmc.org>
Subject: BLT Listening Session Comment, Keith Neal

I am creating a summary of the public comments from the 6/7 listening session for blueline tilefish. The following comment was entered into the chat window by an individual who did not have an audio connection.

The proposed recreational measures for blueline tilefish off the Mid-Atlantic will decimate my blueline tilefish charter operation. As a uninspected for-hire vessel, I conduct "tilefile and seabass" trips from Wachapreague, VA. As you are aware this fishery, off of the Mid-Atlantic, is located on the edges of the continental shelf (approximately 53 miles from land). The proposed per person bag limit reduction for uninspected for-hire vessel (7 down to 5) will have dire impact on my customer base. I strongly suggest Council keep uninspected for-hire vessel bag limit as 7 fish per person to be competitive with inspected for-hire vessels.

The per angler costs on inspected for-hire vessels is dramatically less that uninspected for-hire vessels due to number of for hire passengers each vessel is licensed to carry. Additionally, during the winter months, I carry for hire charters to fish for black sea bass that occupy the same waters as blueline tilefish. For the sustainment of the blueline tile fishery, and reduce mortality, any closure period should be based on current closure period for black sea bass.

Additionally, proposed bag limits will more than likely have unintended consequences of producing much high mortality rates within the blueline tile fishery than at present. Additionally, we own a business that provides lodging for fishermen in Wachapreague. These fishermen, are recreationally permitted and reducing their blueline tilefish bag limit from 7 to 3 per person will have severe consequences for our lodging business.

In closing, it is my hope that the Council keep uninspected for-hire vessel and inspected for-hire vessels bag limit the same and consider a more moderate approach to the proposed bag limit for recreationally permitted vessels. As a small business owner, your decision on this matter will have major ramifications on both my charter operation and lodging business.

Capt Keith Neal: Capt Keith NealTeaser Sportfishing, LLC.Teasers Fisherman's Lodge,
LLC.Wachapreague, VA. 23480

Jason Didden
jdidden@mafmc.org

From: [Moore, Christopher](#)
To: [COUNCIL - Voting](#); [CouncilNonVoting](#); [TechStaff](#)
Subject: FW: Blueline Tilefish
Date: Tuesday, June 07, 2016 9:41:21 AM

fyi

From: Richard Robins [mailto:richardbrobins@gmail.com]
Sent: Tuesday, June 07, 2016 8:48 AM
To: Moore, Christopher <cmoore@mafmc.org>
Subject: Fwd: Blueline Tilefish

FYI

----- Forwarded message -----

From: Ken Neill <jackcrevelle@msn.com>
Date: Mon, Jun 6, 2016 at 4:20 PM
Subject: Blueline Tilefish
To: "Didden, Jason" <jdidden@mafmc.org>, Rick Robbins <richardbrobins@gmail.com>
Cc: Rob O'Reilly <rob.o'reilly@mrc.virginia.gov>, "Cimino, Joe MRC" <joe.cimino@mrc.virginia.gov>

I would like to thank the Mid-Atlantic Council for developing a management plan for blueline tilefish. In Virginia, we enacted regulations several years ago to protect this fishery, which was rapidly increasing in popularity, until such time you could get a plan in place.

I have concerns with your management plan as it applies to the recreational sector. It is disappointing that we are being regulated out of another of our wintertime fisheries. Sea bass and blueline tilefish were our main wintertime recreational fisheries after the collapse of our coastal striped bass fishery. They were important fisheries even when we had a strong striped bass fishery in January and February. Someday, we would like our sea bass and our blueline tilefish fisheries back during the wintertime.

Of more immediate concern, is the plan to regulate recreational anglers differently depending on the boat they are on. As planned, in my home inlet in Virginia Beach, I could get on the Evelyn Kennedy and have a 3-fish bag limit or I can get on the Backlash and have a 5-fish bag limit or I can get on the High Hopes and have a 7-fish bag limit. I'm the same angler and the boats are all about the same size. It makes no sense to have different regulations for me depending on the boat that I am on.

I understand what you are trying to do with this sector separation. The charter industry is an important part of the recreational fishing industry. Fisheries managers tend to forget that they are a small part of the industry. This is likely due to the majority of recreational representatives on the various panels being in the charter business. Sector separation invariably punishes those that invest the most into the recreational industry; those that are

buying most of the boats, tackle, electronics, fishing licenses and all of the other things that keep boat builders, tackle manufacturers, bait shops, marinas and the other businesses that rely on recreational anglers to stay in business. We do not want to forget about the goose while focusing on the golden egg. Without the goose, the industry collapses.

I encourage you to pick a bag limit and season which will apply to me no matter which boat I am fishing on. Virginia has never had regulations which discriminate against certain recreational anglers. I am one of the Associate Commissioners of the Virginia Marine Resources Commission. When we change our tilefish regulations for 2017, my recommendation to my fellow commissioners will be that we do not start now. If the Council's plan for various bag-limits for different recreational anglers remains, I will suggest that we pick the lowest number to apply to all anglers returning to Virginia regardless of the boat they are on. I hope the Council will decide to treat all recreational anglers the same.

Dr. Ken Neill, III
IGFA Representative
President, Peninsula Salt Water Sport Fisherman's Association, Inc.
Associate Commissioner Virginia Marine Resources Commission
www.igfa.org
www.pswsfa.com
www.vbsf-hookedup.net/healthygrin/
www.facebook.com/HealthyGrinSportFishing
www.NeillDental.com
www.facebook.com/NeillFamilyAndCosmeticDentalCare

From: [Moore, Christopher](#)
To: [COUNCIL - Voting](#); [CouncilNonVoting](#); [TechStaff](#)
Subject: Fw: Proposed blueline tilefish regulations
Date: Wednesday, June 08, 2016 10:03:50 AM

fyi

From: Oswald, David M CIV USARMY TRADOC (US) <david.m.oswald.civ@mail.mil>
Sent: Wednesday, June 8, 2016 9:52 AM
To: Montanez, Jose; Seagraves, Richard; Moore, Christopher
Subject: Proposed blueline tilefish regulations

Good Morning,

I would like to provide my input in regards to the proposed regulations for Blueline Tilefish.

I really do not understand the rational where a person on a charter boat can keep 7 fish per person,

while a recreational angler can only keep 3 ? Whereas I do not have a boat capable of running to the

tilefish grounds out of Virginia Beach (50 miles +), I do fish on friends recreational boats and share in

the expenses of fishing for the day, which usually runs from \$150-200. It is unjust that I can spend

that amount of money and only keep 3 fish while a person fishing on a headboat spends the same

amount and can keep 7 ! In addition to the trip expense, recreational boaters spend a lot more

money in slip fees, and upkeep and maintenance on their boats. To single out a specific group of

boaters, and penalize them in regards to fish limits, is flat out wrong !!!

What you are proposing will

effectively kill private recreational boats from fishing for Blueline Tilefish !!

David M. Oswald
Chief, Information Management Office
Security Assistance Training Field Activity
757-501-5072

From: [Moore, Christopher](#)
To: [COUNCIL - Voting](#); [CouncilNonVoting](#); [TechStaff](#)
Subject: Fw: proposed tile fish regulations
Date: Wednesday, June 08, 2016 10:43:40 AM

fyi

From: Al Phipps <alehipps@aol.com>
Sent: Wednesday, June 8, 2016 10:09 AM
To: Montanez, Jose; Seagraves, Richard; Moore, Christopher
Subject: proposed tile fish regulations

Hello,

I am a recreational fisherman that enjoys offshore fishing on occasion.

Managing the fisheries is important to both recreational and commercial fishermen.

I used to enjoy going to the triangle during the winter months to fish for tautogs knowing that if the tog were not available I could generally catch a mess of seabass to justify the trip.

With the increase regulations on recreational seabass (closed winter season) and reduce tog limits I no longer participate in the fishery. Of note is that a commercial boat can fish for seabass during the closed winter anger season and retain 1000's of pounds of seabass.

With the greatly reduced offshore catches the bottom dropping allows me to turn days with no tuna or mahi into good days with limits of tile fish. Once again the commercial interest will be protected with a limit of 7 per person while the recreational boater like myself and many others will be penalized. Sounds just like the recent changes in cobia.

Flounder is following a similar pattern. The small commercial boats that go jigging for flounder keeping 100's of small fish 16 inches in a day to 'support' their charter fishing interest is destroying the flounder fishing for both commercial and recreational fishing.

All that said it is time to hold the recreation and commercial fishing parties to the same limits.

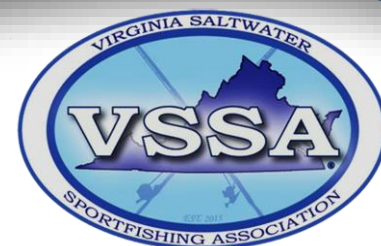
Thanks,
Al Phipps
757 582 6548

Virginia Saltwater Sportfishing Association, Inc (VSSA)

PO Box 28898

Henrico, VA 23228

www.ifishva.org



Mike Avery
President

Mid-Atlantic Fishery Management Council
800 North State Street, Suite 201, Dover, DE 19901

Curtis Tomlin
Vice President

Dear Sir,

June 7, 2016

Kevin Smith
Treasurer

The Virginia Saltwater Sportfishing Association (VSSA) requests the following be included as a public comment for the Blueline Tilefish Listening Session June 9, 2016. We appreciate the opportunity to comment as the decisions made at the April Council meeting were made without public scrutiny and review.

Brent Bosher
Secretary

Virginia recreational anglers do not support sector separation. Separating recreational limits based on what boat your fishing from (Inspected, OUPV, Private) is wrong as each angler is still a recreational angler who should be regulated by a single recreational limit (not by what boat you are fishing from). Separating limits based on boats creates unfair advantages to certain boats which results in angler frustration.

Board of Directors

John Bello,
Chairman

Virginia recreational anglers support 7 Blueline Tilefish per person for all vessels. We believe your estimation of the level of effort and number of boats targeting blueline tilefish is overstated based on the long distance needed to travel to the fishing grounds. Additionally, with mandatory reporting the Council should have near real time data to manage the quota thus shutting down the season as the ACL is approaching.

Dr. Robert Allen

Mike Avery

Jerry Aycock

Brent Bosher

Jerry Hughes

Virginia recreational anglers do not support closed seasons. There is very little left to fish for off the coast of Virginia in winter months and taking away tilefish represents a hardship, particularly on charter boats. If closed seasons are needed, at a minimum blueline tilefish should be reasonably aligned with BSB as they inhabit the same waters. Anglers targeting BSB who catch and release a blueline tilefish likely results in a dead tilefish.

Doug Ochsenknecht

Bob Reed

Mike Ruggles

If you have any questions or comments, the best way to contact us is through our website or email, ifishva@gmail.com, or my phone: 757-329-5137.

Kevin Smith

Murphy Sprinkle

Sincerely,

Curtis Tomlin

Mike Avery

Mike Avery, President

From: Jeff <jgutman28@comcast.net>
Sent: Tuesday, August 30, 2016 8:01:18 PM
To: Moore, Christopher
Subject: Blueline Tilefish

Dr. Moore,

As we move closer to the October MAFMC meeting I wanted to contact you regarding Blueline Tilefish.

As you know, there will be discussion at the meeting regarding a framework adjustment to the Tilefish FMP that could modify blueline tilefish recreational measures. I know that differential bag limits (3/5/7 fish per person) and open/closed seasons will be discussed. I would like to request that the Council include multi-day bag limits in that discussion. Multi-day bag limits was a topic that was never discussed in April in Montauk as time was short and many people felt that the differential bag limits would help "ease the pain" in the inspected for-hire industry. Additionally, comments were made that multi-day bag limits might only help one or two vessels. I just want to point out that the reason the November-December closure issue is on the table is because one or two vessels "need" this time period open.

Again, I respectfully request that the Council include multi-day bag limits for consideration in the Blueline Tilefish framework adjustment at the October Council meeting.

Thank You,
Jeff Gutman



Mid-Atlantic Fishery Management Council
800 North State Street, Suite 201, Dover, DE 19901
Phone: 302-674-2331 | FAX: 302-674-5399 | www.mafmc.org
Michael P. Luisi, Chairman | G. Warren Elliott, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 20, 2016
To: Council
From: Jason Didden *JDD*
Subject: Spiny Dogfish 2017 Specifications Review

On October 5, 2016, the Council will review the 2017 fishing year specifications for spiny dogfish. Multiyear specifications are currently in place for May 2016-April 2019.

After reviewing the information developed for and considered by the Spiny Dogfish Advisory Panel (AP), the Scientific and Statistical Committee (SSC), and the Spiny Dogfish Monitoring Committee, Council staff recommends that no changes be made to the 2017 fishing year specifications. Although all relevant parameters are within expected ranges, we note that the NEFSC survey and landings rate are both higher for 2016 compared to 2015.

The following supporting documents are included in this Tab:
(a running page number has been added for reference)

- Monitoring Committee Summary
- SSC Report
- Staff Memo on Acceptable Biological Catch (ABC)
- AP Fishery Performance Report

The Data Update provided by NMFS and the Fishery Information Document used by the AP are also available at: <http://www.mafmc.org/ssc-meetings/2016/september-14-2016>.



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Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 20, 2016
To: Council
From: Jason Didden *JDD*
Subject: Spiny Dogfish 2017 Specifications Review, Monitoring Committee Summary

On October 5, 2016, the Council will review the 2017 fishing year specifications for spiny dogfish. Multiyear specifications are currently in place for May 2016-April 2019. This memo summarizes the results of the September 16, 2016 Spiny Dogfish Monitoring Committee (MC) meeting (webinar). The purpose of the meeting was to review management measures for the upcoming fishing years and make recommendations as appropriate. Monitoring Committee members in attendance included Jason Didden (MAFMC staff, Chair), Fiona Hogan (NEFMC staff), Willie Whitmore (NMFS-GARFO), Eric Schneider (RI-DEM), Dan McKiernan (MADMF), Angel Willey (MDDNR), Jack Musick (VIMS), Beth Egbert (NCDENR), and Kathy Sosebee (NMFS-NEFSC). Others in attendance included Greg DiDomenico, Katie Almeida, Rob O'Reilly, John Whiteside, and Max Appelman (ASMFC).

Jason Didden summarized the data update provided by the NMFS Northeast Fisheries Science Center, the Advisory Panel input, and the Scientific and Statistical Committee's decision to endorse the already-set multiyear spiny dogfish specifications (Table 1 next page). Based on a review of the available information, the Monitoring Committee saw no reason to recommend any changes to the 2017 specifications and management measures. The Monitoring Committee noted that the NEFSC survey and landings rate are both higher for 2016 compared to 2015 (Figures 1 and 2 next page). The relevant background materials may be accessed at <http://www.mafmc.org/ssc-meetings/2016/september-14-2016>.

Table 1. May 2016 to April 2019 Spiny Dogfish Specifications

Specifications	Basis	2016 (pounds)	2016 (mt)	2017 (pounds)	2017 (mt)	2018 (pounds)	2018 (mt)
OFL	Projected Catch at Fmsy	64,414,664	29,218	na	na	na	na
New ABCs	Council Risk Policy	52,066,572	23,617	50,805,528	23,045	49,901,633	22,635
Canadian Landings	= avg last 3 years (10,11,12)	143,300	65	143,300	65	143,300	65
Domestic ABC	= ABC – Canadian Landings	51,923,272	23,552	50,662,228	22,980	49,758,333	22,570
ACL	= Domestic ABC	51,923,272	23,552	50,662,228	22,980	49,758,333	22,570
Mgmt Uncert. Buffer	Ave pct overage since 2011	0	0	0	0	0	0
ACT	= ACL - mgmt uncertainty	51,923,272	23,552	50,662,228	22,980	49,758,333	22,570
U.S. Discards	=3 year average 12-13-14	11,494,167	5,214	11,494,167	5,214	11,494,167	5,214
TAL	ACT – Discards	40,429,105	18,338	39,168,060	17,766	38,264,165	17,356
U.S. Rec Landings	= 2014 estimate	68,343	31	68,343	31	68,343	31
Comm Quota	TAL – Rec Landings	40,360,761	18,307	39,099,717	17,735	38,195,822	17,325

OFL = Overfishing Level; ABC = Acceptable Biological Catch; ACL = Annual Catch Limit; ACT = Annual Catch Target; TAL = Total Allowable Landings; Rec = Recreational; Comm = Commercial.

Figure 1. NEFSC Spring Survey Spiny Dogfish Index - 1991-2016

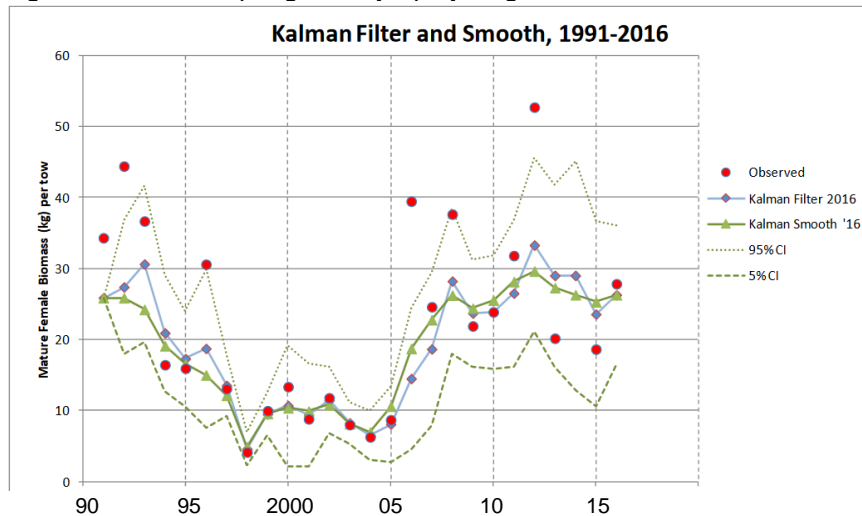
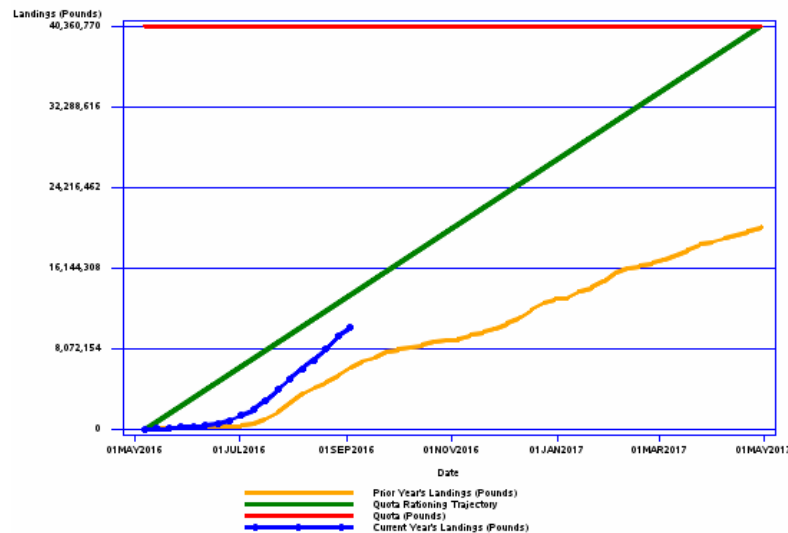


Figure 2. Current Fishing Year (through 9/3/2016) Versus Previous Year Spiny Dogfish Landings

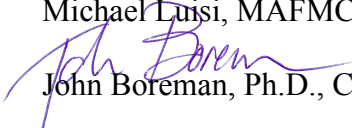




Mid-Atlantic Fishery Management Council

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Michael Luisi, Chairman | G. Warren Elliott, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

DATE: 21 September 2016
TO: Michael Luisi, MAFMC Chairman
FROM:  John Boreman, Ph.D., Chair, MAFMC Scientific and Statistical Committee
SUBJECT: Report of the September 2016 SSC Meeting

The SSC met in Baltimore, MD, on 14 September 2016 for the main purpose of reviewing the 2017 and 2018 ABC recommendations for Spiny Dogfish to determine if they should be changed, continuing discussion of criteria for assigning coefficients of variation (CVs) for overfishing limits (OFLs), and reviewing a draft of the State of the Ecosystem Report being prepared by the Northeast Fisheries Science Center. The final meeting agenda is attached (Attachment 1).

A total of 16 SSC members were in attendance, which constituted a quorum (Attachment 2). Also in attendance, beside you, were MAFMC staff, staff from NMFS HQ, and a representative from the Pew Charitable Trust. Documents cited in this report can be accessed via the MAFMC SSC website: <http://www.mafmc.org/sscmeetings/2016/september-14-2016>.

Spiny Dogfish

Jason Didden presented the data update for Spiny Dogfish prepared by the Northeast Fisheries Science Center (NEFSC) and a summary of the Fishery Performance Report prepared by the Spiny Dogfish Advisory Panel. The stock is in the second year of a three-year specification period. Recent landings, discards, and trawl survey indices are all within the expected range, although the trawl survey was delayed. The NEFSC data update states that “estimated total catches in 2015 were less than half of the ABC, and the index of female spawning stock abundance increased in 2016. Hence, the primary metrics that underlie the assessment revealed no major causes for concern. Various indicators of stock status also suggest no causes for concern. Recent changes in average size of landed fish and an increase in the fraction of male

fish in landings should be monitored to determine if a change in fishery selectivity patterns is occurring.” The NEFSC survey indicates that recruitment appears to be trending upward in recent years, an observation supported by information obtained from the NEAMAP survey.

Based on the information provided by the NEFSC and that contained in the Fishery Performance Report, the SSC saw no compelling reason to change its ABC recommendations for the 2017 and 2018 fishing years. Another data update from the NEFSC is expected next year, followed by an assessment update in 2018.

Although the SSC did not alter the ABC recommendations, committee members did note several areas of concern. The impact of the delay in the Spring 2016 bottom trawl survey does not appear to be significant, but should be examined further through simulation modeling. Also, the multispecies impact of Spiny Dogfish predation, especially on other important species such as Atlantic Mackerel, should be explored, perhaps in conjunction with the next benchmark assessment. The SSC also recommends in-depth studies of the factors affecting catchability of Spiny Dogfish and the proportion of the stock biomass that exists outside of the area sampled by the NEFSC, since the biological reference points in the assessment are based on estimates of the total stock biomass.

OFL CVs

The SSC discussed the latest report of the SSC’s OFL CV Subcommittee, which includes suggested next steps for clarifying methods used to quantify scientific uncertainty in the overfishing limit (OFL) – a requirement to implement the MAFMC risk policy. The discussion and clarification are necessary because it has been difficult to justify differences in the OFL coefficients of variation (CVs) that have been applied for different assessments when they are other than the default value of 100%. Different OFL CV values have direct implications for the levels of acceptable biological catch (ABC) under the MAFMC risk policy. The MAFMC intends to review its risk policy this coming year, and clarifying methods for determining OFL CVs is a critical step in the process.

The SSC outlined objectives for methods used to address scientific uncertainty in establishing ABC. Any method should:

1. Result in an accurate estimate of the true scientific uncertainty;
2. Be responsive to improvements in data and assessments;
3. Avoid unproductive dynamics between the SSC and stock assessment teams;
4. Follow a transparent, logical process;
5. Be operational, in that it can be applied consistently across assessments; and
6. Result in consistent decisions across all assessment and data categories to ensure that the buffer between the OFL and ABC actually increases with increasing uncertainty.

The SSC recognized that these objectives are difficult to achieve and also potentially in conflict with each other, but will nevertheless use them to shape further development of OFL CV methods. For example, while the true uncertainty (#1) is unknown, the chosen method should

come as close as possible given the current state of knowledge. Methods emphasizing objective #1 are likely to be complex and therefore less transparent (#4); however, a logical process can still be outlined and communicated. Accurately estimating uncertainty requires addressing both potential biases in input data streams and variances from multiple sources. However, simple methods that are transparent and consistent (#4 and 5), such as applying a constant buffer, will likely not achieve objective #1. An advantage of a simple transparent buffer is that it would relieve assessment teams of attempting to estimate scientific uncertainty, and would therefore prevent differences between the assessment team's and the SSC's estimates of uncertainty (achieving objective #3). However, simple transparent buffers applied to all assessment categories may result in inappropriately smaller uncertainty buffers where uncertainties are actually higher (data-poor assessments), and do not respond to improvements in data quality or assessment methods, sacrificing objectives #2 and #6. Finally, using simple buffers may blur the line between determining scientific uncertainty (the charge of the SSC) and establishing policy on acceptable risk of overfishing (the purview of the MAFMC).

The SSC discussed potential methods that could achieve the six objectives listed above. One approach could use a hybrid of OFL CV estimation and fixed buffers by establishing criteria for applying 3-4 fixed OFL CVs depending on data sources and their quality, life history, and assessment methodology for a given species. Another approach could use past assessment projection performance relative to current assessment estimates (this assumes the current estimate is unbiased). Addressing bias separately from variance is desirable, especially with upcoming changes to recreational catch datasets that may impact multiple MAFMC assessments.

Overall, communicating that improving estimates of uncertainty may not necessarily lead to lower OFL CVs will also be important; increased knowledge of our uncertainty (due to environmental interactions that are explicitly modeled or other assessment improvements) will still provide a benefit to the MAFMC. The SSC OFL CV Subcommittee will continue to update the MAFMC ABC document based on this discussion.

State of the Ecosystem Report

Sarah Gaichas walked the SSC through the latest draft State of the Ecosystem report (SOE) provided by the Northeast Fisheries Science Center. The objective of this SSC review was to provide feedback to NEFSC on the report's format and content to improve its use as contextual information for MAFMC fishery management.

Overall, the SSC appreciated that so much information was summarized and distilled in one place, and found the aggregate indicators of biological and economic performance useful, especially where they are separated by MAFMC jurisdiction or region. The SSC was supportive of reviewing this contextual information annually in support of the MAFMC's Ecosystems Approach to Fisheries Management (EAFM) initiative, especially considering that this information is not redundant with current assessments. A potential schedule would be to have the SSC review the State of the Ecosystem report at its annual March meeting, with MAFMC review at its annual April meeting.

The SSC had the following major suggestions for improving the SOE before March 2017:

- Overall, each section should include a clear “SO WHAT?” — why should managers care? What should they do with this information? Is a short-term increase or decrease in an index bad or good? More guidance is needed on how to interpret the information.
- Include more forecasts where possible — what can we expect for a particular index or issue in the near term?
- Include links between sections in the narrative (e.g., temperature and Gulf Stream north wall indicators, similar to the link between copepods and right whales) for a more cohesive and integrated presentation.
- Link to information sources (data, documents, and/or contact information for lead scientists).
- A section on habitat issues/indicators (anthropogenic influence on habitat, trends in amount of area protected/reserved, etc.) and harmful algal blooms would be useful for the MAFMC.
- Include seabirds and marine mammals from the Mid-Atlantic region.
- Include a brief overview of Integrated Ecosystem Assessment (IEA) or other tools to implement ecosystem approaches to management, and where the MAFMC currently stands with implementation.
- A mix of indicators that are tracked annually and indicators that may rotate with others on an annual basis may be very useful; clearly delineate which are annual and which are “hot topics” or for a single year only.
- Using the same time interval for recent status and trends has merit, but investigate whether five years is an appropriate timeframe, and consider robust slope estimators to determine direction of the trends.

Additional, more detailed suggestions regarding particular indices were passed along to the NEFSC.

Ocean Quahog Assessment TORs

The Northeast Region Coordinating Council (NRCC) has requested the MAFMC to review the terms of reference (TORs) for the upcoming Ocean Quahog benchmark assessment. The SSC briefly discussed the TORs and suggested that potential impacts of ecosystem effects, such as climate change, on stock dynamics and distribution be included. SSC members were asked to provide the SSC chair with any additional suggestions by 23 September; the SSC chair will then forward the suggestions to the Chris Moore for inclusion in the MAFMC’s response to the NRCC.

Upcoming Assessments and 2017 SSC Schedule

Rich Seagraves reviewed the tentative work assignment for the SSC in 2017. The Black Sea Bass benchmark assessment is supposed to be reviewed and in the SSC’s hands by the end of 2016 and the MAFMC and ASMFC need to act on the results at the February 2017 MAFMC meeting. Therefore, a special meeting of the SSC will be scheduled for either the third or fourth week in January to re-visit the 2017 ABC recommendation in light of the new assessment results.

An SSC meeting will be scheduled in March 2017 primarily to review the 2018 ABC recommendations for Golden Tilefish and Blueline Tilefish. The SSC is expecting an assessment

update for Golden Tilefish and a data update for Blueline Tilefish from the NEFSC prior to the March meeting.

A benchmark assessment for Surfclams has recently been peer reviewed and the SSC is waiting for the final report. Additionally, a benchmark assessment for Ocean Quahogs will be peer reviewed in February 2017, so the May 2017 SSC meeting will be developing new ABC recommendations for these species. That meeting will also develop new ABC recommendations for Atlantic Mackerel, based on an expected assessment update provided by the NEFSC, and review its 2018 ABC recommendations for Butterfish and the squids, based on expected data updates also provided by the NEFSC.

The July 2017 SSC meeting will involve review of the 2018 ABC recommendation for Summer Flounder, based on an expected updated assessment from the NEFSC, and review of the 2018 ABC recommendations for Bluefish and Scup, based on expected data updates from the NEFSC. The September 2018 SSC meeting will involve review of the 2018 ABC recommendation for Spiny Dogfish, based on an expected data update from the NEFSC.

Species Lead Assignments

Turnover in SSC membership during the past year have left several species lead assignments vacant, especially the species leads for social sciences. The SSC chair reviewed the current assignment list and will work with SSC members over the next few months on species leads re-assignments and new assignments.

c: SSC Members, Warren Elliott, Chris Moore, Rich Seagraves, Jason Didden, Kathy Sosebee

Mid-Atlantic Fishery Management Council
Scientific and Statistical Committee Meeting
September 2016

Final Agenda

Wednesday 14 September 2016

- 10:00 a.m. Review fishery performance report and multi-year ABC for Spiny Dogfish
- 12:00 p.m. Lunch
- 1:30 p.m. Report of OFL CV Subcommittee
- 3:00 p.m. NEFSC Ecosystem Status Report
- 4:00 p.m. Review/comment on Ocean Quahog Draft Assessment ToRs
- 4:30 p.m. 2017 SSC Schedule, Upcoming Assessments, Species Lead Assignments, etc.
- 5:00 p.m. Adjourn

MAFMC Scientific and Statistical Committee
14 September 2016 Meeting
Baltimore, MD

<u>Name</u>	<u>Affiliation</u>
<i>SSC Members in Attendance:</i>	
John Boreman (SSC Chairman)	NC State University
Tom Miller (SSC Vice-Chair)	University of Maryland - CBL
David Tomberlin	NMFS Office of Science and Technology
Mark Holliday	NMFS (Retired)
Doug Lipton	NMFS Headquarters
Sarah Gaichas	NMFS Northeast Fisheries Science Center
Ed Houde	University of Maryland – CBL
Wendy Gabriel	NMFS Northeast Fisheries Science Center
Olaf Jensen	Rutgers University
Lee Anderson	University of Delaware (Retired)
Yan Jaio	VA Tech
Brian Rothschild	UMass Dartmouth (Retired)
Cynthia Jones	Old Dominion University
Mike Wilberg	University of Maryland – CBL
Rob Latour	VIMS
Dave Secor	University of Maryland - CBL
<i>Others in attendance:</i>	
Mike Luisi	MAFMC chair
Rich Seagraves	MAFMC staff
Jason Didden	MAFMC staff
Jessica Coakley	MAFMC staff
Erin Schnettler	NMFS Office of Sustainable Fisheries
Karen Greene	NMFS Office of Sustainable Fisheries
Purcie Bennett-Nickerson	Pew Charitable Trust



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Michael P. Luisi, Chairman | G. Warren Elliott, Vice Chairman
Christopher M. Moore, Ph.D., Executive Director

MEMORANDUM

Date: September 6, 2016
To: Chris Moore, Executive Director
From: Jason Didden, Staff *JDD*
Subject: Dogfish Specifications Review for 2017 Fishing Year

Dogfish is in multi-year specifications for 2016-2018. The Council's Scientific and Statistical Committee (SSC) is scheduled to review the 2017 dogfish ABCs during its September 2016 meeting.

A data update from NMFS' Northeast Fisheries Science Center (NEFSC), a fishery information document that supported the Advisory Panel's meeting, and the Advisory Panel's Fishery Performance Report have been posted to <http://www.mafmc.org/ssc-meetings/2016/september-14-2016>.

Staff recommends no changes to 2017 dogfish ABCs because recent landings, discards, and trawl indices have fluctuated within expected ranges. We expect another data update in 2017 followed by an assessment update in 2018.

2016 Spiny Dogfish Advisory Panel (AP) Fishery Performance Report (FPR)

The Spiny Dogfish Advisory Panel (AP) (<http://www.mafmc.org/advisory-panels/>) met September 6, 2016 to develop the Fishery Performance Report (FPR) below. The meeting was conducted via internet webinar and facilitated by Jason Didden, the Mid-Atlantic Fishery Management Council's Dogfish Fishery Management Plan (FMP) coordinator. The advisors who participated were:

Bonnie Brady
James Sulikowski
Jan McDowell
Greg DiDomenico
Sonja Fordham

James Fletcher
Douglas Feeney
Claire Fitz-Gerald
Chris Hickman
Scott MacDonald

Additional participants included:

Max Appleman
Rob O'Reilly
John Whiteside
Wendy Gabriel
Fiona Hogan

William Whitmore
John Boreman
Ray Kane

The fishery performance report's primary purpose is to contextualize catch histories for the Scientific and Statistical Committee (SSC) because of the potential importance of this and related information for determining Acceptable Biological Catches (ABCs). The goal is to allow comparing and contrasting of the most recent year's conditions and fishery characteristics with previous years. First an overview of recent fishery data was provided by Jason Didden, and then trigger questions were posed to the AP to generate discussion. The trigger questions were:

- *What factors have influenced recent catch?
 - Markets/economy? – Environment?
 - Fishery regulations? – Other factors?
- *Are the current fishery regulations appropriate? How could they be improved?
 - Gear regulations and exemptions? -Trip Limits? -Others?
- *Where should the Council and Commission focus their research priorities?
- *What else is important for the Council and Commission to know?
- *Are there any recent major changes in this fishery?

The input from the AP begins on the following page. The information in this FPR does not represent a consensus, but rather a summary of the perspectives and ideas that were raised at the meeting.

General

- Quality is critical for maintaining price and the existing market. Large trips may have trouble maintaining product quality.
- The regional differences in the fishery mean that any changes (e.g. trip limits) have the potential to differentially impact different areas.
- Flooding processors with lots of spiny dogfish will harm the market. The fishery appears stable. See what happens with new rules (higher trip limits and rules allowing dual-targeting of monkfish and dogfish).
 - o A contrary, minority perspective was also voiced: Developing new markets (Asia/Africa) will require lower, not higher prices, and manipulating price (by limiting catch) to address small boat concerns hinders the possibility of greater overseas markets.

Factors Influencing Catch

- Markets are crucial to getting prices high enough to stimulate fishing activity. Low catches relative to the quota in recent years are due to low prices/effort. Some European markets constraints have been mitigated, others persist.
- There may be some spiny dogfish landings in Europe in the near future related to retention rules, which may impact demand for imports.
- Abundance does not currently drive catches; boats have no problem obtaining their trip limits.
- There are relatively few boats willing to go out for dogfish at current prices, but a small price increase could change that (see Cape Cod info below)
- European markets are shifting away from sharks, limiting US dogfish exports to Europe.
 - o The Shark Alliance did not promote European boycotts of US spiny dogfish/other legally caught sharks (though other entities seek/have sought to do this).
 - o Europe seems to have the U.S. figured out in terms of pricing, while traditional European demand may be declining due to changing tastes.
- General sentiment about sharks and shark fins have hurt the market and created barriers to shipping (about 19 container lines have adopted internal policies to not carry any shark products and there are bans in several states). There is interest in purchasing spiny dogfish internationally but ENGO opposition as well, despite MSC certification and the sustainability of the U.S. East Coast spiny dogfish fishery.
- Market & regulatory issues discourage new processors. The one New York processor closed after Hurricane Sandy – market issues discouraged their re-entry.
- The web of federal, state, and international rules (on fishing and sales) discourage entry into the processing sector generally. The Council processes, and favoring of small boats and a few processors, have exacerbated and perpetuate these issues.
- Virginia had mild winter and boats fished through the winter (including Jan & Feb), improving early 2016 landings.
- On Cape Cod:
 - o In 2013, the price for dogfish was extremely low (~10 cents/lb) and processors instituted forced days off.

- In 2014, the price was much better (upper 20s cents/lb) and there were no days off.
- 2015: 18-22 cents per pound; 2016: 20-24 cents, 30-34 cents if trucked to New Bedford. They have seen more vessels participating.
- It is not clear what exactly is driving these price changes, but they have a big impact on fishing/total catches.

Input on Regulations

- Some advisors would like to see a slow and steady approach that does not create large changes in catches and/or prices.
- Raising trip limits may collapse prices if additional markets are not developed.
- An occasional trip limit for trawlers (once or twice a month) around 30,000 pounds could help provide fish to any markets that develop.
 - A double limit once a week was raised as an alternative possibility
 - Regarding different kinds of trip limits, enforcement/monitoring needs to be ensured.
 - Some in Massachusetts are interested in a seasonal (October through December) trip limit increase that would not hurt smaller boats in the summer or crash the market. Discussions are considered preliminary, but may be in the 7,500 – 10,000 pound trip limit range.
 - There was concern that such adjustments could hurt more southern ports, and more details would be needed to evaluate.
- At least one advisor is interested in allowances to harvest male dogfish in excess of the typical trip limit and possibly a separate quota (which is currently made up of mostly female dogfish). A male only fishery would need an Amendment and/or benchmark assessment but recent research suggests it may be feasible. An advisor noted that males can be targeted currently.
- It would be useful to have a NE permit covering smooth dogfish to reduce regulatory burdens.

Research Priority Ideas

- Domestic and/or non-European markets.
 - Lack of southern processor(s) is an issue restricting southern landings.
- Separation of spiny and smooth dogfish in NOAA trade database (buyers in particular may want to know) and ground-truthing of this database by NOAA Fisheries/Council, etc. NOAA cannot separate spiny and smooth dogfish – this is a code by another international trade agency – a petition could be made but may not be successful given the relatively low value of dogfish.
- Longer term tracking of export trends. <https://www.st.nmfs.noaa.gov/commercial-fisheries/foreign-trade/applications/trade-by-product>

- Better tracking of dogfish used/sold as fertilizer.
- Investigate ways to increase the quality of meat (i.e. how can it be processed on deck, etc.), which in turn would increase the price of the product. There is no shortage of dogfish and if we can get the price higher I think this would have a snow ball effect on the market.
- New benchmark assessment needed including:
 - o Exploration of how spiny dogfish recovered so much faster than predicted (Could be useful for managing multiple other shark fisheries).
 - o Increased engagement with fishermen as part of scientific research.
 - o Better estimate of the population of male dogfish and availability of dogfish to the relevant surveys generally.
 - o Obtain reproductive and other biological information across the range of the species before the next assessment.
 - o Prioritize the biological information that needs updating before the next assessment.

Other Issues Raised

- There needs to be a clear division of male and female dogfish in terms of the assessment versus catch limits versus monitoring.
- Consider having NAFO manage the fishery outside the EEZ to facilitate the creation of a male-only fishery.
- There was a concern voiced over the process used to change the trip limit on the ASMFC side of things in terms of public notice – this was passed along to ASMFC staff.
- A name change for spiny dogfish (“chipfish” has been suggested in addition to “cape shark”) could help the market, and could allow access to a prison protein market (<http://www.wsj.com/articles/SB122290720439096481>).
- o Massachusetts advisers noted that “Cape Shark” is an approved market name (http://www.accessdata.fda.gov/scripts/fdcc/?set=seafoodlist&id=Squalus_acanthias&sort=SLSN&order=ASC&startrow=1&type=basic&search=dogfish)

**A Report to the Mid-Atlantic Fishery Management Council
on the New Jersey Department of Environmental Protection's request for
Special Management Zone (SMZ) Designation for 13 Artificial Reef Sites in the EEZ**

FIRST DRAFT

October 2016

SMZ Monitoring Team

**Travis Ford
Karen Greene
Richard Seagraves
Scott Steinback**

Executive Summary

The New Jersey Department of Environmental Protection (DEP) petitioned the Mid-Atlantic Council to designate 13 artificial reef sites as Special Management Zones (SMZs) in the EEZ under provisions of Amendment 9 to the Summer Flounder, Scup and Black Sea Bass FMP. The justification for this request was based on the need to ameliorate gear conflicts between hook and line fishermen and fixed pot/trap gear at those sites. The DEP had funds for its artificial reef program in the EEZ under the US Fish and Wildlife Service Sport Fish Restoration (SFR) Program terminated (which is effectively the DEPs sole source of funding for its reef program) as a result of the gear conflict issue in 2011, though this funding was at least partially restored in 2016.

A Monitoring Team was formed to evaluate the NJDEP request relative to the following factors: (1) fairness and equity; (2) promotion of conservation; (3) avoidance of excessive shares; (4) consistency with the objectives of Amendment 9 to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan, the Magnuson-Stevens Act, and other applicable law; (5) the natural bottom in and surrounding potential SMZs; and (6) impacts on historical uses. This report contains an analysis of these factors and recommendations relative to the DEP request.

Findings:

1. The designation of the NJDEP 13 reef sites appears to be compatible with the Magnuson-Stevens Act and other applicable federal law.

2. Comparing the mapped commercial pot/trap effort by reef site to estimates of recreational fishing effort at each reef site points to potential gear conflicts at the Cape May and Sea Girt reef sites, particularly between commercial pot/trap vessels and party/charter vessels. Given that approximately half of the party/charter reef effort in 2015 was estimated to occur at the Cape May and Sea Girt reef sites, gear interactions may be occurring at these reef sites. The probability of gear conflicts at the other 11 reef sites is low.

3. Ex-vessel revenue from pot/trap landings at all 13 reef sites combined approached only \$25 thousand in 2015. This represents less than one percent of total ex-vessel revenue (i.e., reef revenue and non-reef revenue combined) obtained by vessels with pot/trap reef landings in 2015. Over the past 5 years, ex-vessel reef revenue from pot/trap landings has remained below 1% of total ex-vessel revenue for vessels with pot/trap reef landings. When all pot/trap activity occurring in New Jersey is considered (i.e., ex-vessel revenue from vessels with and without reef landings), reef site ex-vessel revenue represented between 0.19% and 0.31% of total ex-vessel revenue from New Jersey pot/trap landings.

4. These findings indicate that commercial fishing vessels deploying pot/trap gear off the coast of New Jersey would likely face minimal to no losses in ex-vessel revenue if the artificial reefs are designated as SMZs.

Recommendations

1. Based on evaluation of all relevant factors and issues as outlined in Amendment 9 to the Summer Flounder, Scup and Black Sea Bass FMP, the SMZ Monitoring Team recommends that the Council designate all 13 New Jersey's artificial reefs located in the EEZ as SMZs. The SMZ designation should stipulate that no fishing vessel or person on a fishing vessel may fish in the 13 New Jersey Special Management Zones with any gear except hook and line and spear fishing (including the taking of fish by hand).
2. The Council would reserve the right to change or revise these SMZs, including any gear restrictions imposed as a result of such designations, if future analyses cause the Council to alter its policy with respect to SMZs during a broader consideration of this issue.
3. The Council should review the 2007 National Artificial Reef Plan and modify (if necessary) the artificial reef policy it adopted in 1995 and consider incorporating its artificial reef policy into ongoing efforts to establish habitat policy within the context of an Ecosystem Approach to Fisheries Management.

1.0 Introduction

The Mid-Atlantic Fishery Management Council received a letter dated 6 November 2015 from the State of New Jersey's Department of Environmental Protection (DEP) requesting Special Management Zone (SMZ) designation for 13 permitted artificial reefs located in the Exclusive Economic Zone (EEZ). Amendment 9 to the Summer Flounder, Scup and Black Sea Bass FMP (approved by NOAA on 17 October 1996; see 61 FR 58467, Nov. 15, 1996) incorporated a provision into the FMP (Section 9.1.2.7) that allows for the designation of artificial reefs in the EEZ as SMZs, if so petitioned by the permit holder.

The current regulatory language (as of July 19, 2012) pertaining to the SMZ provision of the FMP can be found at 50 CFR Part 648: Subpart I - Management of the Black Sea Bass Fishery as follows:

§ 648.148 Special management zones.

The recipient of a U.S. Army Corps of Engineers permit for an artificial reef, fish attraction device, or other modification of habitat for purposes of fishing may request that an area surrounding and including the site be designated by the MAFMC as a special management zone (SMZ). The MAFMC may prohibit or restrain the use of specific types of fishing gear that are not compatible with the intent of the artificial reef or fish attraction device or other habitat modification within the SMZ. The establishment of an SMZ will be effected by a regulatory amendment, pursuant to the following procedure:

(a) A SMZ monitoring team comprised of members of staff from the MAFMC, NMFS Northeast Region, and NMFS Northeast Fisheries Science Center will evaluate the request in the form of a written report, considering the following criteria:

- (1) Fairness and equity;
- (2) Promotion of conservation;
- (3) Avoidance of excessive shares;
- (4) Consistency with the objectives of Amendment 9 to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan, the Magnuson-Stevens Act, and other applicable law;
- (5) The natural bottom in and surrounding potential SMZs; and
- (6) Impacts on historical uses.

(b) The MAFMC Chairman may schedule meetings of MAFMC's industry advisors and/or the SSC to review the report and associated documents and to advise the MAFMC. The MAFMC Chairman may also schedule public hearings.

(c) The MAFMC, following review of the SMZ monitoring team's report, supporting data, public comments, and other relevant information, may recommend to the Regional Administrator that a SMZ be approved. Such a recommendation will be accompanied by all relevant background information.

(d) The Regional Administrator will review the MAFMC's recommendation. If the Regional Administrator concurs in the recommendation, he or she will publish a proposed rule in the Federal Register in accordance with the recommendations. If the Regional Administrator rejects the MAFMC's recommendation, he or she shall advise the MAFMC in writing of the basis for the rejection.

(e) The proposed rule to establish a SMZ shall afford a reasonable period for public comment. Following a review of public comments and any information or data not previously available, the Regional Administrator will publish a final rule if he or she determines that the establishment of the SMZ is supported by the substantial weight of evidence in the record and consistent with the Magnuson-Stevens Act and other applicable law.

1.1. Formation of SMZ Monitoring Team

Based on requirements described above, an SMZ Monitoring Team (MT) was formed consisting of members of MAFMC Staff, the Northeast Fisheries Science Center (NEFSC), and the Northeast Regional Office (NERO) to evaluate the SMZ request submitted to the MAFMC by NJ DEP (see appendix 1). The role of the Monitoring Team is to evaluate New Jersey's SMZ request for 13 reef sites in the EEZ based on the criteria developed in Amendment 9 in the form of a written report.

1.2 Basis for New Jersey's SMZ Request

In a letter to Dr. Chris Moore dated November 6, 2015 (appendix 1), the NJ DEP formally requested that the Council designate its 13 artificial sites currently permitted in federal waters (as defined by the Army Corps of Engineer [COE] permit number CENAP-OP-R-200401135-1) under the SMZ provisions of Amendment 9 to the Summer flounder, Scup and Black Sea bass FMP described above. In the SMZ request letter it was noted that "Since the inception of New Jersey's Reef Program in 1984, and increasingly as reef development intensified and habitat increased, we have received complaints from individuals, head boat and charter boat captains, grassroots organizations and state legislators on behalf of their constituents that there is too much commercial gear on our reefs. The deployment of this gear severely limits recreational access to these reefs and makes unviable the intended hook-and-line use of these sites."

In its SMZ request letter, the NJDEP also noted that "New Jersey's Reef Program was funded primarily through the U. S. Fish and Wildlife Service's (USFWS) Sport Fish Restoration Program (SFR), which is a "user pays, user benefits" program. Following several requests by the USFWS to resolve these user conflict and access issues, on April 12, 2011 SFR funding for the Reef Program and all reef construction and monitoring activities was discontinued for failure to address the issue. USFWS officials stated that funding to the Reef Program would be restored once these issues are resolved. The USFWS stated position is that that when gear conflicts occur, pot fishing on reef sites is not consistent with the objectives of their Sportfish Restoration Program. State reef programs must be able to limit gear conflicts by regulations in state waters or by way of SMZ's for sites in the EEZ in order to comply with the goals of the Sportfish Restoration Program. This theme was also articulated during a presentation to the Council by the USFWS entitled *Dingell – Johnson Sport Fish Restoration Program(SFRP)* -

Recreational and Commercial Fishing Conflicts on Artificial Reefs - Implications for Federal Funding. That presentation described the artificial reef grant objectives of USFWS to be "to increase diversity, abundance and availability of reef-dependent species sought by recreational fishermen through creation of artificial reefs and to provide increased fishing opportunities for recreational anglers ...". The major issues from the USFWS perspective include 1) proliferation of commercial fishing traps/pots on artificial reefs constructed with Dingell-Johnson Sport Fish Restoration (SFR) funds, 2) commercial/recreational gear conflict interferes with accomplishment of artificial reef grant objectives and 3) absence of mechanisms to manage commercial fishing on reefs located in State -controlled waters and the Exclusive Economic Zone. The USFWS noted the following implications for SFR funding in cases where commercial/recreational gear conflicts are not remedied: 1) replacement of expended funds 2) suspension or termination of project for noncompliance and 3) declare the State ineligible to participate in SFR program.

Thus, the following evaluation by the SMZ Monitoring Team of New Jersey's request for SMZ status for its 13 reef sites in the EEZ focuses on the proliferation of gear conflicts between recreational fishermen and fixed pot/trap gear described by NJDEP in its 6 November 2015 letter and the contention that gear conflicts are contravening the goals of its artificial reef program. As noted above, this contention is consistent with policy guidance relative to acceptable uses of artificial reefs funded with SFR funds as articulated by the USFWS.

2.0 History of Development of New Jersey Reef Sites

Since 1984, the NJ Bureau of Marine Fisheries has been involved in an intensive program of artificial reef construction and biological monitoring along the New Jersey coastline. The stated purpose of the NJ Reef Program is to create a network of artificial reefs in the ocean waters along the New Jersey coast to provide a hard substrate for fish, shellfish and crustaceans, fishing grounds for anglers, and underwater structures for scuba divers (<http://www.state.nj.us/dep/fgw/artreef>).

Artificial reefs are constructed by intentionally placing dense materials, such as old ships and barges, concrete and steel demolition debris and dredge rock on the sea floor within designated reef sites. At present, the division holds permits for 15 artificial reef sites encompassing a total of 25 square miles of sea floor. The reefs are strategically located along the coast so that one site is within easy boat range of 12 New Jersey ocean inlets. The subjects of this SMZ request are the 13 reef sites located in the EEZ.

Within each reef site, which range in size from one-half to over four square miles, numerous "patch reefs" have been constructed. A patch reef is a one-half to 5-acre area where one barge load of material has been deployed. In total, over 1200 patch reefs have been constructed on the state's 15 reef sites since the program began. Reefs are now being used extensively by anglers and divers who catch sea bass, blackfish, porgy and lobster.

New Jersey's Artificial Reef Network



Figure 1. Location of artificial reefs in the Atlantic Ocean permitted to the State of New Jersey (includes reef sites located in NJ state waters and the EEZ). Note: the two Del-Jerseyland sites are not included in this SMZ request.

2.1 New Jersey Reef Sites Description

2.1.1 Materials Allowed on the Reefs:

Under the US Army Corps of Engineers permit for the New Jersey reef program, artificial reef materials permitted for use on the sites are in two separate categories. The first are specifically designed reef materials. These design materials are constructed to maximize surface area for attracting organisms to provide specific habitat requirements for targeted reef fish and other marine species. The second category of reef materials allowed is identified as materials of opportunity. Materials of opportunity that could be used for construction of artificial reef structures include, but are not limited to, concrete, rock, surplus ships, barges, tanks, armored personnel carriers, and obsolete subway cars. In accordance with the National Artificial Reef Plan, and the US Army Corps of Engineers, all materials of opportunity must be properly cleaned, dismantle where necessary, and inspected prior to deployment to assure that they are clean and free of contaminants.

2.1.2 Description of Reef Sites for which the NJ DEP seeks SMZ designation

1. Sea Girt Reef site (area=1.3 nm²) is located approximately 3.4 miles east of Sea Girt, in Monmouth County New Jersey. The Sea Girt site requires a minimum vertical clearance of fifty (50) feet below mean low water.
2. Shark River Reef site (area=0.72 nm²) is located approximately 15.6 Nautical miles and at a direction of 100 degrees from the Manasquan Inlet, in Monmouth/Ocean County, New Jersey. The Shark River site requires a minimum vertical clearance of fifty (50) feet below mean low water.
3. Barnegat Light Reef site (area=0.85 nm²) is located approximately 3.1 Nautical miles east of Barnegat Light in Ocean County, New Jersey. This site is approximately 3.1 miles from Barnegat Inlet at a direction of 103 degrees. The Barnegat Light site requires a minimum vertical clearance of fifty (50) feet below mean low water.
4. Garden State North Reef site (area=1.1 nm²) is located approximately 6.5 nautical miles east of Harvey Cedars in Ocean County, New Jersey. This site is approximately 7.7 nautical miles at a direction of 172 degrees from Barnegat Inlet. The Garden State North site requires a minimum vertical clearance of fifty-two (52) feet below mean low water.
5. Garden State South Reef site (area=0.6 nm²) is located approximately 5.1 nautical miles east of Spray Beach in Ocean County, New Jersey. This site is located approximately 9.1 nautical miles at a direction of 64 degrees from Little Egg Inlet. The Garden State South site requires a minimum vertical clearance of fifty-two (52) feet below mean low water.

6. Little Egg Reef site (area=1.5 nm²) is located approximately 3.8 nautical miles east of Holgate in Ocean County, New Jersey. This site is located approximately 5.05 nautical miles at a direction of 93 degrees from Little Egg Inlet. The Little Egg site requires a minimum vertical clearance of fifty (50) feet below mean low water.

7. Atlantic City Reef site (area=4.0 nm²) is located approximately 12.2 nautical miles east of Atlantic City in Atlantic County, New Jersey. This site is located approximately 8.5 nautical miles at a direction of 142 degrees from Absecon Inlet. The Atlantic City site requires a minimum vertical clearance of fifty (50) feet below mean low water.

8. Great Egg Reef site (area=1.0 nm²) is located approximately 7 nautical miles southeast of Atlantic City in Atlantic County, New Jersey. This site is located approximately 9.2 miles at a direction of 110 degrees from Great Egg Harbor Inlet. The Great Egg site requires a minimum vertical clearance of fifty (50) feet below mean low water.

9. Ocean City Reef site (area=0.8 nm²) is located approximately 4.5 nautical miles southeast of Ocean City in Cape May County, New Jersey. This is located 4.3 nautical miles at a direction of 131 degrees from Carson's Inlet. The Ocean City site requires a minimum vertical clearance of fifty (50) feet below mean low water.

10. Townsends Inlet Reef site (area=0.52 nm²) is located approximately 3.8 nautical miles southeast of Townsends Inlet in Cape May County, New Jersey. The Townsends Inlet Reef site requires a minimum vertical clearance of thirty (30) feet below mean low water.

11. Wildwood Reef site (area=2.1 mi²) is located approximately 4.4 nautical miles southeast of Wildwood in Cape May County, New Jersey. This site is located 4.5 nautical miles at a direction of 135 degrees from Hereford Inlet. The Wildwood site requires a minimum vertical clearance of thirty (30) feet below mean low water.

12. Cape May Reef site (area=4.5 nm²) is located approximately 8.5 nautical miles southeast of Wildwood in Cape May County, New Jersey. It is located 9.1 nautical miles at a direction of 128 degrees from Cape May Inlet. The Cape May site requires a minimum vertical clearance of thirty (30) feet below mean low water.

13. Deepwater Reef site (area=0.72 nm²) is located approximately 25.1 nautical miles southeast of Avalon in Cape May County, New Jersey. This site is located 31.5 nautical miles at a direction of 99 degrees from Cape May Inlet. The Deepwater site requires a minimum vertical clearance of fifty (50) feet below mean low water.

3.0 SMZ Monitoring Team Evaluation Based of the Criteria Established in Amendment 9

3.1 Evaluation relative of SMZ request relative to National Standard 4

There are six criteria for SMZ designation in Amendment 9 as described above in section 1.0. The first three criteria for SMZ evaluation: (1) fairness and equity; 2) promotion of conservation; and (3) avoidance of excessive shares are related to the National Standard 4 of the MSA which sets forth criteria Councils must follow when allocation of fishery resources or restrictions on access to those resources are contemplated.

Discrimination among residents of different states

First and foremost, National Standard 4 requires that management measures or programs promulgated under MSA shall not discriminate between residents of different states. An FMP may not differentiate among U.S. citizens, nationals, resident aliens, or corporations on the basis of their state of residence. An FMP may not incorporate or rely on a state statute or regulation that discriminates against residents of another state. Conservation and management measures that have different effects on persons in various geographic locations are permissible if they satisfy the other guidelines under Standard 4.

Examples of these precepts are:

- (1) An FMP that restricted fishing in the EEZ to those holding a permit from state X would violate Standard 4 if state X issued permits only to its own citizens.
- (2) An FMP that closed a spawning ground might disadvantage fishermen living in the state closest to it, because they would have to travel farther to an open area, but the closure could be justified under Standard 4 as a conservation measure with no discriminatory intent.

In the case of SMZ designation for New Jersey reefs in the EEZ, the Monitoring Committee sees no evidence of discrimination of residents of any particular state regardless of the Council's decision relative to SMZ status. Rather, the decision to designate an artificial reef as an SMZ represents an allocation of access to areas of the ocean within the geographic boundaries of the reef site in question (and any additional areas surrounding the SMZ deemed necessary to address practical law enforcement concerns is so included in accompanying regulations for the proposed action) to those using the gear type allowed in the SMZs. Access to the SMZs is not restricted to fishermen from any particular state. All fishermen using the gear type allowed in the SMZs can access this area to fish regardless of the state from which they departed. While there may be a disadvantage to those fishermen from states which are not adjacent to the SMZs, this is not considered to be discriminatory within the context of National Standard 4 as can be seen in Example 2 above.

Allocation of fishing privileges

An FMP may contain management measures that allocate fishing privileges if such measures are necessary or helpful in furthering legitimate objectives or in achieving the OY, and if the measures conform with paragraphs (3)(i) through (3)(iii) described below.

(1) Definition. An "allocation" or "assignment" of fishing privileges is a direct and deliberate distribution of the opportunity to participate in a fishery among identifiable, discrete user groups or individuals. Any management measure (or lack of management) has incidental allocative effects, but only those measures that result in direct distributions of fishing privileges will be judged against the allocation requirements of Standard 4. Adoption of an FMP that merely perpetuates existing fishing practices may result in an allocation, if those practices directly distribute the opportunity to participate in the fishery. Allocations of fishing privileges include, for example, per-vessel catch limits, quotas by vessel class and gear type, different quotas or fishing seasons for recreational and commercial fishermen, *assignment of ocean areas to different gear users*, and limitation of permits to a certain number of vessels or fishermen. Given the very limited amount of ocean area occupied by the SMZs of the available fishing area on the continental shelf off New Jersey, this allocation might well be considered *de minimis* in nature.

(2) Analysis of allocations. Each FMP should contain a description and analysis of the allocations existing in the fishery and of those made in the FMP. The effects of eliminating an existing allocation system should be examined. Allocation schemes considered, but rejected by the Council, should be included in the discussion. The analysis should relate the recommended allocations to the FMP's objectives and OY specification, and discuss the factors listed below in paragraph (3) of this section.

(3) Factors in making allocations. An allocation of fishing privileges must be fair and equitable, must be reasonably calculated to promote conservation, and must avoid excessive shares. These tests are explained in paragraphs (c)(3)(i) through (c)(3)(iii) of this section:

(i) Fairness and equity.

(A) An allocation of fishing privileges should be rationally connected to the achievement of OY or with the furtherance of a legitimate FMP objective. Inherent in an allocation is the advantaging of one group to the detriment of another. The motive for making a particular allocation should be justified in terms of the objectives of the FMP; otherwise, the disadvantaged user groups or individuals would suffer without cause. For example, an FMP objective to preserve the economic status quo cannot be achieved by excluding a group of long-time participants in the fishery. On the other hand, if there is a rational connection between an objective of harvesting a species at its maximum size, closing a nursery area to fishing would be allowable.

(B) An allocation of fishing privileges may impose a hardship on one group if it is outweighed by the total benefits received by another group or groups. An allocation need not preserve the status quo in the fishery to qualify as "fair and equitable," if a restructuring of fishing privileges would maximize overall benefits. The Council should make an initial estimate of the relative

benefits and hardships imposed by the allocation, and compare its consequences with those of alternative allocation schemes, including the status quo.

Part A above notes that allocation of fishing privileges should be considered in relation to achievement of OY or to achieve an objective of the FMP. In this case, the Council is being asked to restrict access to New Jersey artificial reef sites in the EEZ to those recreational and commercial fishermen using rod and reel and hand line gear only in order to ameliorate gear conflicts between this gear type and fixed pot/trap gear. While this action would further the stated objectives of the New Jersey Artificial Reef Program, it does not specifically address any of the stated FMP objectives nor serve to achieve OY. Neither conclusion is surprising given the extremely small area of the ocean area occupied by the artificial reefs for which SMZ designation is sought.

The designation of these artificial reefs as SMZs will serve one of the MSA's purposes, that is the promotion of recreational fishing. It is important to continue funding for the establishment and maintenance of the artificial reef program because these areas serve to enhance recreational fishing for certain species of fish such as black sea bass in the areas of the reefs. These areas provide forage and shelter for these species with benefits accruing for both recreational and commercial fishermen using compatible gear types. While fixed pot/trap fishermen would be disadvantaged because they would no longer have access to these areas, the area affected comprises an insignificant percentage of the overall area where fishing with these gear types is not constrained. Fostering the orderly conduct of a fishery within these areas for compatible gear types is a legitimate objective particularly where the impact on those using non-compatible gear is certainly not significant.

Part B requires the Council to evaluate the tradeoffs between benefits and costs to the two user groups relative to SMZ designation on New Jersey EEZ reef sites. If the Council ultimately decides to designate New Jersey reefs as SMZs (which includes gear restrictions), some positive benefits would be expected to accrue to fishermen using rod and reel and handline gear through reduced gear conflicts. However, prohibition of fixed pot/trap gear as part of an SMZ designation would have a negative impact on that sector of the fishery since they would be denied access to these areas. However, given the small size of the areas affected and the few fixed pot/trap fishermen operating in these areas, the amount of these losses is speculative. Certainly, there will be adverse economic consequences for the few fixed pot/trap gear fishermen who concentrate their efforts in these areas. However, it may be stated generally that there will not be a significant impact on a substantial number of small entities. Further, the economic losses suffered by fixed pot/trap gear fishermen who are displaced from these areas could be mitigated to some degree by redirection of fishing effort to other fishing areas. The Monitoring Team lacks sufficient data to evaluate these tradeoffs quantitatively.

(ii) Promotion of conservation. Numerous methods of allocating fishing privileges are considered "conservation and management" measures under section 303 of the Magnuson-Stevens Act. An allocation scheme may promote conservation by encouraging a rational, more easily managed use of the resource. Or, it may promote conservation (in the sense of wise use) by optimizing the yield in terms of size, value, market mix, price, or economic or social benefit

of the product. To the extent that rebuilding plans or other conservation and management measures that reduce the overall harvest in a fishery are necessary, any harvest restrictions or recovery benefits must be allocated fairly and equitably among the commercial, recreational, and charter fishing sectors of the fishery.

As noted above, the SMZ designation request received by the NJDEP is based on the stated need to reduce gear conflicts between hook and line fishermen and fixed pot/trap gear on New Jersey reef sites in the EEZ. Certainly, the significant reduction or elimination of gear conflicts falls within the ambit of “wise use” of the resource in the artificial reef sites through the promotion of at least social benefits. More trips may be made to these areas if fishermen realize that they may no longer lose gear to fixed pot/trap gear. This could result in increased economic benefits for those commercial and recreational fishermen who choose to fish in these areas. Further, the elimination of fixed pot/trap gear should reduce or eliminate the presence of ghost fishing gear in the SMZ area. Certainly, given the small size of these artificial reef areas in comparison to the totality of available fishing grounds, these conservation benefits are expected to be less than significant. This conclusion does not have any measureable impact on the overall management scheme since fishing mortality for the sea bass stock is controlled by annual quotas which are allocated to the recreational and commercial sectors of the fishery based on historical performance of each sector. Thus limiting access to the artificial reef areas under an SMZ designation would not be expected to affect achievement of the FMPs conservation objectives one way or another.

(iii) Avoidance of excessive shares. An allocation scheme must be designed to deter any person or other entity from acquiring an excessive share of fishing privileges, and to avoid creating conditions fostering inordinate control, by buyers or sellers, that would not otherwise exist.

In the instant proposal, there is no direct allocation of quantifiable fishing privileges to individuals or entities in the form of individual fishing quotas. If the 13 reef sites in question are designated as SMZs, any fishermen, whether recreational or commercial, using appropriate gear could fish in the area without limitation (though subject to other restrictions imposed under the black sea bass FMP). The most that can be said is that the proposal represents an allocation to a particular gear type, that is rod and reel and handline (or other gears types if final action on this request results in prohibition of fixed pot/trap gear only). However, within the allowable gear sectors, no one individual or entity has an excessive share of the fishing privileges since anyone can participate at any level of fishing effort. Nor does the allocation to these particular gear sectors represent an excessive allocation of fishing privileges vis a vis other gear sectors. The areas under consideration for SMZ allocation represent less than 20 square nautical miles of the total available fishing area over the continental shelf off New Jersey. The fishing privileges in these areas yield but a small fraction of the total fishery-wide catch of species that are found in the artificial reef areas.

3.2 Consistency with the objectives of Amendment 9 to the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan, the Magnuson-Stevens Act, and other applicable law;

Consistency with Objectives of the FMP

The objectives of the Summer Flounder, Scup and Black Sea Bass FMP are to:

- 1) reduce fishing mortality in the summer flounder, scup, and black sea bass fisheries to ensure that overfishing does not occur;
- 2) reduce fishing mortality on immature summer flounder, scup, and black sea bass to increase spawning stock biomass;
- 3) improve the yield from the fishery;
- 4) promote compatible management regulations between state and Federal jurisdictions;
- 5) promote uniform and effective enforcement of regulations; and
- 6) minimize regulations to achieve the management objectives stated above.

The designation of New Jersey's 13 artificial reefs as SMZs appears to be unrelated to the first three management objectives which are designed to insure compliance with National Standard 1 (prevent overfishing), promote conservation of the resources managed under the FMP by reducing mortality on juvenile fish and improving yield from the fishery. For example, if fixed pot/trap gear were prohibited from NJ reef sites in the EEZ, it is likely that fishing effort by that gear type would shift to open areas. Even if all of the forgone catch of this sector from NJ reef sites was not recouped in open areas, the amount of catch in question (see below) is small relative to the overall quota for the fishery. Thus, any conservation benefits and/or effects on fishing mortality, reduction in mortality of juvenile fish and improvements in yield are expected to be minimal. Since fishing mortality in the black sea bass fishery is controlled by quotas, the issue of designation of SMZs to address gear conflicts would not be expected to affect the conservation of the black sea bass resource.

In terms of objective number 4, the designation of NJ reefs as SMZs would promote compatibility between state and federal regulations in as much as New Jersey has already enacted legislation restricting the use of fixed pot/trap gear on its permitted reef sites located in state waters. Therefore, an SMZ designation for NJ reef sites in the EEZ that restricts the same gear types would be compatible with state of New Jersey regulations in this regard.

Objective 5 of the FMP specifies that the Council promote uniform and effective enforcement of regulations. The request for SMZ status for New Jersey reefs is unrelated to this objective.

Objective 6 seeks to minimize the regulatory burden on the public to achieve the first five objectives of the FMP. The case has been made that the designation of New Jersey permitted reefs in the EEZ as SMZs has little to do with the achievement of the first five FMP objectives. Therefore, one could reasonably conclude that SMZ designation in this case is not necessary to achieve those objectives. Rather, the sole purpose of the designation of NJ reef sites as SMZs is to ameliorate gear conflicts (which is not contemplated in the any of the FMP objectives).

Consistency with the Magnuson Stevens Act and Other Applicable Law

For purposes of this report, the regulations intend that a consideration of consistency with the Magnuson-Stevens Act and other applicable law be a facial examination to identify any aspects of a proposed designation that may be inconsistent with the law. If the Council ultimately decides to forward a recommendation for designation to NMFS to implement SMZs through regulation, then a much more in-depth analysis of the consistency of the ultimate recommendation will be conducted.

When the SMZ provision was first recommended to NMFS by the Council in Amendment 9, an assessment of its consistency with the MSA was conducted by the Office of General Counsel during the review process leading to its approval. There is a provision at section 303(b)(2)(A), which deals with the discretionary provisions of an FMP or amendment, that contemplates measures such as an SMZ. It reads:

[Any fishery management plan may....] designate zones where, and periods when, fishing shall be limited, or shall not be permitted, or shall be permitted only by specified types of fishing vessels or with specified types and quantities of fishing gear

The designation of the 13, or fewer, artificial reef sites in Federal waters off New Jersey's coast does not raise any issues with respect to the national standards other than national standard 4, which is discussed above, or other provisions of the Magnuson Stevens Act.

There are a number of additional statutes and Executive Orders that must be considered when implementing any action recommended herein. These include the Administrative Procedure Act (APA), the Coastal Zone Management Act (CZMA), the National Environmental Policy Act (NEPA), the Regulatory Flexibility Act (RFA), the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), the Paperwork Reduction Act, the Information Quality Act, Executive Order 12866, and Executive Order 13132. At this seminal stage, most of these statutes and Executive Orders are inapplicable since we have no final recommendation by the Council or action taken by NMFS. Without these, for example there is no Federal activity or action for purposes of the CZMA and NEPA. However, since the State of New Jersey is proposing these areas, which are located in Federal waters off its coast, for designation one can infer that the proposal is consistent with its approved Coastal Zone Management Plan. Similarly, since the scope of the final areas to be designated as SMZ is unsettled, it is difficult to predict actual impacts on listed species and marine mammals. One should expect that since designation would eliminate fishing with fixed pot/trap gear in the areas, the impact on any listed species or marine mammals in the SMZs due to vertical lines in the water column would be significantly diminished. Given the limited expanse of water and bottom encompassed by the SMZs and the relative small number of fishermen that would be displaced by an SMZ designation, the economic impacts to be considered under the RFA and Executive Order 12866 would not be significant fleet wide. Further, it is reasonable to anticipate that the action will not have a significant impact on the human environment under the NEPA analysis associated with implementing SMZs. Since an SMZ designation, as currently conceived, does not have an information generating or reporting component, the Paperwork Reduction Act and the Information Quality Act are not implicated. Lastly, since a designation would have to be

implemented through the normal rulemaking process, the requirements of the APA will be satisfied.

The South Atlantic Fishery Management Council (SAFMC) has designated 51 artificial reefs in the EEZ off South Carolina, Georgia and Florida as SMZs under provisions contained in the Snapper Grouper FMP. The SMZ designations apply to each artificial reef and a 500 m buffer zone surrounding the boundaries of each reef and include a prohibition on the use of fish pots, fish traps, trawls and electric reels on permitted reef sites. In some of the SMZs, the use of powerheads (bang-sticks) to harvest fish is also prohibited and individuals harvesting fish using spearguns are limited to the recreational bag/size limits established within the snapper grouper management plan.

It is important for the Council to note that the basis for the SMZ designation by the SAFMC was fundamentally different from the rationale stated by the NJ DEP. The DEP request is based on the need to ameliorate gear conflicts between the hook/line and fixed pot/trap gear. The rationale for designating artificial reefs contained in the Snapper Grouper FMP was as follows: "The intent of a SMZ is to create incentive to create artificial reefs and fish attraction devices that will increase biological production and/or create fishing opportunities that would not otherwise exist. The drawback to investing in artificial reefs or fish attraction devices is that they are costly and have limited advantages that can be rapidly dissipated by certain types of fishing gear (e.g., traps harvesting black sea bass from artificial reefs). Fishing gear that offers 'exceptional advantages' over other gear to the point of eliminating the incentive for artificial reefs and fish attraction devices for users with other types of fishing gear prevent improved fishing opportunities that would not otherwise exist". While a reduction in gear conflicts was discussed as a collateral benefit of SMZ designation by the SAFMC, the primary factor they considered relative to SMZ designation was related to the achievement of perceived conservation benefits on reef sites through prohibition of "efficient" gear types such as pot/trap gear, long lines and bang sticks.

3.3 The natural bottom in and surrounding potential SMZs

The Middle Atlantic Bight (the area of the U.S. east coast and continental shelf between Cape Cod, Mass., and Cape Hatteras, N.C.) is characterized as being a homogeneous habitat of relatively flat topography, composed of soft sediments, mostly sands, but grading to silt-clay in deeper areas except for relic sand and gravel ridges, exposed Holocene to Pleistocene clay or sandstone in some areas, and glacially exposed rock along the southern New England coast (Steimle and Zetlin 2000). The natural bottom in and surrounding potential SMZs (in this case the 13 reef sites permitted to the DFW) is described above.

Essential fish habitat (EFH) has been designated by the New England Fisheries Management Council, MAFMC and NMFS for a number of federally managed species including highly migratory species within the artificial reef sites. Habitat Areas of Particular Concern (HAPC) have been designated for sandbar shark at the mouth of Great Bay in the vicinity of the Little Egg Reef and within Delaware Bay inshore of the Cape May Reef. Through the COE permitting process, the COE and NMFS have evaluated the potential effects of the artificial reefs on EFH. It has been concluded that artificial reefs may have some adverse effects on EFH for species that are demersal and prefer open sandy bottoms, but the reefs would have a positive effect on EFH

and species that preferred structural habitat. Because hard surface, reef habitat is rare in the off New Jersey, consisting of primarily of shipwrecks and a few rock outcroppings, artificial reefs benefit EFH by provide lacking structure and habitat diversity, increased habitat for prey species and feeding opportunities. In addition, because certain fishing gear types such as dredges, trawls and gill nets are generally not used in and around artificial reefs, EFH and federally managed species benefit from reduced fishing pressure from these gear types.

A review of energy development site proposals for the Mid-Atlantic Area shows that several reef sites including the Atlantic City Reef are in or near the BOEM Wind Energy Area (WEA) for New Jersey where the OCS could be leased. However, BOEM has worked closely with the State of New Jersey and others (including NMFS) on the Task Force in developing the boundaries of the WEA. As a result, the reef site will not be part of any lease. Though the NEPA process of the leasing and site assessments, any potential impacts to reef from wind facilities proposed nearby will be evaluated.

3.4 Impacts on historical uses

3.4.1 Recreational Fishery

Three sources of marine recreational fishing data were considered for describing recreational fishing activity at the 13 NJ artificial reefs in question. The strengths and weaknesses of all three are discussed below.

Marine recreational fishing data collected through NMFS' Marine Recreational Information Program (MRIP), provides estimates of recreational catch, effort, and participation across states, fishing modes, and two-month waves. The MRIP data is also post-stratified spatially to provide estimates of catch and effort according to area fished. The MRIP spatial estimates, however, are limited to inland waters, state waters, and the federal exclusive economic zone. Thus, the spatial estimates provided by MRIP are not sufficient for describing private boat and for-hire recreational fishing activity occurring at an artificial reef. Please see <http://www.st.nmfs.noaa.gov/st1/recreational/index.html> for further information on the MRIP program.

Vessel trip reports (VTRs) submitted by for-hire recreational fishing vessels include the latitude/longitude of where most of the effort on a trip occurred, but the vast majority of the for-hire reports include only the nearest latitude/longitude degrees and not the latitude/longitude minutes and seconds necessary for pinpointing actual fishing locations. In addition, the VTR instructions state that fishermen must "enter a single set of latitude [longitude] bearings where most of your effort occurred." Thus, the entirety of a trip's effort is represented by a single set of points within each NMFS statistical area, regardless of how many different locations were fished during the trip. Given that the area of each artificial reef under SMZ consideration is generally less than one square mile, the precision of the self-reported VTR points was deemed inadequate for identification of for-hire activity occurring near or at a reef site.

The final data source was obtained from a reef creel survey conducted by the New Jersey Department of Environmental Protection (NJDEP) in 2000 (Figley 2001). This survey focused

on determining the level of participation, effort, and catch in New Jersey’s recreational boat wreck/reef fisheries. The 2000 survey was a follow-up to two previous reef creel surveys conducted by the NJDEP in 1991 and 1995. Unfortunately, the 2000 survey was the last one conducted by the NJDEP. While the data collected from the 2000 survey are over 15 years old, in combination with more recent NMFS data on fishing effort and angler expenditures in New Jersey, estimates of angler trips and expenditures at the 13 artificial reef sites under SMZ consideration can be derived.

The 2000 NJDEP survey was conducted to assess the effectiveness of the State’s artificial reef construction program and to collect information necessary for management of reef fisheries. A combination of telephone and onboard surveys was used. A full description of the methods can be found in Figley (2001). Results of the survey indicated that 105,160 private boat angler fishing trips and 97,013 party/charter angler fishing trips occurred at the artificial reef sites during 2000. This represents 2.8% of total New Jersey private boat angler fishing trips in 2000 (3,727,384), according to MRIP data, and 18.7% of total New Jersey party/charter boat angler fishing trips in 2000 (517,954). Since 2000, private boat angler effort in New Jersey has generally declined and reached its lowest level in 2015 (Figure 1). Party/charter angler effort in New Jersey has remained relatively stable over the past 15 years.

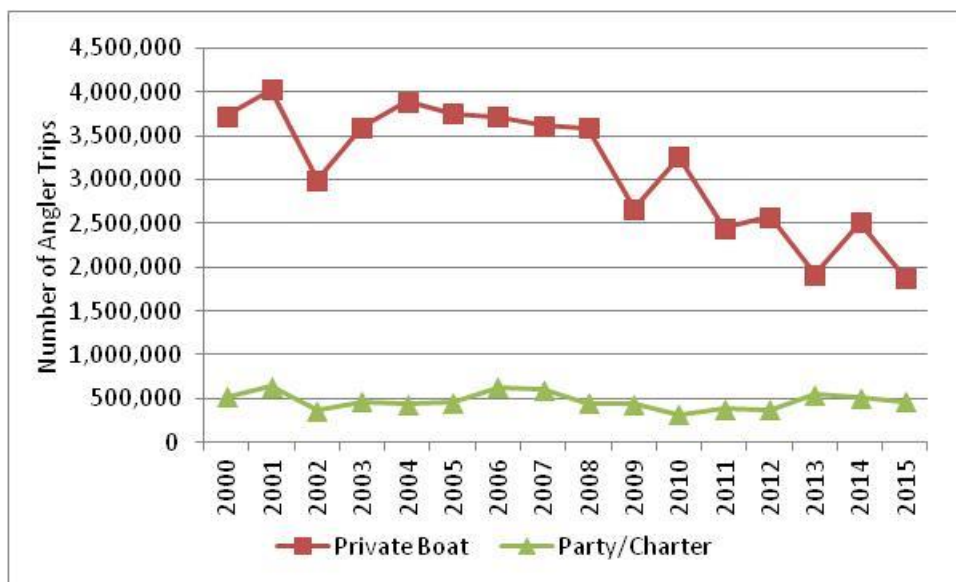


Figure 1. Estimated Number of Angler Trips in New Jersey by Mode

If it is assumed that the same proportions of angler fishing trips that occurred at the reef sites in 2000 has remained constant, then 52,930 private boat angler trips and 87,234 party/charter angler trips took place at the reef sites in 2015 (Table 1).

Table 1. 2015 Angler Trips in New Jersey and the Percentage that Occurred at Artificial Reefs

	Total Angler Trips	Angler Trips at Artificial Reefs	% of Total
Private Boat	1,876,955	52,930	2.8%
Charter/Party	465,745	87,234	18.7%

In light of the fact that decisions may be made that involve differential treatment of the 13 reefs, Table 2 shows the estimated number of angler trips at each of the reef sites by mode in 2015. These estimates should be viewed with caution since they were calculated by extrapolating from results found in Figley (2001). The importance of the reef sites to anglers, in terms of number of angler trips to a particular reef, may have changed during the past 15 years. Nonetheless, the estimates in Table 2 provide the best available approximation of the current distribution of angler effort at the reef sites.

The highest percentage of private boat angler effort at the artificial reefs is estimated to occur at the Barnegat Light site, followed closely by Little Egg, and then Sea Girt, Garden State South, Cape May, and Garden State North. These sites account for over 85% of angler private boat effort at the artificial reefs. The majority of charter and party boat angler trips occur at three reef sites: Cape May, Sea Girt, and Garden State North. These three sites account for over 63% of charter/party angler trips. In total, the reef sites that attract the most angler effort aboard private boats and charter/party boats are Barnegat Light, Little Egg, Sea Girt, Cape May, and Garden State North and South.

Table 2. Estimated Number of Angler Trips by Reef Site in 2015

	Private		Charter/Party		Total	
	Trips	%	Trips	%	Trips	%
Atlantic City Reef Site	2,334	4.4%	7,122	8.2%	6,559	4.7%
Barnegat Light Reef Site	9,906	18.7%	3,786	4.3%	24,783	17.7%
Cape May Reef Site	6,372	12.0%	30,190	34.6%	19,147	13.7%
Deepwater Reef Site	*	*	*	*	*	*
Garden State North reef Site	6,309	11.9%	12,160	13.9%	16,910	12.1%
Garden State South Reef Site	6,687	12.6%	3,786	4.3%	16,873	12.0%
Great Egg Reef Site	1,641	3.1%	6,481	7.4%	4,781	3.4%
Little Egg Reef Site	8,516	16.1%	3,786	4.3%	21,369	15.2%
Ocean City Reef Site	1,703	3.2%	1,893	2.2%	4,403	3.1%
Sea Girt Reef Site	7,382	13.9%	12,801	14.7%	19,621	14.0%
Shark River Reef Site	252	0.5%	-	0.0%	618	0.4%
Townsend Inlet Reef Site	*	*	*	*	*	*
Wildwood Reef Site	1,829	3.5%	5,230	6.0%	5,100	3.6%
	52,930	100.0%	87,234	100.0%	140,164	100.0%
* Too few trips at Deepwater to estimate angler effort and the Townsend Inlet reef site was constructed after the Figley (2001) report so angler effort at the Townsend site could not be estimated.						

Black sea bass comprised the majority of anglers' catches at the New Jersey artificial reefs in 2000, followed by scup, summer flounder, and tautog (Figley 2000). When contrasted with MRIP data, about 13% of the total number of fish caught in New Jersey in 2000 were caught at artificial reefs. Additionally, the reefs accounted for approximately 53% of the total catch of the species encountered at artificial reefs (black sea bass, scup, summer flounder, tautog, cunner, and

red hake). Thus, in relative terms, the reef sites contributed to the recreational catch of several species, particularly black sea bass and scup, at a much higher rate than the non-reef ocean environment in 2000. While recreational fishing activity at the artificial reefs may have changed somewhat since the Figley (2001) report, the importance of the artificial reefs to many recreational fishermen has likely remained strong.

Social and Economic Assessment

The total value recreational anglers place on the opportunity to fish at each of the 13 reef sites can be separated into (1) actual expenditures and (2) non-monetary benefits associated with satisfaction. In other words, anglers incur expenses to fish (purchases of gear, bait, boats, fuel, etc.), but do not pay for the fish they catch or retain nor for the enjoyment of many other attributes of the fishing experience (socializing with friends, being out on the water, etc.). Despite the obvious value of these fish and other attributes of the experience to anglers, no direct expenditures are made for them, hence the term "non-monetary" benefits. In order to determine the magnitude of non-monetary benefits associated with fishing at the 13 reef sites, demand curves for recreational fishing must be constructed. Unfortunately, data limitations preclude the ability to construct these demand curves for recreational fishing at the reef sites. Therefore, the angler assessment provided here is limited to describing only actual expenditures by anglers fishing at the reef sites.

Anglers' expenditures generate and sustain employment and personal income in the production and marketing of fishing-related goods and services. In 2014, an economic study of marine recreational fishermen (National Marine Fisheries Service 2016) estimated that average trip expenditures in New Jersey in 2014 were \$66.34 for anglers fishing from a private/rental boat and \$111.45 for anglers that fished from a party/charter boat. Trip-related goods and services included expenditures on private transportation, public transportation, food, lodging, boat fuel, private boat rental fees, party/charter fees, access/boat launching fees, equipment rental, bait, and ice.

Apart from trip-related expenditures, anglers also purchase fishing equipment and other durable items that are used for many trips (i.e., rods, reels, clothing, boats, etc.). Although some of these items may have been purchased specifically to fish at one of the artificial reef sites, the fact that these items can be used for multiple trips creates difficulty when attempting to associate durable expenditures with the artificial reefs. Therefore, only trip-related expenditures are used in this assessment.

Assuming that the average trip expenditures estimated in National Marine Fisheries Service (2016) are equivalent to the expenditures of anglers fishing at the artificial reef sites, total angler expenditures at the reef sites can be estimated by multiplying the average expenditure estimates by the estimated number of angler trips fished at the reef sites by mode. Based on the Figley (2001) report and MRIP data it is estimated that 2.8% of angler private boat fishing trips and 18.7% of angler party/charter boat fishing trips in New Jersey occur at the artificial reefs. Thus, according to the most recent year of available MRIP data (2015), 52,930 private boat and 87,234 charter/party boat angler trips occurred at the reef sites in 2015.

Table 3 shows the estimated total trip expenditures incurred by anglers to fish at the artificial reef sites in 2015. Across all reef sites, charter/party boat angler expenditures were almost three times higher than private boat angler expenditures. Private boat anglers spent an estimated \$3.5 million on trip expenditures while charter/party boat anglers spent over \$9.7 million to fish at the reef sites. In total, anglers are estimated to have spent over **\$13.2 million** on trip expenditures to fish at the 13 artificial reefs in 2015.

Table 3. 2015 Angler Trip Expenditures (\$'s) in New Jersey and the Percentage Associated with Trips that Occurred at Artificial Reefs

	Total Angler	Artificial Reef	
	Trip Expenditures	Expenditures	% of Total
Private Boat	124,517,195	3,511,376	2.8%
Charter/Party	51,907,280	9,722,229	18.7%
Total	176,424,475	13,233,605	7.5%

If designation of the artificial reefs as SMZs reduces gear conflicts, some level of positive social and economic benefits would accrue to recreational fishermen. Lost recreational fishing gear due to interactions with commercial gear in the water would be eliminated, saving anglers' and party/charter businesses money and lost time, and could actually result in higher catches per angler. Anglers may even take more trips to these areas raising angler expenditures and party/charter revenues. Although sufficient data to evaluate these potential changes in social and economic benefits to anglers is unavailable, designation of the artificial reefs as SMZs would likely result in positive benefits to both anglers and party/charter businesses fishing at the reef sites relative to taking no action.

3.4.2 Commercial Fishery

Impacts to commercial fishing were analyzed by mapping and quantifying recent fishing effort relative to the 13 artificial reefs. A Technical Memorandum outlining the mapping methodology was published by the NEFSC in 2014 (DePiper 2014) and a summary is provided here.

Federally permitted commercial and party/charter vessels are required to submit a VTR for each trip, the requirements of which include indicating a general fishing location as a set of geographic coordinates. These self-reported coordinates do not precisely indicate the location of fishing effort, given that only one point is provided regardless of trip length or distance covered during the trip. As indicated above, this means that the self-reported VTR points are generally inadequate for identification of party/charter or commercial fishing activity occurring near or at a reef site. The mapping approach used here assesses the spatial precision of the commercial fishing VTR points and derives probability distributions for actual fishing locations. This allows for more robust analysis of the commercial fishing VTR data by taking into account some of the uncertainties around each reported point. The mapping approach is applied only to commercial fishing VTR data and not party/charter VTR data, because it requires use of Northeast Observer Program data that are not available for party/charter fishing trips.

Using observer data, for which precise fishing locations are available, a model was developed to derive probability distributions for actual fishing locations around a provided VTR point. Other variables likely to impact the precision of a given VTR point, such as trip length, vessel size, and fishery, were also incorporated into the model. The model allows for generation of out-of-sample predictions for the spatial footprint of a fishing trip, covering the universe of VTR data available. The model-generated dataset can be understood as a repeated measure of the distance on a single trip between observed hauls and the self-reported VTR location of fishing. The distance is equivalent to a radius of a circle centered around the self-reported fishing location within which there is a certain confidence of all a trip's hauls falling. For example, a one-day trip employing pot/trap gear in the Mid-Atlantic region has a 25% confidence interval extending 1.02 nautical miles from the self-reported centroid of the circle. This means that on average we would expect 25% of a one-day pot/trap trip's hauls to fall within a 1.02 nautical miles of a self-reported location. The 50% confidence interval for a one-day pot/trap gear trip extends out 2.51 nautical miles, the 75% confidence interval extends out 6.18 nautical miles, and the 90% confidence interval extends out 14.0 nautical miles.

This analysis includes all VTR commercial fishing trips employing pot/trap gear where the model-generated spatial footprint of a trip (using the 90% confidence interval) included one or more of the 13 artificial reef sites from 2011 through 2015. While commercial fishing vessels employing gear other than pot/trap gear will technically be regulated if the artificial reefs are granted SMZ status, only pot/trap gear vessel trips are included in this analysis. Hand gear and dive gear activities will continue to be allowed under SMZ designation, and vessels using other mobile gears and fixed gears stay clear of the reef site areas to avoid bottom hang-ups with reef materials.

Price information from Northeast Dealer Weighout data was used to transform all VTR catches on trips employing pot/trap gear into revenues. Reef site dependence was then assessed by calculating the percentage of total ex-vessel revenue derived from the reef site areas.

The mapping model does have important caveats. The probability distributions generated from each reported VTR point create a likelihood of actual fishing locations in all directions from a given point, and do not take into account any specific directionality that may be associated with specific fishing methods or specific locations. For example, the model does not take into account fishing behavior along depth contours or other specific habitat features such as an artificial reef. Thus, for self-reported VTR points located on the reefs the model-estimated distribution of fishing effort would tend to be expanded beyond the reef to areas that may not actually be fished. In contrast, for self-reported VTR points located outside of the reef areas the model-estimated distribution of fishing effort may attribute a portion of the effort to the reef areas. As such, given the uncertainty of the initial self-reported coordinates, it is difficult to determine if the overall model-estimated activity at the reef sites would tend to be over or under estimated. Nonetheless, since the model-estimated spatial footprint of a pot/trap trip is considerably larger than a reef site area, the model likely tends to underestimate reef activity on trips where most or all of the trip's landings occurred at a reef site. While the extent of this underestimation is unknown, given that each reef site is generally less than one square mile it's unlikely that a significant number of trips concentrate most or all of their hauls on a reef site.

The number of VTR mapped commercial fishing trips during 2011 through 2015 that overlapped one or more of the reef sites for vessels employing pot/trap gear is shown in Table 4. In 2015, the model attributes a portion of the hauls on 826 pot/trap trips to the reef site areas. This means that there were an estimated 826 trips in 2015 where at least a portion of the landings on those trips was attributed to one or more reef site areas. Given the close proximity of some of the reef sites many pot/trap trips overlap more than one reef site. The model also estimates that vessels with reef site landings made an additional 1,234 pot/trap trips to areas that did not overlap with any of the reef sites. The percentage of trips that overlapped with one or more reef sites each year has remained relatively stable over the past five years. Although, in 2015 the number of reef site trips declined to its lowest level during the time series shown.

Table 4. Frequency of VTR Mapped Commercial Fishing Trips for Pot/Trap Vessels where the Estimated Spatial Footprint of the Trip Includes One or More of Reef Sites

	2011		2012		2013		2014		2015	
	Trips	% of Total	Trips	% of Total	Trips	% of Total	Trips	% of Total	Trips	% of Total
Reef Site Trips	971	43.9%	986	47.9%	933	39.2%	954	41.4%	826	40.1%
Other Site Trips	1,240	56.1%	1,074	52.1%	1,445	60.8%	1,352	58.6%	1,234	59.9%
	2,211		2,060		2,378		2,306		2,060	

Table 5 shows the percentage of mapped pot/trap trips by reef site. The reefs with the highest percentage of mapped pot/trap effort over the past five years are Shark River, Sea Girt, Cape May, Wildwood, Ocean City, and Townsends Inlet. In 2015, these six reef sites comprised approximately 80% of the mapped reef site effort along the New Jersey coast. The six reef sites are located in close proximity to areas along the northern and southern New Jersey coast where the vast majority of New Jersey commercial pot/trap activity takes place. Figure’s 2, 3, 4, and 5 show the model-estimated spatial concentrations of total ex-vessel revenue from commercial pot/trap gear along New Jersey’s coast from 2011 to 2014.

Comparing the mapped commercial pot/trap effort by reef site in Table 5 to estimates of recreational fishing effort at each reef site (Table 2), points to potential gear conflicts at the Cape May and Sea Girt reef sites, particularly between commercial pot/trap vessels and party/charter vessels. A relatively high proportion of VTR mapped commercial pot/trap fishing trips overlapped the Cape May and Sea Girt reef sites in 2015. Given that approximately half of the party/charter reef effort in 2015 was estimated to occur at the Cape May and Sea Girt reef sites, gear interactions may be occurring at these reef sites. The probability of gear conflicts at the other 11 reef sites is low, based on the recreational and commercial effort estimates shown in Table 2 and Table 5, respectively.

Table 5. Percentage of VTR Mapped Commercial Fishing Trips by Reef Site for Pot/Trap Vessels where the Estimated Spatial Footprint of the Trip Includes One or More Reef Sites

	2011	2012	2013	2014	2015
	% of Total Reef Trips				
Atlantic City Reef Site	7.4%	6.6%	5.4%	2.8%	3.6%
Barnegat Light Reef Site	3.2%	2.5%	3.1%	1.8%	2.4%
Cape May Reef Site	7.3%	9.7%	7.9%	10.3%	11.2%
Deepwater Reef Site	1.6%	1.8%	2.3%	1.8%	2.4%
Garden State North reef Site	0.9%	1.1%	2.0%	0.5%	1.2%
Garden State South Reef Site	0.7%	0.9%	2.5%	0.5%	1.0%
Great Egg Reef Site	11.7%	9.1%	7.9%	6.5%	7.3%
Little Egg Reef Site	3.4%	5.1%	3.3%	1.4%	2.2%
Ocean City Reef Site	13.7%	9.7%	8.7%	10.1%	7.3%
Sea Girt Reef Site	15.9%	18.3%	19.7%	20.8%	20.5%
Shark River Reef Site	14.7%	18.9%	21.2%	21.7%	22.0%
Townsend's Inlet Reef Site	10.2%	6.2%	8.6%	10.5%	8.1%
Wildwood Reef Site	9.4%	10.1%	7.4%	11.3%	10.8%

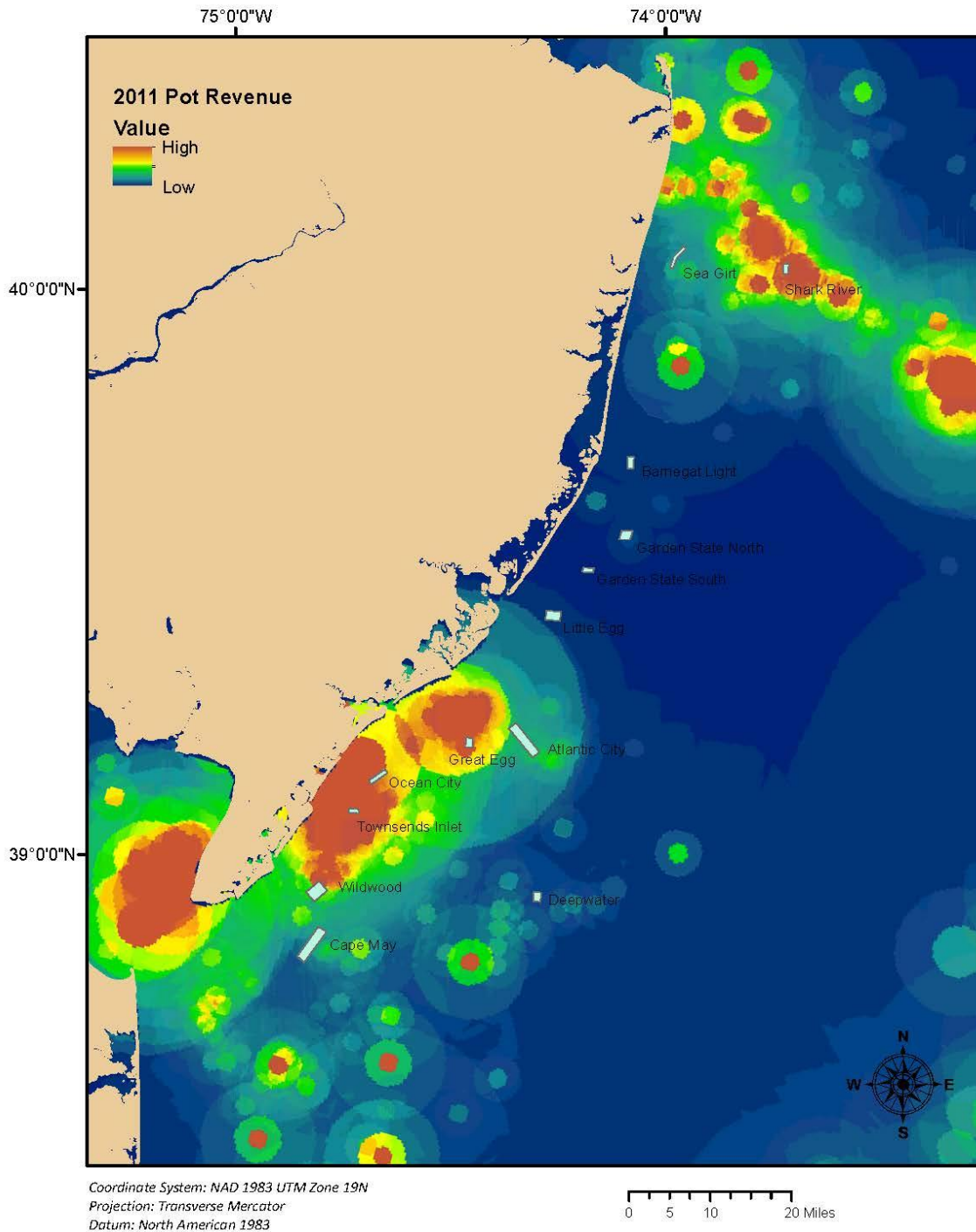


Figure 2. Ex-vessel Revenue Concentrations of Commercial Fishing Vessels using Pot/Trap Gear, 2011

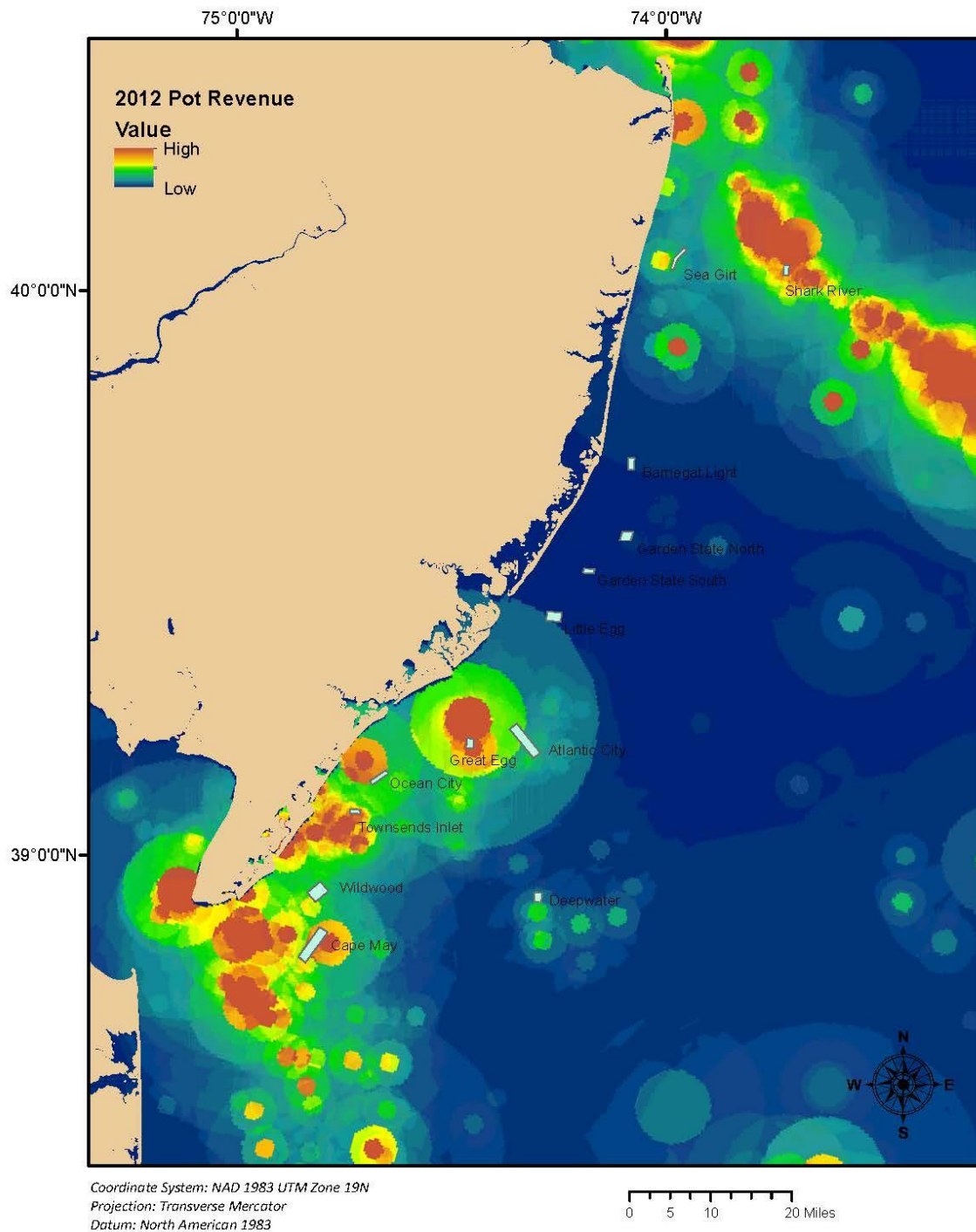


Figure 3. Ex-vessel Revenue Concentrations of Commercial Fishing Vessels using Pot/Trap Gear, 2012

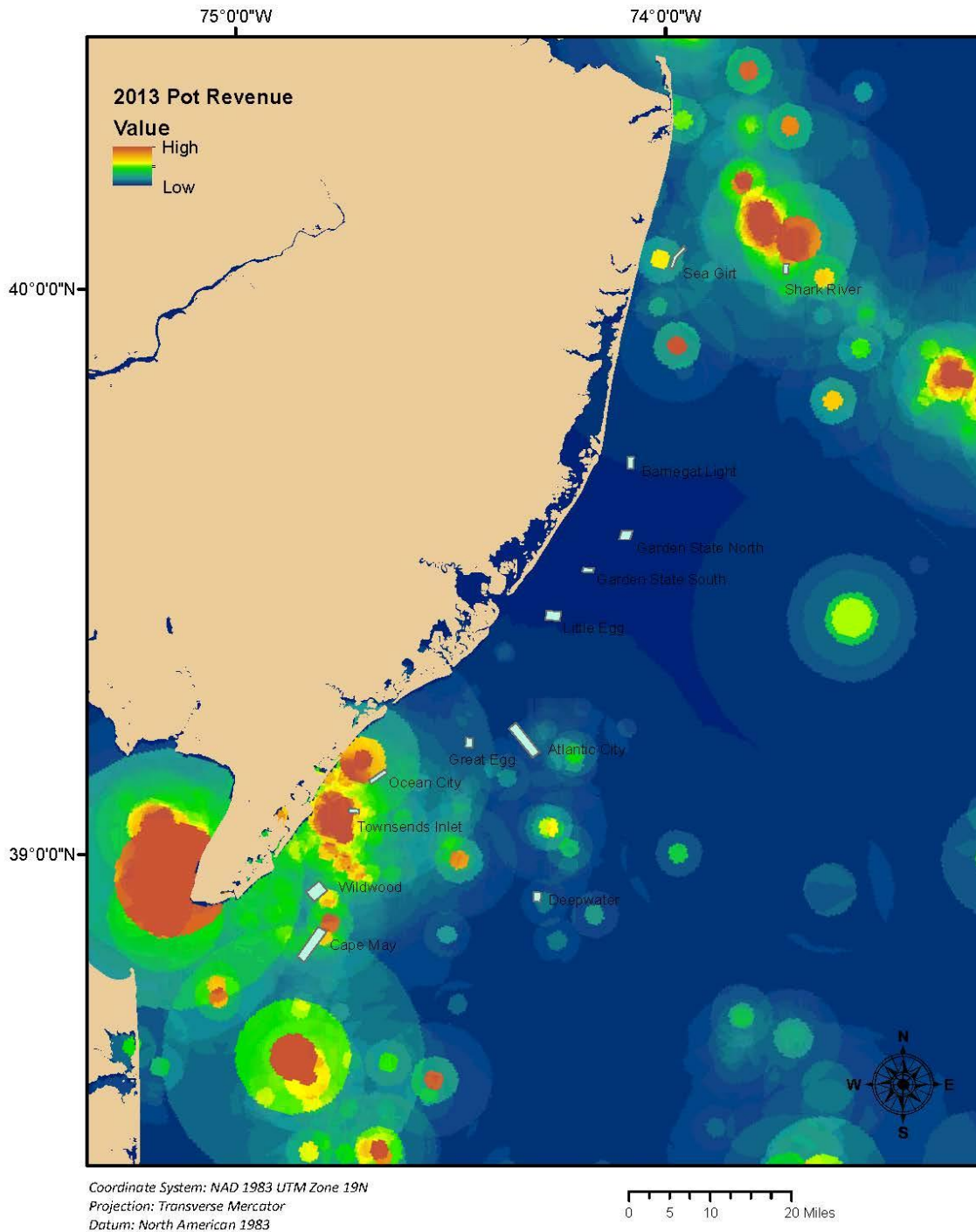


Figure 4. Ex-vessel Revenue Concentrations of Commercial Fishing Vessels using Pot/Trap Gear, 2013

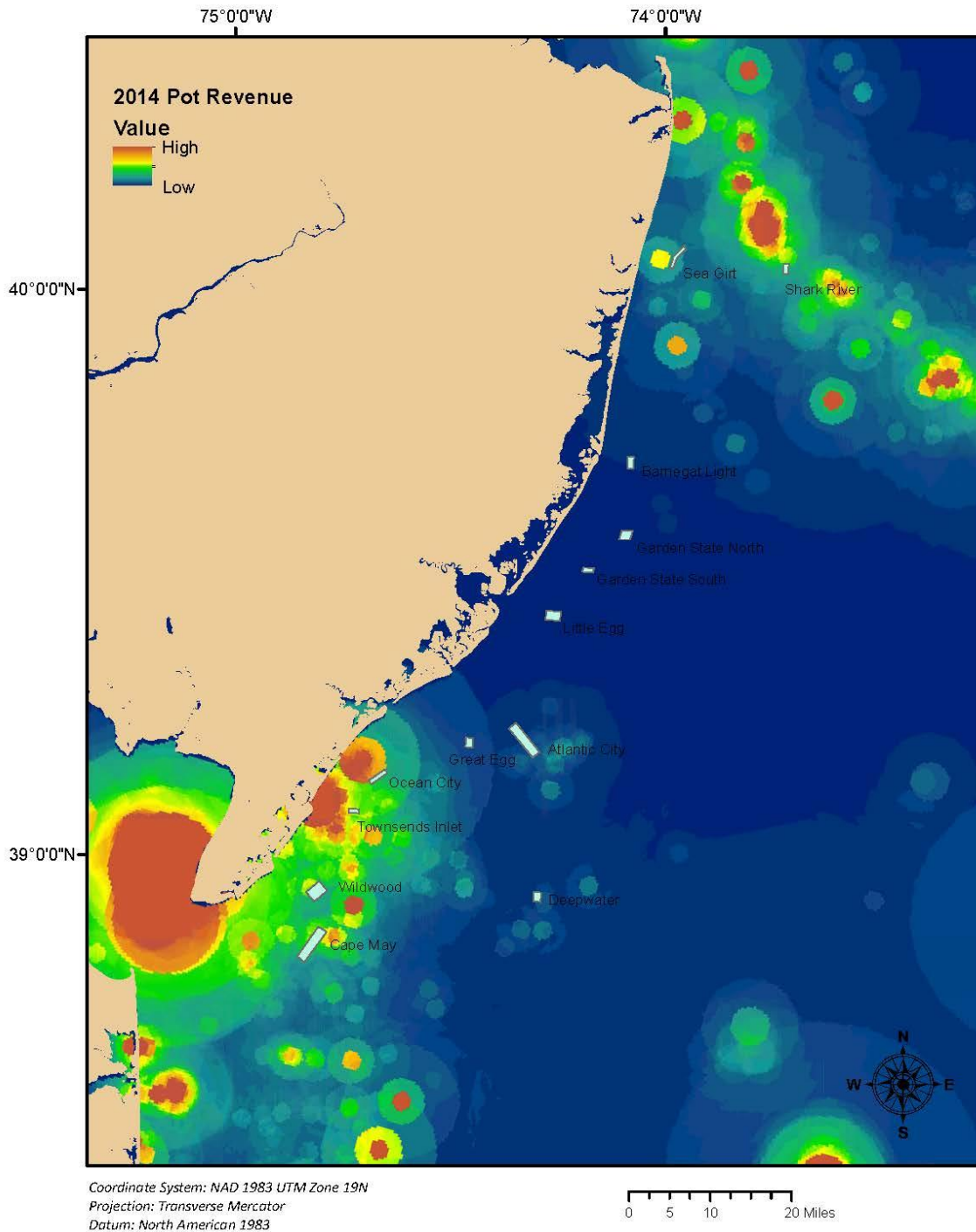


Figure 5. Ex-vessel Revenue Concentrations of Commercial Fishing Vessels using Pot/Trap Gear, 2014

3.4.2.2 Social and Economic Assessment

The estimated ex-vessel value of landings at each reef site provides an indication of the importance of the sites to commercial pot/trap fishermen. The VTR mapping approach attributed pot/trap gear ex-vessel revenue to all 13 of the reef sites in 2011, 2012, 2013, 2014, and 2015 (Table 6). Since 2012, the highest ex-vessel revenues were from landings at the Cape May reef site, which constituted almost half of the total ex-vessel revenue obtained from the 13 reef sites in 2015. Two other reef sites with measurable pot/trap ex-vessel revenue over the past few years include the Wildwood reef site and Ocean City reef site.

Table 6. Ex-Vessel Revenue of VTR Mapped Commercial Fishing Pot/Trap Trips where the Estimated Spatial Footprint of the Trip Includes One or More Reef Sites

	2011		2012		2013		2014		2015	
	\$'s	%	\$'s	%	\$'s	%	\$'s	%	\$'s	%
Atlantic City Reef Site	3,002	13.4%	5,090	12.5%	1,224	4.8%	894	3.8%	1,422	5.7%
Barnegat Light Reef site	51	0.2%	41	0.1%	44	0.2%	35	0.2%	50	0.2%
Cape May Reef Site	2,086	9.3%	13,682	33.5%	9,757	38.3%	9,347	40.1%	11,761	47.2%
Deepwater Reef Site	103	0.5%	384	0.9%	373	1.5%	234	1.0%	2,273	9.1%
Garden State North reef Site	103	0.5%	35	0.1%	25	0.1%	8	0.0%	62	0.2%
Garden State South Reef Site	6	0.0%	2	0.0%	13	0.1%	2	0.0%	26	0.1%
Great Egg Reef Site	2,914	13.0%	9,602	23.5%	363	1.4%	257	1.1%	246	1.0%
Little Egg Reef Site	100	0.4%	104	0.3%	45	0.2%	11	0.0%	35	0.1%
Ocean City Reef Site	3,809	17.0%	2,313	5.7%	2,965	11.6%	3,025	13.0%	2,467	9.9%
Sea Girt Reef Site	680	3.0%	1,499	3.7%	1,314	5.2%	1,161	5.0%	1,605	6.4%
Shark River Reef Site	2,247	10.0%	2,391	5.9%	1,863	7.3%	1,052	4.5%	1,028	4.1%
Townsend's Inlet Reef	3,607	16.1%	2,002	4.9%	3,204	12.6%	1,833	7.9%	832	3.3%
Wildwood Reef site	3,749	16.7%	3,684	9.0%	4,318	16.9%	5,458	23.4%	3,097	12.4%
Total	22,457		40,830		25,507		23,317		24,903	

It is important to point out, however, that since the size of each reef site is generally less than one square mile, the amount of pot/trap activity occurring at each reef site is limited. Ex-vessel revenue from pot/trap landings at all 13 reef sites combined approached only \$25 thousand in 2015. This represents less than one percent of total ex-vessel revenue (i.e., reef revenue and non-reef revenue combined) obtained by vessels with pot/trap reef landings in 2015 (Table 7). Over the past 5 years, ex-vessel reef revenue from pot/trap landings has remained below 1% of total ex-vessel revenue for vessels with pot/trap reef landings.

Table 7. Total Pot/Trap Gear Ex-vessel Revenue (\$'s) for Vessels with Reef Landings and the Percentage Derived from the Reef Sites

Year	Total Revenue	Total Reef Value	Reef %
2011	3,072,121	22,457	0.73%
2012	4,173,844	40,830	0.98%
2013	3,838,313	25,507	0.66%
2014	2,761,648	23,317	0.84%
2015	3,597,491	24,903	0.69%

When all pot/trap activity occurring in New Jersey is considered (i.e., ex-vessel revenue from vessels with and without reef landings), reef site ex-vessel revenue represented between 0.19% and 0.31% of total ex-vessel revenue from New Jersey pot/trap landings (Table 8).

Table 8. Total Pot/Trap Gear Ex-vessel Revenue (\$'s) in New Jersey and the Percentage Derived from the Reef Sites

	Total Revenue	Total Reef Value	Reef %
2011	12,029,983	22,457	0.19%
2012	13,288,816	40,830	0.31%
2013	11,520,749	25,507	0.22%
2014	9,401,312	23,317	0.25%
2015	9,530,137	24,903	0.26%

If all commercial fishing activity occurring in New Jersey is considered, reef site ex-vessel revenue by pot/trap gear represents 0.02% or less of total New Jersey ex-vessel revenue from 2011 – 2014 (Table 9).

Table 9. Total Ex-vessel Revenue (\$'s) in New Jersey (all gears) and the Percentage Derived from the Reef Sites

	Total Revenue	Reef %
2011	220,376,924	0.01%
2012	187,706,784	0.01%
2013	132,859,932	0.02%
2014	151,930,102	0.01%

Table 10 shows the estimated number of commercial fishing vessels that deploy pot/trap gear at the reef sites and the percent of their total annual gross revenue landed at the 13 reef sites. The number of vessels with landings at the reef sites ranged from a high of 50 in 2012 to a low of 36 in 2015. Approximately 80% to 89% of these vessels were estimated to land less than 1% of their total annual revenue from the reef sites during 2011 to 2015. All but one of the remaining vessels were estimated to land between 1% to 5% of their total annual revenue at the reef sites during 2011 to 2015. One vessel was estimated to have reef site landings equivalent to about 7% of its total annual revenue in 2014. However, total annual revenue for this vessel in 2014 was only \$2,763, of which \$185 (6.7%) was estimated to have been landed at one of the reef sites.

Based on the results shown in Table 10 commercial fishing vessels deploying pot/trap gear off the coast of New Jersey would likely face minimal to no losses in ex-vessel revenue if the artificial reefs are designated as SMZs. In addition, commercial pot/trap fishing effort at the reefs would shift to other open areas mitigating potential revenue losses. An important point to consider though is that pot/trap vessels likely fish at the reef sites because catch rates are higher and because conflicts with mobile gear vessels are reduced. Forcing pot/trap vessels out of these sites may increase the likelihood of conflicts with vessels fishing mobile gear.

Table 10. Number of Pot/Trap Vessels by Percent of Total Annual Ex-vessel Revenue Derived from the Reef Sites

	<=1.0%	1.0 to 5.0%	5.0 to 10.0%	>=10.0%	Total
2011	34	9	0	0	43
2012	39	11	0	0	50
2013	32	5	0	0	37
2014	32	5	1	0	38
2015	32	4	0	0	36

3.4.3 Recreational and Commercial Fishery Summary

In summary, there were low levels of commercial pot/trap activity at all 13 of the reef sites from 2011 to 2015. Ex-vessel revenue from pot/trap landings at all 13 reef sites combined was less than \$25 thousand in 2015, and averaged \$27.4 thousand from 2011 to 2015. The combined value of the landings at the reef sites comprised less than 0.31% of the total annual ex-vessel value landed by all pot/trap gear in New Jersey from 2011 to 2015.

The number of vessels with landings at the reef sites ranged from a high of 50 in 2012 to a low of 36 in 2015. Approximately 80% to 89% of these vessels obtained less than 1% of their total annual gross revenue from the reef sites during 2011 to 2015. All but one of the remaining vessels earned between 1% and 5% of their total annual revenue at the reef sites during 2011 to 2015. One vessel was estimated to have landings at the reef site equivalent to about 7% of its total annual revenue in 2014. This vessel's total annual revenue in 2014 amounted to only \$2,763 though, of which \$185 (6.7%) was estimated to have been landed at one of the reef sites. These findings indicate that commercial fishing vessels deploying pot/trap gear off the coast of New Jersey would likely face minimal to no losses in ex-vessel revenue if the artificial reefs are designated as SMZs.

The results also show potential gear interactions between commercial pot/trap vessels and recreational fishing vessels at two of the 13 artificial reef sites - Cape May and Sea Girt. The probability of gear conflicts at the other 11 reef sites is estimated to be low based on comparisons of commercial pot/trap and recreational activity occurring at the reef sites.

4.0 Recommendations

Based on the weight of evidence examined, the SMZ Monitoring Team recommends the following:

1. Based on evaluation of all relevant factors and issues as outlined in Amendment 9 to the Summer Flounder, Scup and Black Sea Bass FMP, the SMZ Monitoring Team recommends that the Council designate all 13 New Jersey's artificial reefs located in the EEZ as SMZs. The SMZ designation should stipulate that no fishing vessel or person on a fishing vessel may fish in the 13 New Jersey Special Management Zones with any gear except hook and line and spear fishing (including the taking of fish by hand).

2. The Council would reserve the right to change or revise these SMZs, including any gear restrictions imposed as a result of such designations, if future analyses cause the Council to alter its policy with respect to SMZs during a broader consideration of this issue.

3. The Council should review the 2007 National Artificial Reef Plan and modify (if necessary) the artificial reef policy it adopted in 1995 and consider incorporating its artificial reef policy into ongoing efforts to establish habitat policy within the context of an Ecosystem Approach to Fisheries Management.

6.0 References

DePiper, Geret (2014). Statistically Assessing the Precision of Self-reported VTR Fishing Locations. NOAA Technical Memorandum NFS-NE-229.

Figley, Bill (2001). Survey of New Jersey's Recreational Wreck/Artificial Reef Fisheries, 2000. New Jersey Department of Environmental Protection, Division of Fish and Wildlife, Marine Fisheries Administration, Bureau of Marine Fisheries. Fisheries Project F-15-R-41.

National Marine Fisheries Service (2016). Fisheries Economics of the United States, 2014. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-F/SPO-163, 237p.

Steimle, F.W and C. Zetlin (2000). Reef Habitats in the Middle Atlantic Bight: Abundance, Distribution, Associated Biological Communities, and Fishery Resource Use. Marine Fisheries Review. Vol 62(2). pp 24-42.

Appendix 1

SMZ Monitoring Team

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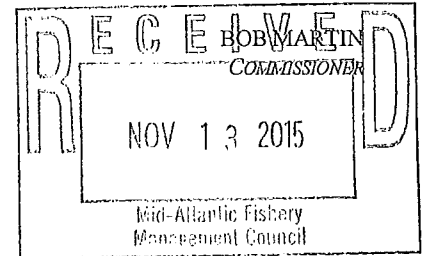
Appendix 2
NJ SMZ Request Letter



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
NATURAL AND HISTORIC RESOURCES

Office of the Assistant Commissioner
MAIL CODE 501-03A
PO Box 420
Trenton, New Jersey 08625
609-292-3541/Fax: 609-984-0836



CHRIS CHRISTIE
GOVERNOR

KIM GUADAGNO
Lt. Governor

November 6, 2015

Dr. Christopher M. Moore
Executive Director
Mid-Atlantic Fishery Management Council
800 N. State Street, Suite 201
Dover, DE 19901

Dear Dr. Moore:

I am writing to the Mid-Atlantic Fishery Management Council (MAFMC) to initiate the process for Special Management Zone (SMZ) designation for New Jersey's 13 artificial reefs in federal waters. I would like to request some time on the agenda for MAFMC's December 2015 meeting in Annapolis to discuss the potential for moving forward with the SMZ designation, including presentation of any materials the MAFMC deems appropriate to initiate this discussion.

Since the inception of New Jersey's Reef Program in 1984, and increasingly as reef development intensified and habitat increased, we have received complaints from individuals, head boat and charter boat captains, grassroots organizations and state legislators on behalf of their constituents that there is too much commercial gear on our reefs. The deployment of this gear severely limits recreational access to these reefs and makes unviable the intended hook-and-line use of these sites.

New Jersey's Reef Program was funded primarily through the U. S. Fish and Wildlife Service's (USFWS) Sport Fish Restoration Program (SFR), which is a "user pays, user benefits" program. Following several requests by the USFWS to resolve these user conflict and access issues, on April 12, 2011 SFR funding for the Reef Program and all reef construction and monitoring activities was discontinued for failure to address the issue. USFWS officials stated that funding to the Reef Program would be restored once these issues are resolved.

For the past two years, NJDEP has been working diligently with representatives from the recreational and commercial fishing sectors to develop regulations that balance access on our reefs located in marine State waters (Sandy Hook and Axel Carlson Reefs). This week, we promulgated regulations that will limit commercial gear to only small sections of these reefs. In addition, we also are proposing a new reef in marine State waters where commercial gear will be completely prohibited. While we have taken the necessary steps to restore recreational access on our State water reefs, recreational

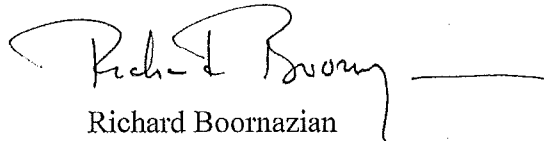
access to our 13 reefs in federal waters is still severely limited by commercial gear. Therefore we are requesting an SMZ designation that would completely prohibit commercial potting gear on all 13 of these reefs.

In June 2011, for its five reefs located in federal waters, the State of Delaware formally requested an SMZ designation from the MAFMC through the Black Sea Bass provisions of the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan. Following the necessary procedural steps—including evaluating the State's request, producing and evaluating a report by the MAFMC's SMZ Monitoring Committee, holding public hearings, making a recommendation to the Nation Marine Fisheries Service Regional Administration, and ultimately a decision by the Regional Administrator in July 2015—four of the five reefs were granted the SMZ designation.

New Jersey is aware there are a several necessary logistical and regulatory steps that need to occur during this process and we will fully support and respect the MAFMC process, Monitoring Committee's evaluation and final determination by the Regional Administrator. However, I am hopeful that the Council will recognize the importance of SFR funding to our fisheries management activities in New Jersey and fully support this request. Again, we are willing to provide any additional information you believe is necessary for the December meeting.

My staff and I look forward to interacting with the MAFMC on this issue. Thank you for your consideration of this important request. If you would like to discuss this matter prior to the December meeting, please contact Brandon Muffley, Marine Fisheries Administrator, at (609) 748-2020.

Sincerely,

A handwritten signature in black ink, appearing to read "Richard Boornazian", followed by a horizontal line extending to the right.

Richard Boornazian
Assistant Commissioner
Natural and Historic Resources

Appendix 3

Mid-Atlantic Fishery Management Council - Artificial Reef Policy

In June 1995, the Council adopted five policy statements on artificial reefs and the associated effects of reef activities on fisheries under Council authority. The goal was to have Council policy for artificial reefs such that all States in the Mid-Atlantic are treated uniformly. As stated in the National Plan (1985), the Federal role is one of providing technical assistance, guidance and regulations for the proper use of artificial reefs by local governments in a manner compatible with other long-term needs and to improve coordination and communication on artificial reef issues.

1) Each new EEZ artificial reef site proposal must have a stated conservation and management objective.

It is the Council's position that unless an organization (local government or association) has a conservation and management objective for a reef site, there is no way to evaluate the potential costs and benefits associated with a reef proposal. In essence, without stated objectives an artificial reef proposal is little more than "ocean dumping".

2) The MAFMC endorses the National Artificial Reef Plan (1985) and encourages staff to work with ASMFC, NMFS, and the States in the updating of plan.

The MAFMC was not heavily involved in the development of the National Artificial Reef Plan in the early 1980s because of higher priorities for fisheries that were under or attempting to be managed at that time. It is now the understanding that ASMFC is leading the reevaluation and updating of the Reef Plan and staff is encouraged to work closely in this endeavor. Artificial reefs have become much more important to MAFMC activities with the expansive efforts by States to locate additional reefs in the EEZ, as well as our management of additional species that frequently inhabit artificial reefs (e.g. black sea bass).

3) Only materials identified and acceptable in either the National Artificial Reef Plan (1985) or the Reef Material Criteria Handbook (1992) or revisions thereof should be used for the creation of artificial reefs.

The Council wants only materials that are "environmentally acceptable" to be used in artificial reefs. Environmentally acceptable deals with both the toxicity of materials and also the issue that materials have to be compatible with the reef site. The latter deals with the potential energy levels at the site, and the issue that what may be acceptable at one site may be unacceptable at a different site that has a much different energy level at the bottom. The Council is greatly concerned over the usage of tires for artificial reef sites specifically. Tires have recently been shown (MD studies) to be toxic to certain organisms at reef sites with low salinity (e.g. bays and estuaries where salinities of 15 ppt or less occur), but appear to not be toxic in high salinity. The Council still believes that tires are an inappropriate material because of high energy levels in the ocean which inevitably leads to tire structure breakdown and thus mobility off the reef once they get caught up in ocean currents.

4) No fishery management regulations may be implemented for any artificial reef in the EEZ without concurrence by the MAFMC.

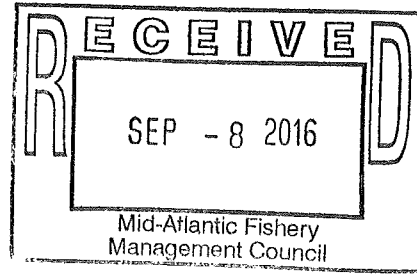
The Magnuson Act states that the Council shall "prepare and submit to the Secretary a fishery management plan with respect to each fishery within its geographical area of authority that requires conservation and management... ". It is the intent of the MAFMC that they agree with any attempt at fishery management around any artificial reef in the EEZ in the Mid-Atlantic off of New York through Virginia.

5) The Council will attempt to facilitate communication on the siting of any new artificial reef in the EEZ with various user groups of the proposed site.

Siting of new artificial reef is regulated by the US Army Corps of Engineers and often commercial and sport fishing interests are not well informed of Corps activities. Also individual States may coordinate with fishing interests within their State on artificial reefs, but the highly migratory nature of many fisheries necessitates information transfer to organizations beyond individual States. Council staff will attempt to widely distribute information on new sitings in the initial stages of reef proposals.

These five policy statements should help facilitate Federal, State, and local activities in the Mid-Atlantic and can only be beneficial to the ocean and coastal habitats.

5 Sept 2016



Mid Atlantic Marine Fisheries Council
Council members

Gentlemen;

RE: New Jersey SMZ request

Federal regulation 50 CFR 648.146¹ shows that before starting the procedure to implement an SMZ, you need to determine if the specific gear types being prohibited are not compatible with the ***intent*** (objectives) of the reefs.

But what is the intent of these 13 reefs that New Jersey is asking SMZs for? Is it what New Jersey said on its Army Corps reef permit application (Attachment 1A)? Or is it what New Jersey publishes on their web site and what the Sport Fish Restoration Program thinks (Attachment 1B)? Notice that these are NOT the same. What these clippings show is that New Jersey either lied to the Corps about the 4th objective: "*providing economic benefits to the fishing industry*", or that by leaving out that 4th objective, they didn't tell the Sport Fish Restoration Program the whole truth. Either way, New Jersey has **committed FRAUD with one of these federal agencies**. [STRIKE 1 !] But that's not the worst of it.

On your screen in the June 2011 ASMFC meeting was a slide showing how the former head of New Jersey's Artificial Reef program designed the reefs (Attachment 2). It shows that he designed them for ONLY recreational usages. But Federal law says that properly designed reefs are designed for recreational and commercial usages. And that one of the reefs' objectives is to "increase the production of fisheries products". Since this can only be provided by commercial activity, it is evidence that New Jersey didn't understand what it was supposed to be doing constructing Federal reefs..... and therefore they **designed them wrong**.....[STRIKE 2 !!]

It's shaky ground if you rely on any of New Jersey's statements about intents, objectives, or purposes of Artificial Reefs. But think about this for a minute: The reefs you are being asked to put SMZs on are NOT New Jersey's reefs. Jersey's reefs are the two in its state waters. But the 13 reefs you are dealing with are Federal reefs on Federal property. In Federal law 33 USC 2101 a(5), Congress spelled out a list of objectives that it said *properly designed* Federal artificial reefs, on Federal property can achieve. New Jersey built these 13 reefs, but New Jersey doesn't get to pick the objectives for these reefs. Congress said if the permit holder designs them properly², then all of the Federal objectives can be achieved.

Improper design of these Federal reefs is most likely the cause of the conflicts happening now. But before you rush ahead and do what New Jersey is requesting, step back for a minute and consider: If you do it: will all of Congress' objectives be reached???? (Answer) NO..... The reefs will not create

¹ See Attachment 3

² See Federal Law in Attachment 2

"enhanced fishing opportunities" or "increased energy efficiency" for the commercial fishermen as the Federal law³ indicates that they should.

Do you see the problem with New Jersey's request? New Jersey's SMZ plan produces results that are far short of what Congress wants because under Jersey's plan, two of the five **things Congress wants to happen....can't possibly happen.** [STRIKE 3 !!!]

Congress left a lot of flexibility in the reef management game. It set the objectives for federal reefs, but within certain parameters [33 USC 2102 (2+3)] it left up to the permit holder the process of figuring how to achieve those goals. The problem with Jersey's plan, is that it strikes out..... It doesn't achieve Congress' objectives and it violates Congress' parameters. This was pointed out by Coast Guard LCDR Saunders at the Oct 2013 MAFMC meeting when he said:

"...we're in essence excluding the commercial sector from these artificial reefs.."

LCDR Saunders is a credible, unbiased USCG officer making a simple observation. He's pointing out that commercial fishermen will have NO VIABLE REEF FISHERY when an SMZ banning pots is implemented. But Mr. Boorsnazian of the NJDEP comes along, and implies that this officer is wrong. He wants you to believe that once Jersey's planned SMZ is implemented, commercial fishermen will have a *viable* reef fishery catching enough fish with hook and line to make a reasonable profit during the summer when the fish are on the reefs. (Jersey offers no proof of this.) He also wants you to believe that Jersey's recreational hook and line reef fishery has become *UNVIABLE*; even though as you saw at your last meeting in Aug 2016, recreational fishermen are currently exceeding their quota of sea bass by +70% (Attachment 3).

Gentlemen there are several statements about viability being made here that need to be evaluated.

- LCDR Saunders (USCG) says: commercial hook and line fishing on reefs is **UNVIABLE**.
- Mr. Boorsnazian (NJDEP) says: recreational hook and line fishing on reefs has become **UNVIABLE**.
- Mr. Boorsnazian (NJDEP) implies that: commercial hook and line fishing in the summer on the reefs is a **VIABLE** fishery.

Now stop and analyze the information you have concerning these statements:

- On one hand, LCDR Saundser's experience as a law enforcement officer and knowledge of what's happening on the ocean, leads one to believe that his statement is TRUE.
- On the other hand, the presentation at your last meeting; showing that recreational fishermen are currently over-catching their quota by +70% (See Attachment 3) shows you that Mr. Boorsnazian's statement..... is blatantly FALSE.
- But what about Mr. Boorsnazian's implication that hook and line fishing is a viable commercial fishery on these reefs? There's NOTHING to show if it's true or false !!

³ See Federal Law in Attachment 2

Gentlemen, you can't just assume that NJDEP's implication about commercial hook and line reef fishing being viable..... is true. Acting on an assumption while having some indication (Saunders's statement) that it is false... proves the adage that to assume is to make an "ASS" of U and ME. The bottom line here is that.... Jersey's only verifiable statement proves to be.... FALSE; and Jersey gave you "NOTHING"; (not even data to show that a conflict is occurring that is significant enough to take action)..... to show that their SMZ plan would even comply with Federal laws 33 USC 2102 (2&3). The Council should be cautious in moving forward. This council needs to be assured that if NMFS implements what Jersey wants, it won't exacerbate the over-catching problem, (by golly.. How is recreational fishing *unviable* with a +70% quota over-catch?) and that the commercial fishermen will have a viable reef fishery when the dust settles.....

Yes..... New Jersey has reef funding problems..... But this Council can't let New Jersey's money problems divert it from its responsibility under the law. Federal law 33 USC 2102 mandates that you take a middle of the road reef policy for the two sectors of fishermen. It's not enough to say that commercial fishermen have a viable fishery in the rest of the ocean. This law says that this council has an obligation to assure that both fishing sectors have viable fisheries on the reefs. The commercial fishermen may have pushed the recreational guys off the reefs and into the ditch; if so, that's a problem that may need to be solved. But there's a ditch on both sides of the road to proper reef management. It would be a mistake if, by regulation, NMFS pushes the commercial fishermen into the ditch on the other side of the road by implementing an SMZ that leaves them without a viable reef fishery. Millions of consumers that depend on NMFS to manage Federal resources properly would suffer.

Gentlemen, as permit holder, New Jersey's responsibility was to present to this council a plan that would leave both sectors of fishermen with viable reef fisheries while minimizing the conflicts between them (33 USC 2102(2,3)). And to bring enough data to prove that their plan would work. But New Jersey didn't do that. It came here with a plan to help it get grant money by doing exactly what LCDR Saunders said.... "*excluding the commercial sector from the reefs*". Adopting Jersey's plan would be a blatant violation of Federal law 33 USC 2102 (2).

What you should do now is obvious: Abide by the law. Send New Jersey back to the drawing board and tell them that when they come back ... bring good data to show that their plan will leave both sectors of fishermen viable reef fisheries; while minimizing conflicts ... among uses... not simply eliminating commercial uses because their funder wants it that way.

The Old Fisherman >))))>.....
Walt Chew

Attachments 1A & 1B

1A: Hard copy clipping from NJDEP USACE (Army Corps) Artificial Reef permit application showing 4 project purposes.

Attachment A

19. Project Purposes:

- (1) Create reef habitat for 150 species of fish and marine life.
- (2) Provide new fishing grounds for anglers .
- (3) Provide underwater attractions for scuba divers.
- (4) Provide economic benefits to fishing industry.

1B: Information taken from NJDEP web site (<http://www.state.nj.us/dep/tgw/artreef.html>) showing only 3 project purposes: (Data presented to the USFWS Sport Fish Restoration Program)

"The purpose is to create a network of artificial reefs in the ocean waters along the New Jersey coast to

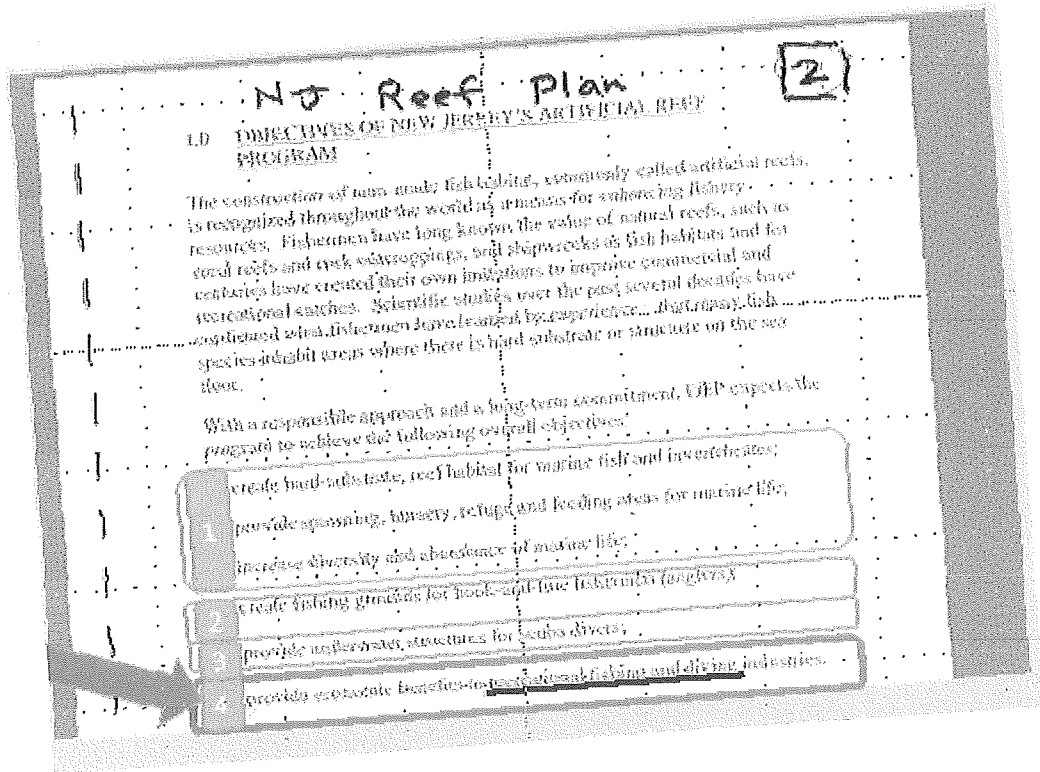
- 1) **provide a hard substrate for fish, shellfish and crustaceans,**
- 2) **fishing grounds for anglers, and**
- 3) **underwater structures for scuba divers."**

#4 is missing

Indicates that NJDEP committed FRAUD with one or the other of these two Federal Agencies.

Attachment 2

Slide presented by Mr. Figley (former head of NJDEP Artificial Reef Program) at June 2011 MAFMC meeting;



Comparison of NJDEP design to Federal law 33 USC 2101 a(5) [below] shows that by designing for only recreational fisheries, NJDEP created an **IMPROPER DESIGN** of Federal reefs. (designed for economic benefits to recreational users only).

Federal law: National Fishing Enhancement Act - Findings

33 USC 2101 a(5)

(5) properly designed, constructed, and located artificial reefs in waters covered under this chapter can

- enhance the habitat and diversity of fishery resources;
- enhance United States recreational and commercial fishing opportunities;
- increase the production of fishery products in the United States;
- increase the energy efficiency of recreational and commercial fisheries;
- and
- contribute to the United States and coastal economies.

Attachment 3

Aug 2016 MAFMC meeting; Section titled: *Black Sea Bass Specifications*

Slide # 15 of presentation

Year	Comm. Landings (mil lb)	Comm. Quota (mil lb)	Comm. % Overage (+)/Underage(-)	Rec. Landings (mil lb)	Rec. Harvest Limit (mil lb)	Rec. % Overage (+)/Underage(-)
2011	1.69	1.71	-1%	1.17	1.78	-34%
2012	1.72	1.71	+1%	3.19	1.32	+142%
2013	2.26	2.17	+4%	2.46	2.26	+9%
2014	2.18	2.17	0%	3.60	2.26	+59%
2015	2.45	2.21	+11%	3.97	2.33	+70%
5-yr Avg.	-	-	+3%	-	-	+49%

The NJDEP says: recreational reef fishery is has become UNVIABLE..... How is over catching by +70% consistent with a characterization of "UNVIABLE"?? Given this landing data, why would you want to make it easier for recreational fishermen to catch fish?

Attachment 4: Laws

Federal regulation:

50 CFR 648.146 Special management zones.

The recipient of a Corps of Engineers permit for an artificial reef, fish attraction device, or other modification of habitat for purposes of fishing may request that an area surrounding and including the site be designated by the Council as a special management zone (SMZ). The SMZ will prohibit or restrain the use of specific types of fishing gear that are not compatible with the intent of the artificial reef or fish attraction device or other habitat modification. The establishment of an SMZ will be effected by a regulatory amendment pursuant to the following procedure:

Federal law - National Fishing Enhancement Act- (National Artificial Reef Standards)

33 USC 2102 “..... artificial reefs in waters covered under this chapter shall be managed in a manner which will—

- (2) facilitate access and utilization by
United States recreational and commercial fishermen;
- (3) minimize conflicts among competing uses of waters covered under this chapter and the resources in such waters;



COMMUNICATION AND OUTREACH OVERVIEW

Introduction

Communication and outreach are critical to effective engagement of stakeholders in the fisheries management process. The Mid-Atlantic Fishery Management Council (Council) has a diverse audience of stakeholders that must be reached using a variety of communication tools and methods. The purpose of this document is to provide the Council with an overview of existing communication tools and methods and to facilitate discussion regarding the future direction of the Council's communication and outreach program.

2014-2018 Strategic Plan

The Council's overall communication goals and objectives are rooted in its 2014-2018 Strategic Plan. The core elements of the plan are provided in the section below.

Council Vision

Healthy and productive marine ecosystems supporting thriving, sustainable marine fisheries that provide the greatest overall benefit to stakeholders.

Council Mission

The Council manages marine fisheries in federal waters of the Mid-Atlantic region for their long-term sustainability and productivity consistent with the National Standards of the Magnuson-Stevens Fishery Conservation and Management Act. The Council is committed to the effective stewardship of these fisheries and associated habitats by incorporating scientific information and informed public input in transparent processes that produce fishery management plans and programs.

Core Values

- Stewardship
- Integrity
- Effectiveness
- Fairness
- Competence
- Clear Communication

Communication Goal

Engage, inform, and educate stakeholders to promote public awareness and encourage constructive participation in the Council process.

Communication Objectives and Strategies

Objectives	Strategies
Objective 1. <i>Develop and implement a strategic communications plan to provide clear and accurate information to a broad range of stakeholders.</i>	1.1. Employ a variety of written, visual, and oral communication methods appropriate for a diverse audience of stakeholders.
	1.2. Expand the use of technology to streamline the communication process.
	1.3. Use the Council's website to provide stakeholders with easy access to accurate and up-to-date information.
	1.4. Provide stakeholders with timely news and updates via email distribution list and website.
	1.5. Ensure that all communication products meet the federal plain language guidelines.
	1.6. Develop communication templates and communication guidelines for staff and Council members.
Objective 2. <i>Engage a diverse audience of stakeholders.</i>	2.1. Conduct a stakeholder analysis to identify target audiences for Council communications.
	2.2. Develop and maintain a database of stakeholder contact information, including a list of key industry leaders.
	2.3. Coordinate communication efforts with management partners and other organizations to reduce redundancy and expand the distribution of messages to a broader audience.
	2.4. Use targeted communication to increase the number of stakeholders in the Council's contact database.
Objective 3. <i>Increase stakeholder trust and facilitate greater stakeholder engagement by making the Council process accessible and transparent.</i>	3.1. Provide conference lines or Webinar access to Council and advisory body meetings whenever it is feasible.
	3.2. Maintain an online calendar of meetings and events with links to meeting materials and supplemental information.
	3.3. Establish a consistent process for collecting and analyzing public input and incorporating it into the decision-making process.
	3.4. Summarize public comments received on specific actions and explain how public input was used in management decisions.
	3.5. Ensure that briefing books, presentations, and other meeting documents provide sufficient background information to be understood by the general public.
Objective 4. <i>Increase awareness and understanding of fishery science and management.</i>	4.1. Partner with academic institutions and non-governmental organizations to develop workshops and other interactive educational opportunities for stakeholders.
	4.2. Collaborate with academic and research institutions to develop outreach materials that explain fisheries science and data collection.
	4.3. Develop plain-language outreach materials to educate the public about the Council's legislative mandates and the fisheries management process.
	4.4. Use the results of the Visioning Project to promote general public understanding of fisheries science and management.
Objective 5. <i>Increase stakeholder involvement in the development of fishery management actions.</i>	5.1. Hold workshops to facilitate collaborative development of innovative management approaches among fishermen, managers, and scientists.
	5.2. Identify and implement additional opportunities for stakeholders to ask questions and make general comments.
	5.3. Ensure that meetings are advertised and conducted in such a way that encourages and enables stakeholder attendance and participation.
	5.4. Provide stakeholders with sufficient background information to provide constructive input

	5.5. Educate stakeholders about the Council process.
	5.6. Utilize an informal, small group meeting format to gather input from “hard to reach” interests via Listening Sessions or Q&A sessions.
	5.7. Ensure that scoping and public hearings are held in locations with high concentrations of interested stakeholders.
	5.8. Use targeted communication methods to solicit public input on management actions.

Stakeholder Audiences

The Council has a diverse audience of stakeholders, ranging from those who actively participate in the management process to those who only want to remain informed about Council issues. Primary audiences include:

- Commercial fishing industry
- Recreational fishing sector
- Environmental NGOs
- Academic/Research Institutions
- Media
- Management Partners
- Other Individuals – seafood consumers, recreational users, general public

Communication Methods and Tools

The following section provides an overview of the primary communication methods and tools currently employed by the Council.

Web-Based Communication

General

- Council Website: www.mafmc.org
- Central hub for information and materials related to Council issues and actions
- Redesigned in 2012 with the objective of providing stakeholders easy access to accurate and up-to-date information
- All Council documents posted on the website
- Updated on a nearly daily basis
- Pages can be updated at any time and from any computer, making it easy to post documents and information in a timely manner
- Entire website is mobile-friendly
- Website Traffic – Recent Daily Averages:
 - 3,971 Visits
 - 9,627 Page Views
 - 2,910 Audience Size

Council News

- www.mafmc.org/news
- Chronological archive of all Council news items
- Includes press releases, meeting agendas, announcements

- Occasionally used for cross-distribution of news items on behalf of management partners
- Most recent 4-5 stories appear on home page
- News items are organized by tags, allowing users to filter news items to view only those related to a specific issue, such as “Deep Sea Coral”

Calendar

- www.mafmc.org/council-events/
- Calendar block on the sidebar of each web page gives users easy access to upcoming events in an easy to navigate manner
- Chronological list of all future and past meetings and events
- Each meeting page contains date, time, location, and meeting details in a consistent and user-friendly format
- Pages are organized by categories and tags, allowing users to filter events based on criteria such as “Advisory Panel Meetings” or “Blueline Tilefish”
- Very positive user feedback

Council Meeting Pages

- www.mafmc.org/meetings
- Contains links to pages for individual Council meetings back to 2010
- Older materials also available through links to briefing books, meeting summaries, and agendas
- Briefing materials, presentations, and webinar recordings are linked directly into meeting agendas, allowing users to easily access related materials during Council meetings

Fishery Pages

- Example: <http://www.mafmc.org/sf-s-bsb/>
- Individual pages for each Council fishery management plan are linked from sidebar
- Each page contains comprehensive information about the fishery
- Pages contain: background information about the FMP, species profiles, latest news, upcoming meetings, ongoing actions, links to amendments and frameworks, staff contact information, and links to relevant committees, advisory panels, and other related pages

Action Pages

- www.mafmc.org/council-actions
- Individual pages for each major Council action serve as a one stop shop for all information and documents related to that action
- Pages contain: an action overview, a summary of the current status of the action, staff contact information, related news items, upcoming meetings, and a list of related documents

Council Member and Staff Pages

- www.mafmc.org/members and www.mafmc.org/staff
- Among the most frequently visited pages
- Contain links to pages for individual members
- Member photos and biographies are intended to help familiarize the public with individual Council members and staff

Online Comment Submission Forms

- Example: <http://www.mafmc.org/comments/unmanaged-forage-amendment-comments>

- Stakeholders have the option to submit comments on Council actions through web-based forms (in addition to email, mail, and fax options)
- Useful for actions with high volumes of public comments

Mailing Lists

Email

- Approximately 2,200 email contacts (and growing)
- Contact database and email distribution are managed using iContact email marketing platform
- Emails include press releases, meeting agendas, announcements, requests for proposals (RFPs), and other important news
- Typically 1-2x per month
- Users are able to manage their email preferences and subscribe/unsubscribe without having to contact Council staff
- Council also maintains sub-lists of contacts who wish to receive news about specific issues or fisheries – can be used for more targeted email campaigns about current actions, such as unmanaged forage
- Individuals can sign up for the Council’s email list at www.mafmc.org/email-list

Snail Mail

- Approximately 800 contacts (declining)
- Only receive Council meeting agendas

Social Media

- Council maintains an active Twitter account: <https://twitter.com/MidAtlanticFish>
- Useful for reaching a broader audience and engaging in two-way dialogue with stakeholders
- Majority of posts relate directly to MAFMC news and activities
- Also useful for sharing other news and announcements from management partners that may be of interest to Council stakeholders
- Council does not currently have an active Facebook page

Web-Based Meetings

- Web-based streaming for all Council meetings and many Committee/AP/SSC/Other meetings
- Adobe Connect platform – has received very positive feedback from stakeholders
- User-friendly interface – no login or prior authorization required
- Users can hear audio *and* see presentations, motions, and notes on the screen
- Option to allow participants to participate remotely *or* listen only
- Webinar recordings include both audio and presentations

Workshops

- Held on an as-needed basis
- Designed to solicit more in-depth participation and engagement from stakeholders
- Often includes participation from outside experts
- Workshop information and documents are archived at www.mafmc.org/workshops-events/

Fact-to-Face Meetings

- Public hearings, scoping meetings, and Q&As/Listening Sessions

- Scheduled on an as-needed basis
- Typically held in ports or other locations with high concentrations of stakeholders
- Opportunity for dialogue between stakeholders and Council staff/members

Publications, Documents, and Print Materials

- Briefing Books
- Advisory Panel Information Documents
- Press Releases
- Meeting Summaries
- Fact Sheets
- Workshop Reports
- Regulations Brochure
- Scoping and Public Hearing Documents
- Navigating the Council Process booklet
- MAFMC Infographic (2012)

Proposed Future Activities

- Develop public comment guidelines
- Update and enhance Fishing Community section of website - <http://www.mafmc.org/communities/>
- Expand stakeholder contact database
- Update and expand lists of stakeholder groups (i.e. commercial fishing associations, recreational fishing clubs, environmental NGOs)
- Increase the use of targeted email lists to provide updates to stakeholders interested in specific issues, fisheries, and actions
- Expand the Council's photo library and integrate new photo galleries into website
- Activate Council Facebook page
- Increase the creation and distribution of fact sheets and outreach materials pertaining to high-interest or controversial Council issues
- Update MAFMC infographic with recent fishery facts and statistics

Issues for Discussion

- Does the Council endorse the overall direction of the communication and outreach approach as described above?
- How can the Council better address the objectives and strategies identified in the 2014-2018 Strategic Plan?
- Are there any issues with the current communication and outreach tools that you would like to see addressed?
- Specific suggestions for communication and outreach activities in 2017/2018?

NOAA Fisheries Announces the Availability of Draft Amendment 10 to the 2006 Consolidated Atlantic Highly Migratory Species Fishery Management Plan: Essential Fish Habitat

NOAA Fisheries announces the availability of Draft Amendment 10 to the 2006 Consolidated Atlantic Highly Migratory Species (HMS) Fishery Management Plan on essential fish habitat (EFH) and an associated Environmental Assessment (EA). Draft Amendment 10 would update and revise existing HMS EFH; modify existing HAPCs or designate new HAPCs for bluefin tuna, sandbar, lemon, and sand tiger sharks, as necessary; and analyze fishing and non-fishing impacts on EFH by considering environmental and management changes and new information since 2009. New information on the biology, distribution, habitat requirements, life history characteristics, migratory patterns, spawning, pupping, and nursery areas of Atlantic HMS would be considered when updating Atlantic HMS EFH designations. EFH and HAPC designations are intended to focus conservation efforts and bring heightened awareness to the importance of HMS habitat.

NOAA Fisheries seeks public comment on the updates for Atlantic HMS EFH designations and existing HAPCs as well as the new HAPCs for lemon and sand tiger sharks.

Comments on Draft Amendment 10 to the 2006 Consolidated Atlantic Highly Migratory Species Fishery Management Plan should be submitted online at the Federal e-Rulemaking Portal:

<http://www.regulations.gov> (enter NOAA-NMFS-2016-0117 into the search box, click the “Comment Now!” icon, complete the required fields, and enter or attach your comments), in writing to Jennifer Cudney, NMFS Highly Migratory Species Management Division, 263 13th Ave. South, St. Petersburg, FL 33701. Comments are due by December 22, 2016

NMFS will conduct public hearing conference calls and webinars to allow for opportunities for interested members of the public from all geographic areas to submit verbal comments on Draft Amendment 10. These will be announced at a later date and in the Federal Register. NMFS has also requested time on the meeting agendas of the relevant Regional Fishery Management Councils (i.e., the Caribbean, Gulf of Mexico, South Atlantic, Mid-Atlantic, and New England Fishery Management Councils) to present information on Draft Amendment 10. Information on the date and time of those presentations will be provided on the appropriate council agendas.



NOAA FISHERIES

Sustainable Fisheries

UPCOMING EVENTS

October 4-7

SARC 62 Witch Flounder Working
Group Meeting, Woods Hole MA

November 2-3

North Atlantic Right Whale Consortium
annual meeting, New Bedford MA

November 29-December 2

SAW/SARC 62, Black sea bass and
witch flounder, Woods Hole MA

December 6-7

30th Annual NEFSC Flatfish
Conference, Westbrook CT

February 21-23, 2017

SARC 63, ocean quahog, Woods Hole
MA

Top Story Tracking Technologies Aid Research



School of Atlantic bluefin tuna image taken using a hexacopter drone northeast of Provincetown MA. Photo Credit: NOAA Fisheries/Michael Jech and Jennifer Johnson; Large Pelagics Research Center/Molly Lutcavage and Angelia Vanderlaan

Unmanned aerial systems (UAS), commonly called drones, along with satellite tags and remotely operated vehicles are providing NOAA Fisheries scientists with new tools to study whales, seals, sea turtles and other marine life from a different perspective.

Drones Provide New Look at Marine Mammals

Studying whales and seals will not be the same for NEFSC marine mammal researchers Lisa Conger and Elizabeth Josephson, who spent weeks training to fly an unmanned aerial system (UAS), commonly called a drone. Both researchers are now certified NOAA UAS pilots. This spring they had a chance to put that training to good use. Operating from a NOAA small boat in Cape Cod Bay, they flew one of the NEFSC's research drones, an APH-22 hexacopter, for right whale photo identification and photogrammetry studies. Photogrammetry techniques allow researchers to get body measurements from aerial photographs. Four NEFSC researchers have become certified NOAA UAS pilots, and in recent months have been putting their training to use for right whale studies as well as research at gray seal pupping colonies, and for menhaden and tuna schooling studies. More here:

http://www.nefsc.noaa.gov/press_release/pr2016/scispot/ss1611/



A loggerhead turtle awaiting its satellite tag. The turtle was placed on tires for cushioning. Photo Credit: NOAA Fisheries/ Heather Haas, ESA Permit 16556

Tagged Loggerhead Sea Turtles Follow Pattern (Except for George)

Researchers, including staff from NOAA's Northeast Fisheries Science Center, tagged 15 juvenile and adult loggerhead sea turtles May 16-21 in Mid-Atlantic waters including one in the Gulf Stream. Eight turtles were also filmed by a remotely operated vehicle, or ROV. The work is part of an ongoing effort started in 2009 to learn more about loggerhead turtle movements and behavior. The team went out two weeks earlier than usual to tag turtles early in their migration to different foraging areas. After capturing 14 turtles on the Mid-Atlantic shelf, the researchers headed further offshore into the edge of the Gulf Stream. They captured and tagged one loggerhead there and named him/her George, for Georges Bank. Unlike the other tagged turtles that stayed on the shelf, George traveled far and wide. The researchers also deployed an ocean surface drifter made by Falmouth (MA) High School students. The drifter data, collected by NEFSC oceanographer James Manning, will add to information that helps ground truth ocean surface circulation models. More here: http://www.nefsc.noaa.gov/press_release/pr2016/scispot/ss1612

Science Shorts

Group Effort Leads to Successful Turtle Disentanglements

Staff from the NEFSC's Protected Species branch at the Woods Hole Laboratory helped disentangle two leatherback turtles on Sunday, June 19, just hours apart. One turtle was spotted near Quick's Hole, the other off Naushon Island, both in the Elizabeth Island chain off Woods Hole. The designated stranding network lead group, the Center for Coastal Studies (CCS) in Provincetown, was 70 miles away and asked NEFSC staff for help. Staff worked with the Coast Guard and with the Massachusetts Environmental Police and freed both turtles:

<http://www.nefsc.noaa.gov/news/features/turtle-disentanglements>

2015 Commercial Fishing Business Costs Survey Underway

NEFSC has been periodically surveying commercial fishing businesses to collect data on costs since 2007, and last did so in 2012. The 2015 survey is designed to collect vital information on the total costs of commercial fishing in the Northeast. Invitations to participate, including instructions on how to take the cost survey online and a paper copy of the cost survey, were mailed to more than 2,000 commercial fishing businesses in August. Data are vital to getting an accurate picture of how fishery management measures are affecting the business bottom line and community stability. Survey responses are confidential data, just like vessel trip, observer, and dealer reports, and protected by law from disclosure. More at:

http://www.nefsc.noaa.gov/news/features/2016_cost_survey/commercial

NOAA Fisheries Considered Moving Trawl Surveys to Fishing Vessels

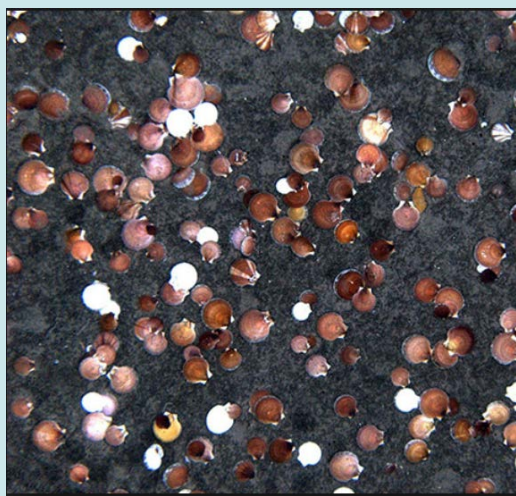
NOAA Fisheries is initiating a planning process to support its intention to transition part or all of the NEFSC's spring and fall bottom trawl surveys from the NOAA Ship *Henry B. Bigelow* to fishing industry vessels provided that survey data collection quality and time series integrity can be maintained. The target timeframe for the transition is five years. A science center working group is being established to develop options and criteria for making the shift; it will work closely with industry through the Northeast Trawl Survey Advisory Panel and seek broader industry input via the Council process: http://www.nefsc.noaa.gov/press_release/pr2016/news/nr1609/



Dr. Susan Gardner is our new Deputy Director. Susan previously served as the NEFSC Chief of Staff. Photo Credit: NOAA Fisheries/Shelley Dawicki



Haddock on conveyor for sorting and sampling aboard the NOAA Ship *Henry Bigelow*



Sea scallops on bottom, photographed from the HabCam

NEFSC seeks commercial fishing vessels for bottom trawl survey project

Competition closed in early September. Selected vessels will work with the NEFSC Northeast Cooperative Research Program and the Northeast Trawl Survey Advisory Panel. The project is intended to assess vessel capability in the region for conducting standardized bottom trawl tows to supplement the existing NEFSC Ecosystem Bottom Trawl Survey conducted aboard the NOAA Ship *Henry Bigelow*.

Release of US risk assessment on exporting live American lobster to the European Union

Last fall, Sweden presented a risk assessment to the European Union and asked it to consider banning imported live American lobster, suggesting that such imports posed an unacceptable risk of introducing an invasive species and disease. The NEFSC along with state and academic colleagues worked on the US assessment, used to argue the case against the ban before the EU's Scientific Forum on Invasive Alien Species this summer. As of this writing, the forum has not issued an opinion on the matter. U.S. and Canadian partners, including NOAA Fisheries, remain actively engaged on this issue. There has been no new scientific evidence added from Sweden at this time. We will provide supplemental information to the EU in anticipation of the next step in this process, when the EU Scientific Committee on Invasive Aquatic Species meets on October 5-7, 2016.

2017-2018 Sea Scallop Research Set-Aside call for proposals issued

Priorities include population surveys as well as research to reduce bycatch, improve and understand factors affecting scallop meat quality, identifying non-harvest sources of sea scallop mortality, documenting loggerhead turtle behavior in the Mid-Atlantic waters, characterize habitat, to better understand sea scallop ecology and biology, and examining the relationship of fishing power to landings per unit effort. Proposals are due October 7. For more information, visit us at: http://www.nefsc.noaa.gov/coopresearch/funding_opps.html#scallop

Field work with Passamaquoddy Tribe

Protected Species Branch staff assisted Passamaquoddy biologists with several projects on tribal lands this summer, including identifying cold water refugia on the South Branch of the Penobscot River, remote pond surveys, and evaluation of martin nest boxes.

Workshop on adding movement to ecosystem and stock assessment models, New Bedford MA

The NEFSC Animal Movement Working Group hosted this NOAA North Atlantic Regional Team-funded workshop. The major outcomes were some best practices for incorporating movement into models and a general framework for doing so.

Biological sampling of two data poor species to proceed

Saltonstall-Kennedy Grant Program funding has been received for Atlantic halibut and Atlantic wolffish cooperative sampling projects. The Nature Conservancy is leading

the halibut project. Otoliths will be aged by the State of Massachusetts; gonad histology will be read by NEFSC, and there is also a tagging component (PSAT tags). Other collaborators include scientists from SMAST, Canada, the New England Aquarium, and the University of Alaska. A number of Cape Cod gillnet and longline vessels are cooperating partners. The wolffish project is led by the University of New Hampshire. Otolith and gonad analysis will be performed by the same partners as in the halibut project. A genetic stock structure/connectivity component will be handled by Dalhousie University. The cooperating industry partner is F/V *Lisa Ann Fisheries*.

NEFSC continuous plankton recorder samples transferred to Sir Alister Hardy Foundation for Ocean Science

The NEFSC Continuous Plankton Recorder Survey began in 1971 and conducted approximately monthly sampling across transects in the Gulf of Maine and Mid-Atlantic Bight until the program was ended in 2013. The transfer of the NEFSC CPR samples to SAHFOS will ensure that they are curated and remain accessible for research use. Sir Alister Hardy invented the CPR method and the foundation maintains a network of CPR transects in North Atlantic and North Pacific.

2 Million Milford bay scallop larvae planted off Cape Cod

NEFSC and cooperating inshore shellfish industry members on Cape Cod and the Islands confirm a successful set. The bay scallops were cultured at the NEFSC Milford Lab and carry genetic markers to allow survival and development of the planted stock to be tracked independent of natural settlement.

Amphipod tubes sampled, Sandy Hook Bay

An ongoing monitoring program at the James J. Howard Lab is sampling stations in Sandy Hook Bay for amphipod tubes. The hypothesis is that the complex bottom created by amphipod tubes shelter newly-settled hard clams from predation by shrimp, crabs, and fish, allowing clam beds to recruit market-sized clams. Clam recruitment has been poor in recent years when the amphipod tubes were absent, but this year the tubes appear present in larger numbers.

NEFSC Ecosystem and Climate Science Program Review, Woods Hole MA This peer review examined NEFSC science programs that investigate ecological, oceanographic, climate, and habitat-related processes as they are linked to living marine resources. For details, presentations, background documents, and other information, visit the review website here:

http://nefsc.noaa.gov/program_review/pr2016.html

NOAA Fisheries Office of Aquaculture Science Program Review

The East Coast program review occurred at our Milford Laboratory July 19-22. Details are here: http://nefsc.noaa.gov/program_review/

NEFSC Northeast Cooperative Research Program Review

Prof. Steve Kennelly (IC Independent Consulting) is conducting this review of the program. His report is expected in September.



Genetically marked bay scallops cultured at NEFSC Milford Lab and planted off Cape Cod

Assessment Updates

Monkfish Operational Assessment review

The review group met all the terms of reference. The final report was posted in late July and is available here: <http://www.nefsc.noaa.gov/publications/crd/crd1609>

Transboundary Resource Assessment Committee meeting, Woods Hole MA

The committee reviewed status updates for cod and haddock in the eastern Georges Bank region, and for yellowtail flounder on Georges Bank. These assessments are conducted jointly with Canadian colleagues from the DFO lab in St. Andrews, NB. They are used to support management decisions for fishery stocks shared by the two countries in the Gulf of Maine-Georges Bank region. The final TRAC Status Reports for this year can be accessed here: <http://www.nefsc.noaa.gov/saw/trac/>

SARC 61 peer review of the surfclam stock assessment, Woods Hole MA

The SARC panel comprised three reviewers from the Center for Independent Experts and one MAFMC Science and Statistical Committee member who served as chair. The assessment presented concluded that the surfclam stock is not overfished and overfishing is not occurring. New biological reference points were recommended based on ratios rather than absolute estimates of biomass and fishing mortality.

SARC 62 witch flounder and black sea bass

The working groups are proceeding with meetings to consider data, modeling, and biological reference points, the peer review will occur Nov. 29-Dec. 2 in Woods Hole MA. Details are here: <http://www.nefsc.noaa.gov/saw/>



Surfclams in a joint study by NEFSC and the Woods Hole Oceanographic Institution on ocean acidification effects.

Vessels and Field Update

F/V *Darana* and F/V *Jersey Cape*, new TED tested

This experiment tested a new cable Turtle Excluder Device design and how its use affected target catch, predominantly summer flounder. It was conducted by NEFSC, the Southeast Fisheries Science Center, Coonamessett Farm Foundation, and fishing industry members. A report on the results is expected this fall.

F/V *Karen Elizabeth*, gear efficiency study

NEFSC staff and contractors were aboard with Capt. Chris Roebuck and completed this sweep efficiency study in witch flounder and thorny skate habitat. The study used both a *Bigelow*-style rock hopper sweep and an industry-designed chain sweep. NEFSC staff and other co-authors will use the data collected to prepare a working paper for the upcoming witch flounder benchmark assessment (SARC 62).

F/V *Kathy Ann*, turtle tagging

The year's second cooperative sea turtle tagging cruise got underway in August. This cruise is focused on waters northeast of Long Island, perhaps including Georges Bank and shelf-break waters. The project is a partnership with Coonamessett Farm Foundation supported by the Sea Scallop Research Set-Aside program and AMAPPS.

F/V *E.S.S. Pursuit*, surfclam/ocean quahog survey

The 2016 survey is complete, including all pre-selected stations and additional sampling in strata of interest.



Gear efficiency study, F/V *Karen Elizabeth*. Photo credit: Calvin Alexander

PUBLICATIONS

Cimino, MA, HJ Lynch, VS Saba, and MJ Oliver.

Projected asymmetric response of Adélie penguins to Antarctic climate change.

Scientific Reports 6: 28785,

DOI:10.1038/srep28785.

Hatch LT, CM Wahle, J Gedamke, J Harrison, B

Laws, SE Moore, JH Stadler, SM Van Parijs.

2016. Can you hear me here? Managing acoustic habitat in US waters. *Endangered Species Research* 30: 171–186.

Jon D, DePiper G, Hoagland P. 2016. Applying

Portfolio Management to Implement

Ecosystem-Based Fishery Management

(EBFM). *North American Journal of Fisheries Management* 36(3):652-669.

KL Smalling, AD Deshpande, VS Blazer, BW

Dockum, D Timmons, BL Sharack, RJ Baker, J

Samson, TJ Reilly. 2016. Young of the year

bluefish (*Pomatomus saltatrix*) as a bioindicator of estuarine health: Establishing a new baseline for persistent organic pollutants after Hurricane Sandy for selected estuaries in New Jersey and New York.

Marine Pollution Bulletin 107(2):422-431.

doi:10.1016/j.marpolbul.2016.03.019

Nickitas G, L Yin, Y Jiang, Y Wang, P Howell, V

Saba, J Schute, PH Orton, B Wen. An open-

access, multi-decadal, three-dimensional,

hydrodynamic hindcast dataset for the Long

Island Sound and New York / New Jersey

Harbor Estuaries. *Journal of Marine Science and Engineering* 4(48). doi:

10.3390/jmse4030048.

Nielsen J, RB Hedeholm, J Heinemeier, PG

Bushnell, JS. Christiansen, J Olsen, C Bronk

Ramsey, R Brill, M Simon, KF Steffensen, JF

Steffensen. Eye lens radiocarbon reveals

centuries of longevity in the Greenland shark

(*Somniosus microcephalus*). *Science* 353:702-704.

Patel SH, SJ Morreale, VS Saba, A

Panagopoulou, D Margaritoulis, JR Spotila.

2016. Climate impacts on sea turtle breeding phenology in Greece and associated foraging habits in the wide Mediterranean region.

PLoS ONE 11(6): e0157170.

doi:10.1371/journal.pone.0157170

Richards, A., J O'Reilly, and K Hyde. 2016. Use

of satellite data to identify critical periods for

early life survival of northern shrimp in the

Gulf of Maine. *Fisheries Oceanography*

25:306-319. DOI: 10.1111/fog.12153

R/V *Sharp*, Integrated Benthic/Atlantic Sea Scallop Survey

The survey was completed on June 24. Excellent progress was made on legs 2 and 3 and all planned work was completed on these legs.

R/V *Neil Armstrong*

NEFSC hydroacoustic survey specialists were aboard a short cruise, helping shake down acoustic and other capabilities of this new UNOLS vessel operated by Woods Hole Oceanographic Institution. Staff developed a method for mid-water trawling using a single tow wire system. Other efforts included using the new SIMRAD EK80 scientific sounder for fisheries acoustics.

FSV *Henry Bigelow*, AMAPPS and fall Bottom Trawl Survey

From late June to late August NEFSC and partnering scientists from the USF&W Service were aboard, conducting the 2016 Atlantic Marine Assessment Program for Protected Species (AMAPPS) abundance line-transect survey. This survey covers waters from Virginia to Massachusetts, from the shoreline to the Gulf Stream and beyond the US EEZ, and into Canadian waters east of Georges Bank. Eight observers were aboard to sight marine mammals, two more observers were sighting seabirds, two scientists were aboard to “listen” for animals using a towed hydrophone and sonobouys, and two scientists were dedicated to collecting physical and biological data using the EK60, bongo nets, neuston tows, a visual plankton recorder and another instrument that continuously photographed phytoplankton collected from the flow-through water system. Next up, the fall Ecosystem Bottom Trawl Survey, scheduled for September 6 through November 13.

R/V *Gloria Michelle*, shrimp, sea pens, and an open house

In June, NEFSC staff and University of Maine students performed 19 beam trawls at 150 to 180 m depth over muddy bottom in the Gulf of Maine to capture sea pens and any associated redfish larvae. The study is an attempt to better understand the importance of sea pens as essential fish habitat for larval redfish. The presence of small sea pens suggests a recent recruitment to the sea floor for this soft coral species, which also warrants further investigation. In July, the vessel conducted the Gulf of Maine Shrimp Survey. In August, the boat visited Nantucket for a public outreach event.

NOAA Ship *Pisces*, Ecosystem Monitoring cruise

The 2016 summer EcoMon cruise achieved almost complete sampling coverage of the Mid-Atlantic Bight, Southern New England, and Georges Bank.

Atlantic Marine Assessment Program for Protected Species aerial abundance survey

This is ongoing through the end of September. The NOAA Twin Otter is based out of Hyannis, MA, although other airports from NY to ME will probably also be used. Six scientists (divided in two teams) and two pilots fly track lines ranging from NJ to ME from the shore line to the EEZ in the Gulf of Maine and from the shore to the 200m depth contour in waters south of the Gulf of Maine.

Atlantic salmon sampling, Qaqortoq Greenland

NEFSC Protected Species Branch staff collected biological samples from this internal use-only commercial Atlantic salmon fishery. Our sampler was one of only six from around the North Atlantic participating in the annual monitoring program, which is agreed to by the Parties to the West Greenland Commission of NASCO.

PUBLICATIONS

Richards, A. and L Jacobson. 2016. A simple predation pressure index for modeling changes in natural mortality: Application to Gulf of Maine northern shrimp stock assessment. *Fisheries Research* 179: 224–236.

Richardson DE, KE Marancik, JR Guyon, ME Lutcavage, B Galuardi, CH Lam, HJ Walsh, S Wildes, DA Yates, JA Hare. Reply to Safina and Walter et al. Multiple lines of evidence for size-structured spawning migrations in western Atlantic bluefin tuna. Letter, *Proceedings of the National Academy of Sciences*.

Stevens, BG and V Guida. 2016. Depth and temperature distribution, morphometrics, and sex ratios of red deepsea crab (*Chaceon quinquedens*) at 4 sampling sites in the Mid-Atlantic Bight. *Fishery Bulletin* 114:343:359.

Cooperative Atlantic States Shark Pupping and Nursery sampling completed, Delaware Bay

Juvenile and mature sand tiger and sandbar sharks were tagged and released. Delaware Bay is a habitat area of particular concern for juvenile sandbar sharks.

Long Island Sound fish trapping and water sampling

NEFSC Milford Lab staff are studying the role of aquaculture sites as fish habitat. They are collecting samples at two aquaculture sites and a rocky reef in Long Island Sound. Weekly water sampling at the sites for use in eDNA analysis is also part of the project.

Monitoring Updates

2016-2016 Standardized reporting methodology (SBRM) sea-day schedule posted and short-term funding for groundfish at-sea monitoring announced

Fewer SBRM days are required this year. This, combined with carry-over in the SBRM monitoring contract resulted in full-funding for SBRM and a surplus that could be used to cover some at-sea monitoring costs for groundfish sector vessels this fishing year. This is the first year that sectors have been paying the cost for a monitor. Trips that were selected for monitoring beginning July 1, are now eligible for reimbursement of 85% of costs incurred for at-sea monitoring. This includes ASM sea-day costs as well as trip using electronic monitoring as a replacement for at-sea monitoring until the surplus funds are expended.

Herring and mackerel electronic monitoring (EM) contract awarded

An award was made to Saltwater Inc. to install EM systems on willing mid-water herring and mackerel vessel for a project to evaluate this technology as a monitoring tool, primarily for slippage events. “Slippage” refers to catch discarded before an onboard fishery observer can sample it. The science center and regional office are working together to solicit vessel participation and oversee the technical aspects of the contract. The complete EM system includes cameras, sensors, GPS, and a control box.

Supplemental Northeast Fishery Observer contract awarded

The observer provider AIS has been retained to assist with completing Northeast observer sea days. There will be additional training sessions in September increase the number of certified observers. This contract is expected to increase the number of sea days accomplished by Northeast fishery observers.



Preliminary Agenda

The agenda is subject to change. Bulleted items represent the anticipated major issues to be discussed or acted upon at the meeting. The final agenda will include additional items and may revise the bulleted items provided below. The agenda reflects the current estimate of time required for scheduled Board meetings. The Commission may adjust this agenda in accordance with the actual duration of Board meetings. Interested parties should anticipate Boards starting earlier or later than indicated herein.

Sunday, October 23, 2016

6:30 – 8:30 p.m. Welcome Reception

Monday October 24, 2016

8:30 a.m. – Noon 75th Annual Meeting Plenary Session – Honoring our Past, Celebrating the Present and Envisioning the Future

1:00 – 5:00 p.m. Law Enforcement Committee
(A portion of this meeting is a closed session for Committee members only)

- Discussion of Emerging ISFMP Issues
- Review and Discussion of 2017 Action Plan Items
- Review of Tautog Tagging Studies and Enforcement Recommendations
- Review and Discussion of Jonah Crab Proposed Claw Harvest Regulations
- Review and Discussion of Ongoing Enforcement Activities (Closed Session)

1:00 – 1:30 p.m. Spiny Dogfish Management Board

- Review and Set Spiny Dogfish Fishery Specifications for 2017/2018
- Consider 2016 Fishery Management Plan Review and State Compliance

1:45 – 2:45 p.m.

Coastal Sharks Management Board

- Review and Set 2017 Coastal Sharks Fishery Specifications
- Review Proposed Rule for Blacknose Possession Limits for Federally-permitted Vessels
- Review Proposed Rule for Highly Migratory Species Amendment 5b (Dusky Sharks) and 2016 Stock Assessment Results

3:00 – 5:00 p.m.

Atlantic Striped Bass Management Board

- Review 2016 Stock Assessment Update for Atlantic Striped Bass
- Review Technical Committee Report on the Performance of Addendum IV in 2015
- Consider Approval of the Advisory Panel Request to Submit Comment to the Mid-Atlantic Fishery Management Council on its Draft Squid Capacity Amendment

Tuesday October 25, 2016

8:00 – 10:00 a.m.

Executive Committee

(A portion of this meeting may be a closed session for Committee members and Commissioners only)

- Consider Approval of FY16 Audit
- Review the Conservation Equivalency Guidance Document
- Review the ASMFC Standard Meeting Practices Document

8:00 a.m. – Noon

Law Enforcement Committee

(A portion of this meeting may be a closed session for Committee members only)

- Federal/State Agency Reports
- Review of Other ISFMP Issues as Requested
- Lobster Enforcement Subcommittee Report and Discussion
- Interstate Violator Compacts and Application to Marine Fisheries
- Review and Discussion of Law Enforcement Committee Comments and Recommendations to Management Boards
- Review of Warrant and Search Provisions among LEC Jurisdictions
- Review of Out-of-State Shipment and Sale Tracking and Record-Keeping for Enforcement Needs

10:15 a.m. – 12:15 p.m.

South Atlantic State/Federal Fisheries Management Board

- Review Red Drum Working Group Report
- Review and Consider Approval of Cobia Public Information Document
- Update on Stock Assessment Progress for Spot and Atlantic Croaker
- Consider Black Drum and Spot Fishery Management Plan Reviews and State Compliance

1:15 – 3:15 p.m.

Tautog Management Board

- Review 2016 Stock Assessment Update Report
- Consider Plan Development Team Tasks for Draft Amendment 1
- Review the Tagging Tank Trial Report
- Consider Law Enforcement Subcommittee Recommendations Regarding the Feasibility of a Commercial Harvest Tagging Program
- Consider 2016 Fishery Management Plan Review and State Compliance

3:30 – 4:30 p.m.

Summer Flounder, Scup, and Black Sea Bass Management Board

- Review Marine Recreational Information Program Estimates for Wave 4 (if available)
- Consider Continuation of Addendum XXVII for Black Sea Bass
- Discuss Management of the 2017 Summer Flounder Recreational Fishery
- Update on Stock Assessment Progress for Black Sea Bass

4:45 – 5:30 p.m.

Shad and River Herring Management Board

- Review Massachusetts Sustainable Fishery Plan for River Herring
- Review Mid-Atlantic Fishery Management Council Decision on Potential Management of Shad and River Herring
- Consider 2016 Fishery Management Plan Review and State Compliance

6:30 – 9:00 p.m.

Annual Dinner

Wednesday October 26, 2016

8:00 – 10:00 a.m.

Horseshoe Crab Management Board

- Consider Approval of Draft Addendum VIII for Public Comment
- Consider Approval of 2017 Harvest Specifications for the Delaware Bay Region
- Consider Technical Committee Draft Proposal for Conducting Additional Bait Trials
- Update Board on Stock Assessment Planning for 2018 Assessment (if needed)

10:15 – 11:15 a.m.

Atlantic Coastal Cooperative Statistics Program (ACCSP) Coordinating Council

- Program Update
- Consider Approval of Addendum to Memorandum of Understanding to Reflect Governance Change

11:30 a.m. – 12:30 p.m. Business Session

- Consider Approval of 2017 Action Plan
- Election of Officers

12:30 – 1:45 p.m. Captain David H. Hart Award Luncheon

2:00 – 5:00 p.m. Atlantic Menhaden Management Board

- Review and Set 2017 Fishery Specifications
- Consider Approval of the Draft Public Information Document to Amendment 3 for Public Comment
- Review Technical Committee Report on “The Fate of an Atlantic Menhaden Year Class”
- Biological Ecological Reference Points Working Group Progress Report
- Consider Advisory Panel Nominations

Thursday October 27, 2016

8:00 – 10:30 a.m. Interstate Fisheries Management Program (ISFMP) Policy Board

- Finalize Revisions to the Conservation Equivalency Guidance Document
- Finalize ASMFC Standard Meeting Practices Document
- Law Enforcement and Habitat Committee Reports
- Update on the Risk and Uncertainty Working Group Progress
- Update on the Climate Change Working Group
- Progress Update on Benchmark Stock Assessments for American Eel and Atlantic Sturgeon
- Atlantic Coastal Fish Habitat Partnership Report

10:45 a.m. – 12:15 p.m. Atlantic Herring Section

- Review and Set 2017 Specifications
- Review and Discuss White Paper on 2016 Fishery Performance and Alternative Management Tools to Consider
- Consider 2016 Fishery Management Plan Review and State Compliance

12:30 – 4:00 p.m. American Lobster Management Board (*Lunch to be provided*)

- Consider Approval of American Lobster Draft Addendum XXV for Public Comment
- Consider Approval of Jonah Crab Draft Addendum II for Public Comment
- Review Reporting Working Group White Paper on Reporting in the Lobster Fishery
- Consider 2016 Fishery Management Plan Review and State Compliance for American Lobster
- Update on New England Fishery Management Council Deep-Sea Coral Amendment and Marine Monument

New England Fishery Management Council Meeting Agenda
Tuesday - Thursday, September 20-22, 2016
DoubleTree by Hilton, 50 Ferncroft Road, Danvers, MA 01923
tel: (978) 777-2500 | fax: (978) 750-7911 | [DoubleTree by Hilton website](http://www.doubletree.com)

Sending comments? Written comments must be received at the NEFMC office no later than 12 noon, Thursday, Sept. 15, 2016 to be considered at this meeting. Please address them to Council Chairman Terry Stockwell or Executive Director Tom Nies at: NEFMC, 50 Water St., Mill 2, Newburyport, MA 01950. Email submissions should be sent to comments@nefmc.org.

Tuesday, September 20, 2016

- 9:00 a.m. Introductions and Announcements** (Chairman Terry Stockwell)
- 9:05 Swearing-in of New and Reappointed Council Members** (John Bullard, Regional Administrator, GARFO)
- 9:15 Election of 2016-2017 Officers**
- 10:15 Reports on Recent Activities**
Council Chairman and Executive Director, Greater Atlantic Regional Fisheries Office (GARFO) Regional Administrator, NOAA General Counsel, Northeast Fisheries Science Center (NEFSC), Mid-Atlantic Council, Atlantic States Marine Fisheries Commission, U.S. Coast Guard, and NOAA Enforcement
- 12:00 Presentation on Draft Amendment 10 to the 2006 Consolidated Highly Migratory Species (HMS) Fishery Management Plan to Address Habitat Revisions** (NMFS HMS staff)
- 12:30 p.m. Lunch Break**
- 2:00 Open Period for Public Comments**
Opportunity for the public to provide brief comments on issues relevant to Council business but not listed on this agenda (please limit remarks to 3-5 minutes)
- 2:15 Small Mesh Multispecies Committee Report** (Mark Gibson)
Plan Development Team (PDT) annual monitoring report covering 2015 fishery performance, including estimated catches compared to annual catch limits (ACLs); potential initiation of a framework (FW) adjustment to modify accountability measures (AMs)
- 3:00 Atlantic Herring Committee Report** (Peter Kendall)
Update on Amendment 8, an action considering alternative acceptable biological catch (ABC) control rules and measures to address localized depletion; and an update on FW 5 to potentially modify haddock bycatch AMs in the Atlantic herring midwater trawl fishery
- 4:45 Electronic Monitoring (EM) Pilot Program Progress Report** (GARFO staff)
Status report on GARFO's pilot project using electronic monitors on Atlantic herring and mackerel midwater trawl vessels to test EM utility for future programs

Wednesday, September 21, 2016

- 8:30 a.m. Transboundary Resource Assessment Committee (TRAC)** (Liz Brooks, NEFSC)
Summary of 2016 assessment results for Eastern Georges Bank (GB) cod, Eastern GB haddock, and GB yellowtail flounder
- 9:15 Scientific and Statistical Committee (SSC)** (Dr. Jake Kritzer)
ABC recommendations for GB yellowtail flounder, monkfish, and deep-sea red crab
- 10:15 Transboundary Management Guidance Committee (TMGC)** (Terry Stockwell)
Review and possibly approve TMGC recommendations for 2017 total allowable catches (TACs) for shared U.S./Canada groundfish stocks on Georges Bank
- 11:15 Groundfish Committee Report** (Terry Alexander)
Approve range of alternatives for FW 56, including: (1) 2017 U.S./Canada TACs, (2) 2017-2019 witch flounder specifications, and (3) commercial/recreational management measures (northern windowpane flounder sub-ACL for scallop fishery; GB haddock sub-ACL for Atlantic herring midwater trawl fishery; potential Atlantic halibut action; recreational management process); receive Groundfish Monitoring White Paper report

- 12:30 p.m. Lunch Break**
- 1:45 Groundfish Committee Report Continued**
- 3:30 Monkfish Committee Report** (Vincent Balzano)
Update on fishing year (FY) 2017-2019 specifications; potential FW initiation if required
- 4:30 Atlantic Deep-Sea Red Crab Report** (Jessica Joyce)
Final action on fishing year 2017-2019 specifications

Thursday, September 22, 2016

- 8:30 a.m. 2017 Council Priorities – Initial Discussion** (Executive Director Tom Nies)
- 9:30 Habitat Committee Report** (Dr. John Quinn)
Update on the Omnibus Deep-Sea Coral Amendment with potential approval of minor adjustments to range of alternatives; update on Clam Dredge Framework; recommendations for further work
- 11:00 Scallop Committee Report** (Mary Beth Tooley)
Update on FW 28, including: FY 2017 specifications and default measures for FY 2018; and measures to (1) potentially restrict possession of shell stock inshore of the days-at-sea (DAS) demarcation line north of 42° 20' N, (2) modify the process for setting ACLs, and (3) modify the Closed Area I Access Area boundary consistent with potential changes to habitat and groundfish mortality closures. Specifications include ABCs, ACLs, DAS, access-area allocations, Northern Gulf of Maine TAC, and observer/research set-asides
- 12:30 p.m. Lunch Break**
- 1:45 Scallop Committee Report Continued**
- 2:15 Ecosystem-Based Fishery Management (EBFM)** (John Pappalardo)
Receive draft PDT report on a Georges Bank operating model to support the development of an example Fishery Ecosystem Plan and Management Strategy Evaluation; provide further guidance to the PDT and EBFM Committee; develop comments for NMFS on EBFM road map
- 4:15 Other business**

Times listed next to the agenda items are estimates and are subject to change.

The meeting is physically accessible to people with disabilities. Council member financial disclosure forms are available for examination at the meeting.

Although other non-emergency issues not contained on this agenda may come before this Council for discussion, those issues may not be the subject of formal action during this meeting. Council action will be restricted to those issues specifically listed in this notice and any issues arising after publication of this notice that require emergency action under section 305 (c) of the Magnuson-Stevens Act, provided the public has been notified of the Council's intent to take final action to address the emergency.

Documents pertaining to Council actions are available for review prior to a final vote by the Council.

Please check the Council's website, www.nefmc.org, or call (978) 465-0492 for copies.



SOUTH ATLANTIC FISHERY MANAGEMENT COUNCIL

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Dr. Michelle Duval, Chair | Charlie Phillips, Vice Chair
 Gregg T. Waugh, Executive Director

SEPTEMBER 12-16, 2016 COUNCIL MEETING REPORT MYRTLE BEACH, SOUTH CAROLINA

The following summary highlights issues discussed and actions taken at the South Atlantic Fishery Management Council's September 2016 meeting in Myrtle Beach, South Carolina.

Briefing materials, presentations, and public comments are available on the Council's website at: <http://blog.safmc.net/meeting-documents/safmc-sept-2016-council-meeting-briefing-book/>

Read further details and see images and other links at the June 2016 Council Meeting Round-up Story Map: <http://arcg.is/2cs90dT>

The Meeting News Release is available at: http://safmc.net/SAFMCMR_091616_Sept2016CouncilMeeting

Major items addressed:

Issue:	Action Taken:	Schedule:
Hogfish	Final approval for review by Secretary of Commerce	September 23, 2016 – Council sends Amendment 37 (Hogfish) for formal review
Cobia	Final approval for review by Secretary of Commerce	October 14, 2016 – Council sends Framework Amendment 4 (Cobia) for formal review
King & Spanish Mackerel	Final approval for review by Secretary of Commerce	Mid-November 2016 – Gulf Council sends Framework Amendment 5 (Modify Permit Restrictions) for formal review
Red Snapper	Direction to prepare a scoping document	December 2016 – Council reviews scoping document and approves for scoping
Dolphin/Yellowtail Snapper	Provided guidance to revise the options	December 2016 – Council reviews revised document and approves for public hearings
Mutton Snapper	Provided guidance to revise the actions/alternatives based on public hearing input	December 2016 – Council reviews final Amendment 41 (Mutton Snapper) and approves for formal review
For-Hire Reporting Amendment	Provided guidance for preparing amendment for final approval	December 2016 – Council reviews final amendment and approves for formal review

Hogfish – Approved for Formal Review

The Council:

- Specified the total ACL for the GA-NC stock in pounds whole weight; specify the ABC and total ACL for the FLK/EFL stock of hogfish in numbers of fish.
- Management measures for the GA-NC stock:
 - Increase the recreational and commercial minimum size limit from 12 to 17 inches fork length
 - Establish a recreational bag limit of 2 hogfish per person per day
 - Establish a commercial trip limit of 500 pounds whole weight
- Management measures for the FLK/EFL stock:
 - Increase the recreational and commercial minimum size limit from 12 to 16 inches fork length
 - Reduce the recreational bag limit from 5 on the Florida east coast to 1 hogfish per person per day for the FLK/EFL stock
 - Establish a recreational fishing season of May-October
 - Establish a commercial trip limit of 25 pounds whole weight
- Accountability Measure for both hogfish stocks: If commercial landings reach or are projected to reach the commercial annual catch limit (ACL), NMFS would close the commercial sector for the remainder of the fishing year. On and after the effective date of such a notification, all sale or purchase is prohibited and harvest or possession of hogfish in or from the EEZ would be limited to the recreational bag and possession limit. This bag and possession limit applies in the South Atlantic on board a vessel for which a valid Federal commercial or charter vessel/headboat permit for South Atlantic snapper grouper has been issued, without regard to where such species were harvested, i.e., in state or Federal waters. Additionally, if the commercial ACL is exceeded, NMFS would reduce the commercial ACL in the following fishing year by the amount of the commercial overage, only if hogfish is overfished and the total ACL (commercial ACL and recreational ACL) of the respective stock is exceeded.
- Approved the amendment for formal review by the Secretary of Commerce.

Cobia – Approved for Formal Review

The Council met as a “Committee of the Whole” to allow the 2 Mid-Atlantic Council representatives to vote at the Council level to address concerns about the amount of input fishermen in Virginia have in the decision process. The Mid-Atlantic Council requested the South Atlantic Council use this approach. The following preferred management alternatives were selected:

- Establish a recreational bag limit for Atlantic cobia of 1 fish per person per day
- Establish a recreational vessel limit for Atlantic cobia of 6 fish per vessel per day (increased from a proposed 3 fish per vessel per day based on public input)
- Increase the minimum size limit for Atlantic cobia for recreational and commercial harvest of Atlantic cobia from 33 inches FL to 36 inches FL
- Accountability Measure (AM#1): If recreational landings, as estimated by the Science and Research Director, exceed the recreational ACL, recreational landings will be monitored for a persistence in increased landings. If necessary, the Regional Administrator shall publish a notice to reduce the length of the following fishing season to ensure that recreational landings meet the recreational annual catch target (ACT) but

do not exceed the recreational ACL, based on the recreational landings in the previous year. The length of the recreational season will not be reduced if the Regional Administrator determines, using the best scientific information available, that a reduction is unnecessary.

- The Regional Administrator will reduce the length of the following fishing year only if the stock ACL (commercial ACL and recreational ACL) is exceeded.
- Accountability Measure (AM#2): If recreational landings, as estimated by the Science and Research Director, exceed the recreational ACL, recreational landings will be monitored for a persistence in increased landings. If necessary, the Regional Administrator shall publish a notice to reduce the recreational vessel limit for the following fishing year to ensure that recreational landings meet the recreational ACT but do not exceed the recreational ACL, based on the recreational landings in the previous year. The recreational vessel limit will not be reduced if the Regional Administrator determines, using the best scientific information available, that a reduction is unnecessary.
 - The Regional Administrator will reduce the recreational vessel limit for the following fishing year only if the stock ACL (commercial ACL and recreational ACL) is exceeded.
 - The AM would be a reduced vessel limit to no less than 2/vessel, and only if stock ACL is exceeded. Reduced vessel limit would be applied before a reduced season length (AM#1).
- Establish a commercial trip limit for Atlantic cobia of 2 fish per person per day, with no more than 6 fish per vessel per day, whichever is more restrictive.

The fishing year cannot be changed through the framework so the Council directed staff to work on a separate amendment to change fishing year, schedule a webinar public hearing(s) prior to December, and bring a draft document for final approval at the December 5-9, 2016 meeting in Atlantic Beach, NC:

- Modify the fishing year for Atlantic cobia from the calendar year to May 1 through April 30.

Mackerel Framework Amendment 5 (Revise Permit Restrictions) – Approved for Formal Review

The purpose of this amendment is to eliminate permit restrictions unique to commercial king and Spanish mackerel permit holders in the Gulf, South Atlantic, and Mid-Atlantic regions.

Red Snapper – Direction to Revise the Scoping Document

SEFSC staff (Dr. K. Sigfried) delivered a presentation addressing reasons why SEDAR 24 and SEDAR 41 estimated such different productivity levels for red snapper. Selectivity changes and shifts in age composition (MRIP and headboat datasets) were cited as contributing factors.

Council staff then presented an overview of options for possibly allowing harvest of red snapper while continuing to rebuild the stock. The Committee discussed options and provided guidance as follows:

- Action 2 (MSST) - Develop different Static SPR values to get over 50% SSBmsy. Add 85% of SSBmsy?
- Action 3 (ACLs) - Specify ABC/ACL in numbers of fish; include a table of red snapper landings by county

- Action 5 (optimum yield) - Remove MSA definition (Alternative 4); include an alternative for defining optimum yield: “OY is the long-term average catch, which is not designed to exceed the ACL, and will fall between the ACL and ACT.”
- Action 6 (closed area(s) to reduce bycatch) - add alternative(s) to investigate depth and discard mortality. Look at 10-foot intervals from 60 ft. to 150 ft.; look at area closure alternatives from Amendment 17A with seasonal (after May 1) and depth (98 ft. to 240 ft) components; examine area closure inshore of 98 ft. with a seasonal component; examine spatial data for red snapper abundance and overlay discards and apply seasonal (temporal) component.
- Action 7 (commercial measures) - add options for no harvest and for keeping the dive fishery closed; no commercial ACT; consider limiting harvest to non-spawning months? Trip limits both in pounds and numbers of fish; measures would specify harvest as *incidental*.
- Action 8 (recreational measures) - add alternative for season and bag limit for private recreational and for-hire combined; add alternative for headboat vessel limits; have similar options those considered for the recreational sector, add option for 75 ft to Alternative 5 and other depths listed in option 6.
- Action 9 (recreational stamp) - consider referring to “permit” instead of “stamp”; include consideration of red snapper bycatch notification system to report incidental catch of red snapper or hail in/out system; bring back information on cost of possible harvest tag program (provided during discussions on Amendment 22); need to be clear about purpose of a stamp/recreational permit program (i.e., data collection or effort control?)
- Action 10 (reporting requirements for recreational sector) – consider referring to Gulf States Commission for e-logbook enforcement. Revise Alternative 5.
- Action 11 (AMs and adaptive management) – remove Alternative 7 (develop adaptive management based fishery independent monitoring using a rumble strip approach).
- Action 12 (Best Fishing Practices) – modify Alternative 2 to require venting tool and/or descending device to be on board vessel when snapper grouper species are onboard; consider descending device requirement for certain depth(s); add options for commercial and recreational sectors.

Joint Dolphin/Wahoo and Snapper Grouper Amendment – Provided guidance based on input from scoping meeting and written comments

The Council provided the following guidance:

- Direct staff to develop an action in the allocation amendment that will look at the long term average catch in the recreational sector for dolphin so that Optimum Yield will be the long-term average catch, which is not designed to exceed the Annual Catch Limit (ACL), and will fall between the ACL and the Annual Catch Target (ACT).
- Removed consideration of allocating the commercial ACL based on gear type.
- Move Alternatives 3 & 6 in Action 2 (Revise sector allocations for dolphin) to the considered but rejected appendix.
- Replace Alternative 7 in Action 2 with new wording.
- Remove Alternatives 6 & 7 in Action 3 (Revise sector allocations for yellowtail snapper) and add a new alternative.

- Clarify throughout the document that all alternatives in all actions will allow ACL transfers to either sector.
- Direct staff to develop an action that would address authorized gear aboard a vessel on which dolphin and wahoo are onboard. This surfaced to allow offshore American lobster vessels to land dolphin/wahoo caught with hook-and-line or rods/reels while fishing lobster traps.

Mutton Snapper – Revisions based on input from public hearings and actions by the FWC:

The Council specified the following as preferred management measures:

- Revised catch level specifications including annual catch limits in numbers of fish
- Designate April-June as the spawning months
- Retain mutton snapper in the 10 snapper aggregate bag limit and set the mutton snapper bag limit as 5 per person per day year-round (increased from 3 per person preferred taken to public hearings)
- Specify a commercial trip limit for mutton snapper during the “spawning months” in the South Atlantic of 5 per person per day (increased from 3 per person preferred taken to public hearings)
- Establish a commercial trip limit for mutton snapper during the “regular season” (i.e., non-spawning months) in the South Atlantic of 500 pounds (increased from 300 pounds preferred taken to public hearings)
- Increase the minimum size limit for mutton snapper in the South Atlantic region from 16 to 18 inches TL

For-Hire Reporting Amendment – Guidance for Final Approval in December

- The Council was asked to review the revised amendment document and provide any comments to staff.
- There was discussion on the importance of ensuring compliance with reporting requirements and the role of law enforcement and administrative provisions in ensuring compliance.
- Review the amendment for final approval at the December 5-9, 2016 meeting in Atlantic Beach, NC.

For-Hire Control Date & Limited Entry – Guidance for scoping document

The Council established June 15, 2016 as the control date for the three open access charter vessel/headboat permits (Snapper Grouper, Mackerel/Cobia, and Dolphin/Wahoo); the notice will publish in the Federal Register in the near future and the public will be provided an opportunity to comment. The Council discussed components of a limited entry program, discussed information they want provided at the December meeting, and directed staff to develop a scoping document for a limited entry amendment for these three for-hire fisheries. The scoping document will be reviewed at the December 5-9, 2016 meeting in Atlantic Beach, NC, and the Council will determine whether to approve the document for scoping.

Information & Education Committee

The Council received a summary of the recent Council Communications survey that was conducted in July 2016. The summary included an overview of:

- How stakeholders are using existing outreach and communication products and programs of the Council; stakeholder preferences for receiving communication from the Council;
- How stakeholders are using existing outreach and communication products/programs from other agencies/organizations;
- Feedback on the current use and possible improvements to the Council's mobile app, *SA Fishing Regulations*;
- Feedback on potential new outreach strategies from the Council; and
- Other recommendations for improving Council communications.

The Council provided guidance on each of these items; see the Final Committee report for details.

Red Grouper SAFE Report

Dr. Mike Errigo, Council Staff, presented an overview of the information in the Stock Assessment and Fishery Evaluation (SAFE) report. The Committee provided guidance to include options to explore spawning season closure modifications in both Visioning Amendments (commercial and recreational) for discussion at December 2016 meeting.

Stock Assessment Schedule & Appointments

Regarding SEDAR 50 (Blueline Tilefish) the Council was informed that the recent age workshop concluded that reliable ages could not be assigned to structures at this time. The assessment will proceed as scheduled, with a January 2017 Data Workshop and SSC review in October 2017. Results will be presented to the Council in December 2017.

Dr. Erik Williams provided a presentation on the research track proposal via webinar. The Committee supports moving ahead with the research track pilot planned for the 2018 scamp assessment. Efforts to increase assessment productivity are supported and encouraged, as long as opportunities for adequate public involvement and data evaluation are retained. Clarification was provided that the research track process applies to assessments conducted through the Center, and not to those conducted by other Cooperators (such as the Commissions and state agencies) and reviewed by SEDAR.

The Council had previously requested a cobia benchmark assessment in 2018, and to include cobia in the SEDAR stock ID workshop in 2017. The Council supported the assessment priorities approved at the prior meeting (shown below), and requested conducting the next assessment of Tilefish sooner if an opening arises earlier in 2019. The Council also requested delaying the Cobia assessment until 2019 data can be included, and prioritize Gag for 2018. The Council's recommendations will be considered by the SEDAR Steering Committee when they meet September 20-21, 2016 in Charleston, SC. The Council previously requested the Scientific and Statistical Committee provide recommendations at their October 18-20, 2016 meeting for stocks to consider for data limited assessment methods.

Year	Quarter	1	2	3	4	FL FWCC	Extra
2016	1	RSGT	RSGT				SA tile
	2	RSGT				1	SA tile
	3	BL	BL		RG	GG	
	4	BL	BL		RG	GG	
2017	1	BL	BL	<i>BSB-S</i>	RG		
	2	BL	BL	<i>BSB-S</i>			
	3	BL	BL		VS	BLG	
	4			MRIP	VS	BLG	
2018	1	S/RT	<i>COBIA</i>	MRIP	<i>RP-S</i>	BLG	KM
	2	S/RT	<i>COBIA</i>	<i>GAJ-S</i>	<i>RP-S</i>	BLG	KM
	3	S/RT	<i>COBIA</i>	<i>GAJ-S</i>		YTS	KM
	4	S/RT	<i>COBIA</i>			YTS	KM
2019	1	S/RT	<i>COBIA</i>			YTS	KM
	2	S/RT		<i>GAG-S</i>	<i>SpMack-S</i>	YTS	
	3			<i>GAG-S</i>	<i>SpMack-S</i>		
	4			<i>SNG-S</i>	<i>Tile-S</i>	<i>Hog, N-U</i>	
2020	1	<i>GT-B</i>	<i>WhG-B-</i>	<i>SNG-S</i>	<i>Tile-S</i>	<i>MS-S</i>	
	2	<i>GT-B</i>	<i>WhG-B</i>			<i>MS-S</i>	
	3	<i>GT-B</i>	<i>WhG-B</i>	<i>RS-U</i>	<i>RG-U</i>		
	4	<i>GT-B</i>	<i>WhG-B</i>	<i>RS-U</i>	<i>RG-U</i>		

Code	Species	Code	Species	Code	Species
gT	golden Tilefish	BL	Blueline Tilefish	RS	Red Snapper
S/RT	Scamp, Research Track Pilot	RG	Red Grouper	GAG	Gag Grouper
DS	HMS Dusky Shark	VS	Vermilion Snapper	SBS	Sandbar shark
GBt	Gulf Blacktip Shark	GAJ	Greater Amberjack	YTS	Yellowtail Snapper
RSGT	Red Snapper, Gray Triggerfish	ABt	Atlantic Blacktip Shark	GDL	Gulf Data Limited
BLG	Black Grouper (review only)	ABP	Best Practices, Assessments	GS	Gray Snapper, start time TBD
MRIP	Revision Updates for MRIP Data	GG	Goliath Grouper (review only)	SID	Stock ID and Meristics
CDL	Caribbean Data Limited	KM	King Mackerel		

Vision Blueprint Recreational Amendment - Fisheries Seasonality and Retention

The Committee/Council reviewed an options paper containing possible actions to modify recreational bag limits and the annual 4-month closure for shallow water groupers. The Committee/Council provided the guidance below and requested that a revised options paper be prepared for the December 2016 meeting to approve for scoping in early 2017.

- Include an alternative for an aggregate bag limit that would include the species in the existing 10-snapper aggregate and the 20-fish aggregate. The alternative would maintain current restrictions for individual species within that aggregate but would address the Council’s intent to simplify regulations.
- Include an alternative that would eliminate the 10-snapper aggregate and allow specification of individual bag limits for those species.

- Include an alternative for a deepwater species' aggregate that would impose the seasonal restrictions that are currently in place for snowy grouper and blueline tilefish (recreational harvest is restricted to May-August).
- Bring in alternatives originally explored in the draft South Florida Amendment.
- Remove from consideration the alternative to eliminate the 4-month shallow water grouper closure.
- Obtain input from Snapper Grouper Advisory Panel on how to address equitable access to shallow water grouper resource. For instance, gag are not available to recreational fishermen in south Florida because they migrate northward during the closure months.
- Include explanation of actions being considered in Amendment 43 (red snapper) to explain the overlap with items from the Vision Blueprint.
- Include options for red grouper.

Highly Migratory Species Committee

- Received a presentation on a proposed rule to modify the commercial retention limit for blacknose and non-blacknose small coastal sharks in the Atlantic Region.
The proposed rule will implement a commercial retention limit for blacknose sharks that is intended to allow for the better utilization of available non-blacknose small coastal shark quota due to quota linkages between the two groups while also rebuilding and preventing overfishing of blacknose sharks.
- Received a presentation on Draft Amendment 10 to the 2006 Consolidated Atlantic Highly Migratory Species Fishery Management Plan: Essential Fish Habitat.
The amendment will potentially modify and/or create new Essential Fish Habitat for bluefin tuna and Habitat Areas of Particular Concern for sandbar sharks and lemon sharks in the South Atlantic Region.
- The Council approved sending a letter of support to HMS for the blacknose shark retention limits outlined in the amendment.

Other Items:

- Parliamentary Practice Workshop – conducted by Colette Collier Trohan, PRP, CPP-T from A Great Meeting, Inc. The Council learned about communication styles, motions, and how to conduct meetings.
- The Council received a report from the Habitat Ecosystem AP, a summary of FEP II South Atlantic Food Web & Connectivity and Climate Variability & Fisheries Sections, and an overview of Habitat & Ecosystem Tools and Model Development.
- The Council approved sending a letters to NMFS:
 - Outlining the cumulative impact of species-specific estimates of unusually large/small MRIP landings/discards and the impacts on the Council process; bring back in December for review
 - Requesting that NMFS make the necessary request within NOAA to have Council managed areas (Deepwater MPAS, Coral HAPCs) included on NOAA nautical charts.

- Protected Resources
 - The snapper grouper biological opinion is in review and should be finalized in the next two to three weeks.
 - Nassau grouper were listed as a threatened species under the Endangered Species Act due to decline in the population abundance, targeting the species at spawning aggregations (not in US), and limited enforcement in some foreign countries. Next steps include determining whether and where critical habitat should be designated and if a 4(d) rule is needed.
 - The stock assessment for Atlantic sturgeon is on schedule to be completed in 2017.
 - Red knot critical habitat is currently scheduled to be completed in September 2017 although the schedule may change due to the filing of two notices of intent, if potential litigation is forthcoming.
- Scientific & Statistical Committee – the Council voted to re-advertise the SSC vacancy once a conflict of interest policy is developed, and reconsider the appointment at the June meeting.
- Advisory Panel Changes
 - Made appointments to various Advisory Panels
 - Created a Cobia Sub-Panel on the Mackerel Cobia Advisory Panel. Given the high level of interest in cobia at this time, the AP Selection Committee wanted to involve more fishermen than we had open spots on the AP. They have proposed to establish a cobia sub-panel to allow more involvement of cobia fishermen while preserving the current king and Spanish mackerel expertise. There was some concern that this sub-panel was not equal in function to the Advisory Panel. The Committee discussed this and it was noted that the members proposed for the Cobia Sub-Panel were equal to members of the Mackerel Cobia AP. In fact, the Cobia Sub-Panel will be very active over the next two years as results from the stock ID workshop and pending cobia assessment become available. The Cobia Sub-Panel will meet via webinar and can also meet in person as needed. There may be times that the Council has the Mackerel Cobia AP and the Cobia Sub-Panel meet together; should this occur, the Cobia Sub-Panel members will participate and vote as full AP members.
- Public Comment Guidelines – the Council approved the method used at the June and September meetings for public comments. Having the public provide comments using the Council’s Comment Form makes them available to Council members and the public.
- Regional Operations Agreement – the Council reviewed and approved the agreement that outlines the roles and responsibilities of the Council/NMFS/NOAA GC in preparing fishery management plans/amendments.



2016 Planned Council Meeting Topics

February 9-11, 2016 — Doubletree by Hilton New Bern Riverfront, New Bern, NC

- Omnibus Industry Funded Monitoring Amendment – *Select preferred Omnibus alternatives for public hearings*
- Draft EAFM Interactions White Paper – *Review*
- Collaborative Research Program – *Review committee progress*
- Scup GRA Framework – *Meeting 2*
- Unmanaged Forage Fish Amendment – *Discuss FMAT, AP, and EOP Committee recommendations*
- Data Modernization Amendment – *GARFO update*

April 12-14, 2016 — Montauk Yacht Club, Montauk, NY

- 2017 Golden Tilefish Specifications – *Review*
- Golden Tilefish Framework – *Meeting 2*
- Unmanaged Forage Amendment – *Approve Public Hearing Document*
- Blueline Tilefish Amendment – *Final action*
- 2013 River Herring/Shad White Paper – *Review Committee recommendations for TORs for October action*
- Omnibus Industry Funded Monitoring Amendment – *Select preferred mackerel alternatives for public hearings*
- Draft EAFM Guidance Document – *Review*
- Spiny Dogfish Trip Limits

June 14-16, 2016 — Courtyard Marriott Newark / University of Delaware Clayton Hall, Newark, DE

- 2017 Squid and Butterfish Specifications – *Review*
- Longfin/Butterfish Mesh/Strengthener Analyses- *Review*
- 2017 Atlantic Mackerel Specifications – *Review*
- RH/S Cap and RH/S management progress - *Review*
- 2017 and 2018 Surfclam/Ocean Quahog Specifications – *Adopt*
- Surfclam and Ocean Quahog Excessive Shares Amendment – *Discuss next steps*
- Summer Flounder Amendment – *Update*
- Squid Capacity Amendment – *Update*
- eVTR framework – *Meeting 1*
- Omnibus Industry Funded Monitoring Amendment – *Select preferred mackerel alternatives for public hearings*
- Blueline tilefish recreational specifications – *Review*

August 8-11, 2016 — Hilton Virginia Beach Oceanfront, Virginia Beach, VA

- Swearing-in of new and reappointed Council members
- Election of Officers
- 2017 Summer Flounder, Scup, Black Sea Bass Specifications – *Review*
- 2017 Bluefish Specifications – *Review*
- Summer Flounder Amendment – *Consider FMAT recommendations for draft range of alternatives*
- Habitat policies on fishing impacts – *Review and approve*
- Unmanaged Forage Amendment – *Final action*
- eVTR framework – *Meeting 2*
- EAFM Guidance Document – *Review and approve*

October 4-6, 2016 — Stockton Seaview Hotel, Galloway, NJ

- 2017 Spiny Dogfish Specifications – *Review*
- RH/S Stocks in the Fishery Decision
- Risk Policy Omnibus Framework – *Meeting 1*
- Council Communications Plan – *Review*
- New Jersey Special Management Zone (SMZ) request – *Review Monitoring Team Report*
- Blueline Tilefish Recreational Measures Framework – *Meeting 1*

December 13-15, 2016 — Royal Sonesta Harbor Court Baltimore, Baltimore, MD

- 2017 Summer Flounder, Scup, Black Sea Bass Recreational Specifications – *Adopt*
- Summer Flounder Amendment – *Approve range of alternatives for public hearing document*
- Risk Policy Omnibus Framework – *Meeting 2*
- ~~Golden Tilefish 5-year IFQ program review – Approve final document~~
- Squid Capacity Amendment – *Approve public hearing document*
- Omnibus Industry Funded Monitoring Amendment – *Adopt final alternatives*
- Blueline Tilefish Recreational Measures Framework – *Meeting 2*
- NJ SMZ Recommendation – *Final action*
- 2017 Implementation plan – *Review and approve*
- [Monkfish 2017-2019 Specifications Framework](#)

Summary of the results of a genetic-based investigation of blueline tilefish (*Caulolatilus microps*)

Final Report to the MAFMC

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June 2016

INTRODUCTION

Blueline tilefish, *Caulolatilus microps*, also known as grey tilefish (Goode and Bean 1878), is a bottom dweller found at depths of 240-780 feet. Historically blueline tilefish have been reported to occur along the continental shelf from Virginia to the Campeche Banks of Mexico, occupying the same habitat as groupers and snappers (Dooley 1978). North Carolina was previously considered to be the northern extent of the range of blueline tilefish, but concentrations have recently been discovered in Virginia and Maryland with reports as far north as Montauk, NY, extending the known range. A recent data workshop (SEDAR 50), which compiled several fishery-dependent and fishery-independent data sources, determined that blueline tilefish are continuously distributed from the Gulf of Mexico to the Mid-Atlantic Bight (Farmer and Klibansky 2016).

The life-history parameters of blueline tilefish make them particularly vulnerable to overfishing. Like other species of tilefish, blueline tilefish are long-lived and grow slowly, with an estimated lifespan of up to 43 years and a maximum size of 900 mm fork length (SEDAR 32 2013). Blueline tilefish reach maturity as early as age two (Harris et al. 2004; Kolmos et al. 2016) and are sexually dimorphic, with males reaching a larger maximum size than females (Harris et al. 2004). A study by Harris et al. off the southeastern coast of the U.S. (North and South Carolina) found that blueline tilefish are batch spawners. Spawning occurs in the evening from February-November with a peak in May. There is a positive

relationship between size and fecundity in females (Harris et al. 2004; Kolmos et al. 2016). Data concerning larval duration or dispersal is extremely limited.

Blueline tilefish were formally assessed in 2013 by SouthEast Data, Assessment, and Review (SEDAR) in the Southeast region and were found to be overfished with overfishing occurring (SEDAR 32 2013). It was suggested that overfishing had been happening over most of the assessment period and it was noted that there has been considerable uncertainty in the estimates since the mid 2000s (SEDAR 32 2013). The assessment considered blueline tilefish to be a single coastwide stock although there was limited data from north of Cape Hatteras, NC.

The South Atlantic Fishery Management Council (SAFMC) manages blueline tilefish as part of the deep-water snapper-grouper complex (Snapper-Grouper Fishery Management Unit). The South Atlantic management area extends from the North Carolina/Virginia border to Florida within the U.S. Exclusive Economic Zone (EEZ). The Gulf of Mexico Fishery Management Council (GMFMC) manages blueline tilefish in the U.S. portion of the Gulf of Mexico. Historically blueline tilefish have not been a managed species in the mid-Atlantic region. Due to the development of an unregulated fishery off the coast of Virginia, in 2007 the Virginia Marine Resources Commission (VMRC) enacted regulations on blueline tilefish including a recreational landing and possession limit of 7 fish/day and a commercial possession limit of 300 pounds whole weight or 273 pounds gutted weight. Maryland later adopted the same regulations. Until enactment of emergency measures in 2015, the fishery was not regulated north of Maryland there were no Federal regulations north of North Carolina. This lack of regulation became problematic due to a recent substantial increase in commercial and recreational landings in the U.S. mid-Atlantic. Commercial landings in this region averaged 10,776 pounds between 2005 and 2013. Following implementation of a reduction in the commercial catch limit in the South Atlantic by the SAFMC in 2014, the commercial landings of blueline tilefish in the mid-Atlantic skyrocketed to 215,272 pounds. The unregulated northern fishery combined with the lack of information about the number of stocks and the vulnerable (k-selected) life history of blueline tilefish raised concern about the sustainability of the resource and led the Mid-Atlantic Fishery Management Council

(MAFMC) to adopt similar regulations as Virginia in Federal waters north of the latitude of the Virginia/North Carolina border as an emergency measure until long term management measures can be implemented.

Genetic monitoring, which uses molecular markers to follow changes in populations over time, is an increasingly important component of conservation efforts because of the wide range of information that can be obtained from genetic samples. Monitoring can include identification of genetic stocks, mixed stock analysis, genetic tagging (capture-recapture) of individuals, changes in population genetic parameters such as loss of alleles, shifts in allele frequencies and effective population size, and can also include assessment of historical demography for comparison with current estimates (see (Luikart et al. 2003 and Schwartz et al. 2007 for reviews). Genetic monitoring becomes increasingly important as species become exploited. The establishment of a baseline estimate of genetic variation in blueline tilefish is necessary to monitor changes in variation (loss of diversity or changes in how diversity is distributed) in the future that may result from overfishing. In addition, genetic information is critical to identify management measures appropriate for the ongoing conservation of the species. Recent studies have shown that lack of knowledge about spatial structuring can lead to the risk of unintended overexploitation and localized depletions (Ying et al. 2011).

Management of the blueline tilefish resource has been hampered by a lack of basic life history data, including information about stock structure. No genetic studies have been conducted to date, thus there is no information available regarding genetic connectivity among locations. It is unknown if blueline tilefish are comprised of distinct self-recruiting stocks or if (and to what extent) geographically distant sampling areas are interdependent. Information from this study will be useful for the conservation and management of the species.

MATERIALS AND METHODS

Microsatellite Marker Development and Optimization

High molecular weight DNA from a blueline tilefish captured off the coast of Virginia was used to create a 400 base pair (bp) insert genomic library. The

resulting fragments were sequenced using a PGM™ Hi-Q™ Sequencing Kit on an Ion Torrent PGM sequencer using an Ion 318™ chip (Ion Torrent Systems, Inc., Guilford, CT). The FastQC software (Andrews 2010) integrated into the Galaxy Project platform (Giardine et al. 2005, Goecks et al. 2010, Blankenberg et al. 2010) was used to assess the quality of the resulting sequences, and filters integrated into the Galaxy platform were used to remove sequencing artifacts and to filter out short sequences (below 50 bp). Sequences were trimmed to exclude positions 1-9 and all bases over 400 bp and filtered by quality to exclude those in which 50% of the sequence length had a quality < 20 (base call accuracy <99%) and exported as a FASTA-formatted file. Exported sequence files were filtered for the presence of perfect tetranucleotide repeats, resulting in the identification over 8,000 potential microsatellite loci using the MSATCOMMANDER 1.0.8 software (Faircloth 2008). Primers were designed for ~1500 of the identified loci using the Primer3 software (Koressaar and Remm 2007; Untergasser et al. 2012) and 65 primer pairs were ordered and tested for amplification of a product of the predicted length from blueline tilefish DNA isolated from samples from Virginia and South Carolina (two samples from each location). From the original 65 primer pairs, we identified 26 loci that amplified reliably across test samples.

All primer pairs were initially assessed and optimized using gradient PCR on a Bio-Rad C1000 thermal cycler (Bio-Rad, Hercules, CA) using standard protocols. Each 5 µl PCR reaction contained 1x PCR Buffer (Qiagen), 1.5 mM MgCl₂, 200 µM of each dNTP, 0.125 µM the forward primer, 0.125 of the reverse primer, 0.5 unit of *Taq* polymerase (Qiagen), and 0.5 µl genomic DNA. Four samples, two from VA and two from SC were used for testing. Samples were amplified with an initial denaturation temperature of 94 °C for 3 min, followed by 35 cycles at 94 °C for 1 min, 48-65 °C for 1 min, 72 °C for 1 min, with a final elongation step at 72 °C for 7 min. Amplified products were visualized to confirm the presence of a single amplification product of correct size by agarose gel electrophoresis (1.5 % w/v), stained with ethidium bromide and viewed under a UV light source. Markers found to reliably amplify DNA samples from both Virginia and South Carolina were further evaluated using a panel of 8 samples each from Virginia and South Carolina to assess

amplification consistency, levels of polymorphism and conformance to the expectations of Hardy-Weinberg Equilibrium (HWE). PCR reactions were carried out as above except for the addition of a T3-labeled fluorescent probe (either FAM, VIC, NED, PET). The resulting fluorescently labeled PCR products were separated on an ABI 3130xl Prism Genetic Analyzer (Applied Biosystems, Foster City, CA) with a GeneScan 500-Liz size standard (Applied Biosystems, Foster City, CA). The chromatic peaks for each microsatellite locus were sized using the GeneMarker AFLP/Genotyping Software, ver. 1.75 (SoftGenetics, State College, PA).

Sample Collection and DNA Isolation

Geographic sampling spanned the blueline tilefish U.S. East Coast range from New York to the southern Florida Keys and also included a small sample (n=15) from the west coast of Florida in the Gulf of Mexico (Figure 1, Appendix 1). Cooperating commercial fishermen using one of three gear types took fin clips: long-bottom longline (LBLL), short-bottom longline (SBLL), and vertical hook and line (VHL). All fin clips were stored in ethanol until DNA could be extracted and the pertinent collection information (date, fish sex, length, depth, location, vessel, etc.) was recorded on the accompanying data sheets (for specific details, see SEDAR50-DW02). DNA was extracted from archived tissue samples using either the DNeasy Tissue Kit (Qiagen, Valencia, CA) or the Quick-DNA™ Universal Kit (Zymo Research, Irvine, CA). Briefly, 2-3 mm fin clip sub-samples were incubated in lysis buffer (Longmire et al. 1997) for 2 hrs. at room temperature to facilitate removal of residual ethanol prior extraction following the manufacturers protocol. All DNA samples were quantified using a NanoDrop 2000 (Thermo Scientific, West Palm Beach, Florida), and stored at -20 °C.

Microsatellite Markers

Following optimization, primer pairs were multiplexed into panels using the Type-it® Microsatellite PCR Kit (Qiagen) and one of four unique fluorescent tails Table 1. Once optimized, samples from each location were amplified using the multiplexed primer sets and alleles were sized as above. Each multiplex reaction

contained 1x Type-it Multiplex PCR Master Mix, 1x Q-Solution, 0.05 μM of the forward primer, 0.2 μM of the reverse primer, 0.2 μM of the fluorescent dye, 0.5 μl genomic DNA and water to a final volume of 6 μl . Amplifications were performed with an initial denaturation temperature of 95 $^{\circ}\text{C}$ for 5 min, followed by 28 cycles at 95 $^{\circ}\text{C}$ for 30 sec, Annealing for 90 sec, 72 $^{\circ}\text{C}$ for 30 sec, with a final elongation step at 60 $^{\circ}\text{C}$ for 30 min. The resulting fluorescently labeled PCR products were separated on an ABI 3130xl Prism Genetic Analyzer (Applied Biosystems, Foster City, CA) with a GeneScan 500-Liz size standard (Applied Biosystems, Foster City, CA). The chromatic peaks for each microsatellite locus were sized using the GeneMarker AFLP/Genotyping Software, ver. 1.75 (SoftGenetics, State College, PA). To control for errors, approximately 20% of samples were amplified sized twice and all loci were sized independently twice and results were compared

After alleles had been sized for each locus, the Micro-Checker ver. 2.2.3 software (Van Oosterhout et al. 2004) was used to check for the presence of null alleles and evidence of scoring errors. The Genepop'007 software package (Rousset 2008) was used to test for deviations of genotypic distributions from HWE expectations (F_{IS} , exact tests, Guo et al. 1992). Summary statistics (number of alleles, allele frequencies and etc.), were generated using GenAlEx ver. 6.5 (Peakall and Smouse 2012). To evaluate evidence for the presence of population structure, the Arlequin software package ver. 3.5.2.2 (Excoffier and Lischer 2010) was used to estimate (Weir and Cockerham's (1984) unbiased estimator of Wrights F-statistics and to conduct an analysis of molecular variance (AMOVA) based on several alternate geographic groupings (Excoffier et al. 1992). Significance was assessed via 10 000 permutations of the data. A factorial correspondence analysis (FCA) was performed using Genetix ver. 4.05.2 (Belkhir et al. 1996). A discriminant analysis of principal components (DAPC) was performed using the Adegnet software (Jombart 2008; Jombart et al. 2010).

Mitochondrial DNA (mtDNA)

The mtDNA primers of Nohara et al. (2010) were used to amplify and sequence a 489 bp segment of the mtDNA control region from a subset of all

collected samples (Table 4). Briefly, each 25 μ l reaction contained 1x PCR Buffer (Qiagen) 1.5 mM MgCl₂, 200 μ M of each dNTP, 0.125 μ M of each primer, 0.5 unit of *Taq* polymerase (Qiagen), and 1 μ l genomic DNA. Amplifications were performed with an initial denaturation temperature of 94 °C for 2 min, followed by 35 cycles at 94 °C for 1 min, 52 °C for 1 min, 72 °C for 2 min, with a final elongation step at 72 °C for 5 min. Aliquots of amplified products were sized against a DNA ladder of known size using horizontal gel electrophoresis (1.5 % w/v agarose), stained with ethidium bromide and visualized under a UV light source to confirm the presence of a single amplification product of correct size. Amplification products were purified using a QIAquick PCR Purification Kit (Qiagen) following the manufacturers protocol and subsequently quantified using a NanoDrop 2000 prior to storage at -20 °C. Purified PCR products were bi-directionally sequenced using the Big Dye Terminator Cycle Sequencing Kit (Applied Biosystems) with the original amplification primers and 0.25 the recommended concentration of Big Dye. Sequencing reaction products were precipitated using ethanol/sodium acetate to remove unincorporated nucleotides and re-suspended in 16 μ l of Hi-Di formamide (Applied Biosystems) and 10 μ l of each cleaned reaction were electrophoresed on an ABI 3130xl Prism genetic analyzer (Applied Biosystems). The resulting forward and reverse sequences were imported into Sequencher ver. 5.1 (Gene Codes Corporation, Ann Arbor, MI) for trimming of low quality sequence and creation of consensus sequences. Consensus sequences were aligned in MacVector ver. 12.5.1 (MacVector, Inc., Apex, NC) and exported as a FASTA file.

The FaBox software (Villesen 2007) was used to collapse sequences into haplotypes and create input files for the Arlequin software package (Excoffier and Lischer 2010). Arlequin was used to generate descriptive statistics (mean number of pairwise differences (k), haplotype diversity (H), and nucleotide sequence diversity (π), perform analysis of population pairwise Φ_{ST} , AMOVA (Excoffier et al. 1992) and to estimate demographic parameters. Statistical significance was assessed based on 10 000 permutations of the data. The PopART software (Leigh and Bryant 2015) was used to reconstruct and visualize genealogical relationships among

sequences using the Minimum Spanning Network algorithm of Bandelt et al. (1999) and the TCS algorithm of (Clement et al. 2002).

RESULTS AND DISCUSSION

Microsatellite marker development

High throughput sequencing of a blueline tilefish DNA sample on an Ion Torrent sequencer resulted in approximately 4.8 million DNA sequences ranging in length from 25-587 bp with an average Phred (quality) score of 30. Filtering using the software programs integrated into the Galaxy Project platform resulted in the retention of 4.7 million high quality DNA sequences. The retained sequences were subsequently queried for the presence of perfect tetranucleotide repeat loci, resulting in the identification over 8,000 microsatellite loci. Of the loci identified, primers were designed for ~1500 loci and 65 primer pairs were ordered and tested for amplification of a product of predicted length from blueline tilefish DNA samples from Virginia and South Carolina (two samples from each location). Of the original 65 primer pairs tested, we identified 26 loci that amplified reliably across test samples. Further testing of samples taken from Virginia and South Carolina (20 samples from each location) indicated that these loci were in conformance to the expectations of Hardy-Weinberg equilibrium (HWE). One of the primers failed to amplify successfully across multiple samples and was excluded from further analysis. The remaining 25 loci were combined into 8 multiplex marker panels (data available upon request).

Microsatellite Analysis

In total, 505 samples were analyzed across 25 polymorphic microsatellite loci; 490 samples from U.S. east coast range from New York (NY) to the southern Florida Keys (FL) and 15 from western Florida (WF) in the Gulf of Mexico (Figure 1). All loci were polymorphic, with the number of alleles ranging from 6 alleles at CM1787993 and CM1787993 to 21 at CM90501. Markers were in conformance to the expectations of HWE with the exception of CM931277 and CM4391826, both of which had significant global heterozygote deficits, most likely due to the presence of

null alleles (Table 2). All subsequent analyses were done both including and excluding these loci. Results were consistent regardless of whether or not these loci were included. All results presented henceforth are based on the 23 loci that were in HWE. Overall, analysis indicated a genetically homogeneous population. All F_{ST} values were small; the largest value was 0.003 between the WF and North Carolina sample taken North of Cape Hatteras (NCN) samples and most values were 0. There were no significant pairwise comparisons based on 10,000 permutations of the data (Table 3). An analysis of molecular variance (AMOVA, Excoffier et al. 1992) using multiple alternate groupings of sampling locations showed no significant genetic variance due to variation among any groups (data not shown). A factorial correspondence analysis did not indicate the presence of any discrete clusters that would suggest the presence of multiple populations (Figure 2). Likewise, the DAPC had a scree plot with eigenvalues that were flat across the plot.

mtDNA analysis

In total, of 188 control region sequences were examined across a subset of samples from all geographic locations. All sequences were edited to a final length of 407 bp, resulting in 72 haplotypes with 59 variable sites including 58 substitutions, 51 of which were transitions and 7 of which were transversions. A total of four indels were observed. The most common haplotype, haplotype 9, was recovered 39 times (20.7% of sequences) and was recovered in all locations with the exception of the WF sample (Table 4). The second most common haplotype was recovered 9 times (4.8% of all samples) and was recovered in all locations except Delaware (DE). WF and DE had the smallest number of samples sequenced (8 and 13 respectively). Haplotype diversity (H) was 0.94 across all samples and was high in all geographic samples ranging from 0.89 in samples from NCN and 1.0 in DE. The mean number of pairwise differences between sequences (k) across all samples was 3.1 and ranged from 2.4 in NCN to 3.91 in South Carolina (SC). Likewise, nucleotide diversity (π) was low both across all samples (0.008) and within samples from each geographic location. Values ranged from 0.006 in NCN to 0.010 in SC., indicating that there were

very few differences among haplotypes (Table 5). A minimum spanning network showed no division of haplotypes by sampling location (Figure 3).

A global test of differentiation among samples based on the distribution of haplotypes and 10 000 permutations of the data was not significant ($P = 0.144$). However, there were significant pairwise comparisons between the WF sample (the location with the smallest sample size) and the NY, DE and VA samples. Only the comparison with VA was significant after correction for multiple tests ($P = 0.003$). Population pairwise Φ_{ST} values were calculated based both on the number of pairwise differences and on a Tamura-Nei distance (Tamura and Nei 1993). No values were significant based on 10 000 permutations of the data. Values based on the number of pairwise differences between samples ranges from 0 between most pairs of sample collections examined to 0.039 between DE and WF, the two groups with the smallest sample sizes (Table 3).

As with the analysis of the microsatellite data, an AMOVA (Excoffier et al. 1992) using multiple alternate groupings of sampling locations showed no significant genetic variance due to variation among any grouping scheme (data not shown).

CONCLUSIONS

Blueline is a commercially and recreationally important long-lived, slow growing, species. The sedentary nature of adults suggest the possibility multiple populations along the U.S. East Coast. Many marine fishes have been found to have a disjunct genetic boundary near Cape Hatteras, a well-known biogeographic break. This includes other fishes occupying the same habitat as blueline tilefish, such as black sea bass (Roy et al. 2012; McCartney et al. 2013) and golden tilefish (Katz et al. 1983).

Despite the sedentary nature of adults, there was no evidence that blueline tilefish comprise genetically distinct populations along the U.S. East Coast at any scale. There was no evidence that biogeographic breaks are an impediment to gene flow; no genetic differences were found between samples examined either north

and south of Cape Hatteras NC or Cape Canaveral FL. The data suggests that there is sufficient gene flow to prevent the accumulation of genetic differences.

The results of the genetic study are consistent with evidence based on reproduction, catch and hydrodynamic data. A recent analysis by Kolmos et al. 2016 found no differences in spawning fraction or timing of spawning among samples collected along the Atlantic coast. This same analysis found substantial evidence of spawning north of Cape Hatteras and no evidence to suggest that blueline tilefish form spawning aggregations. Furthermore, blueline tilefish were found to spawn over a protracted season from February-November with a peak in May (Harris et al. 2004; Kolmos et al. 2016). Catch data indicate that blueline tilefish are continuously distributed from the Gulf of Mexico to the Mid-Atlantic Bight (Farmer and Klibansky 2016).

Given the sedentary nature of adults, mixing likely occurs via transport of eggs and larvae. Although little is known about the early life history of blueline tilefish, eggs are known to be pelagic (Lewis et al. 2016), as are larvae. Tracks from drifter buoys indicate that the Gulf Stream, the Loop Current and counter current eddies as mechanisms for transport of pelagic blueline tilefish egg, and larvae (Farmer and Klibansky 2016; SEDAR 50 Stock ID Work Group 2016). The drifter data is supported by water current flow maps, which demonstrate that larval transport between the Gulf of Mexico to the South Atlantic and from the South Atlantic to the Mid-Atlantic is probable (Farmer and Klibansky 2016). This data combined with the continuous distribution and prolonged spawning season support the findings of the genetics study. However this does not necessarily indicate that there is sufficient gene flow to overcome the effects of regional overfishing.

REFERENCES

- Andrews, S. 2010. FastQC: A quality control tool for high throughput sequence data. *Bioinformatics* 1.
- Bandelt, H.-J., and A. R. Peter Forster, and Olsh. 1999. Median-Joining Networks for Inferring Intraspecific Phylogenies. *Mol. Biol.* 16:37–48.
- Belkhir, K., P. Borsa, L. Chikhi, N. Raufaste, and F. Bonhomme. 1996. GENETIX 4.05, logiciel sous Windows TM pour la génétique des populations. *Lab. génome, Popul. Interact. CNRS Umr 5000:1996–2004.*
- Blankenberg, D., G. Von Kuster, N. Coraor, G. Ananda, R. Lazarus, M. Mangan, A. Nekrutenko, and J. Taylor. 2010. Galaxy: A web-based genome analysis tool for experimentalists.
- Clement, M., Q. Snell, P. Walke, D. Posada, and K. Crandall. 2002. TCS: estimating gene genealogies. *Proc. 16th Int. Parallel Distrib. Process. Symp.*, doi: 10.1109/IPDPS.2002.1016585.
- Dooley, J. K. 1978. Systematics and biology of the tilefishes (Perciformes: Branchiostegidae and Malacanthidae) with descriptions of two new species.
- Excoffier, L., and H. E. L. Lischer. 2010. Arlequin suite ver 3.5: A new series of programs to perform population genetics analyses under Linux and Windows. *Mol. Ecol. Resour.* 10:564–567.
- Excoffier, L., P. E. Smouse, and J. M. Quattro. 1992. Analysis of molecular variance inferred from metric distances among DNA haplotypes: Application to human mitochondrial DNA restriction data. *Genetics* 131:479–491.
- Faircloth, B. C. 2008. MSATCOMMANDER: Detection of microsatellite repeat arrays and automated, locus-specific primer design. *Mol. Ecol. Resour.* 8:92–94.
- Farmer, N., and N. Klibansky. 2016. Distribution of blueline tilefish (*Caulolatilus microps*) in the U.S. EEZ from fishery-dependent and fishery-independent data collections. SEDAR50-DW11. SEDAR, North Charleston, SC.
- Giardine, B., C. Riemer, R. C. Hardison, R. Burhans, L. Elnitski, P. Shah, Y. Zhang, D. Blankenberg, I. Albert, J. Taylor, W. Miller, W. J. Kent, and A. Nekrutenko. 2005. Galaxy: A platform for interactive large-scale genome analysis. *Genome Res.* 15:1451–1455.
- Goecks, J., A. Nekrutenko, and J. Taylor. 2010. Galaxy: a comprehensive approach for supporting accessible, reproducible, and transparent computational research in the life sciences. *Genome Biol.* 11:R86.
- Goode, G. B., and T. H. Bean. 1878. Description of *Caulolatilus microps*, a new species of fish from the Gulf coast of Florida. *Proc. U.S. Natl. Mus* 1:42–45.
- Guo, S. W., S. W. Guo, E. a Thompson, and E. a Thompson. 1992. Performing the exact

- test of Hardy-Weinberg proportion for multiple alleles. *Biometrics* 48:361–372.
- Harris, P. J., D. M. Wyanski, and P. T. Powers Mikell. 2004. Age, Growth, and Reproductive Biology of Blueline Tilefish along the Southeastern Coast of the United States, 1982–1999. *Trans. Am. Fish. Soc.* 133:1190–1204.
- Jombart, T. 2008. adegenet: a R package for the multivariate analysis of genetic markers. *Bioinformatics* 24:1403–5.
- Jombart, T., S. Devillard, and F. Balloux. 2010. Discriminant analysis of principal components: a new method for the analysis of genetically structured populations. *BMC Genet.* 11:94.
- Katz, S. J., C. B. Grimes, and K. W. Able. 1983. Delineation of tilefish, *Lopholatilus chamaeleonticeps*, stocks along the United States east coast and in the Gulf of Mexico. *Fish. Bull.* 81:41–50.
- Kolmos, K. J., S. Falk, D. M. Wyanski, and M. A. Schmidtke. 2016. A Preliminary Assessment of Reproductive Parameters for Blueline Tilefish in Atlantic Waters from Virginia to Florida SEDAR50-DW03.
- Koressaar, T., and M. Remm. 2007. Enhancements and modifications of primer design program Primer3. *Bioinformatics* 23:1289–1291.
- Leigh, J. W., and D. Bryant. 2015. Popart: Full-Feature Software for Haplotype Network Construction. *Methods Ecol. Evol.* 6:1110–1116.
- Lewis, L. A., D. E. Richardson, E. V. Zakharov, and R. Hanner. 2016. Integrating DNA barcoding of fish eggs into ichthyoplankton monitoring programs. *Fish. Bull.* 114:153–165.
- Longmire, J. L., M. Maltbie, and R. J. Baker. 1997. Use of “lysis buffer” in DNA isolation and its implication for museum collections.
- Luikart, G., P. R. England, D. Tallmon, S. Jordan, and P. Taberlet. 2003. The power and promise of population genomics: from genotyping to genome typing. *Nat. Rev. Genet.* 4:981–994.
- Mccartney, M. A., M. L. Burton, and T. G. Lima. 2013. Mitochondrial DNA differentiation between populations of black sea bass (*Centropristis striata*) across Cape Hatteras, North Carolina (USA). *J. Biogeogr.* 40:1386–1398.
- Nohara, K., H. Takeuchi, T. Tsuzaki, N. Suzuki, O. Tominaga, and T. Seikai. 2010. Genetic variability and stock structure of red tilefish <i>Branchiostegus japonicus</i> inferred from mtDNA sequence analysis. *Fish. Sci.* 76:75–81.
- Peakall, R., and P. E. Smouse. 2012. GenALEX 6.5: Genetic analysis in Excel. Population genetic software for teaching and research-an update. *Bioinformatics* 28:2537–2539.
- Rousset, F. 2008. GENEPOP’007: A complete re-implementation of the GENEPOP software for Windows and Linux. *Mol. Ecol. Resour.* 8:103–106.

Roy, E. M., J. M. Quattro, G. T. W, and T. W. Greig. 2012. Genetic management of black sea bass: influence of biogeographic barriers on population structure. *Mar. Coast. Fish. Dyn. Manag. Ecosyst. Sci.* 4:391–402.

Schwartz, M. K., G. Luikart, and R. S. Waples. 2007. Genetic monitoring as a promising tool for conservation and management. *Trends Ecol. Evol.* 22:25–33.

SEDAR 32. 2013. SEDAR 32 Stock Assessment Report South Atlantic Blueline Tilefish. Sedar.

Tamura, K., and M. Nei. 1993. Estimation of the number of nucleotide substitutions in the control region of mitochondrial DNA in humans and chimpanzees. *Mol. Biol. Evol.* 10:512–526.

Untergasser, A., I. Cutcutache, T. Koressaar, J. Ye, B. C. Faircloth, M. Remm, and S. G. Rozen. 2012. Primer3-new capabilities and interfaces. *Nucleic Acids Res.* 40.

Van Oosterhout, C., W. F. Hutchinson, D. P. M. Wills, and P. Shipley. 2004. MICRO-CHECKER: Software for identifying and correcting genotyping errors in microsatellite data. *Mol. Ecol. Notes* 4:535–538.

Villesen, P. 2007. FaBox: An online toolbox for FASTA sequences. *Mol. Ecol. Notes* 7:965–968.

Weir, B. S., and C. C. Cockerham. 1984. Estimating F-statistics for the analysis of population structure. *Evolution (N. Y.)* 38:1358–1370.

Work, S. 50 S. I. 2016. SEDAR50-DW12. 50.

Ying, Y., Y. Chen, L. Lin, T. Gao, and T. Quinn. 2011. Risks of ignoring fish population spatial structure in fisheries management. *Can. J. Fish. Aquat. Sci.* 68:2101–2120.

Table 1. Primers and amplification conditions for blueline tilefish loci.

Locus	T _{Optimal} (°C)	Repeat Motif	Primer Sequence Forward 5' to 3'	Primer Sequence Reverse 5' to 3'	Tail	Dye	Multiplex Group
CM_2316467	48	(AGAT) ₁₀	GGCCTACACCCATGCAAAC	TTTCTCCAACCGCAATGTCG	TAATACGACTCACTATAGGG	VIC	1
CM_2352680	48	(AGAT) ₁₂	CTCCCTGTTCTAATGACCGC	TTTGCCACCAACCTTCTCTG	GGTAAAACGACGGCCAGT	NED	1
CM_2492523	48	(AGGC) ₁₀	GTGAGAAGAAACAAACACTCC	CCACTGTAAGTGTATACCTGG	GGCAGGAAACAGCTATGAC	PET	1
CM_54794	48	(AGAT) ₁₀	TTGAAATGCTGCTATGACAACC	GGTCGGCTGCACTATTTTCAG	AATTAACCCTCACTAAAGGG	FAM	1
CM_1787993	49	(AGAT) ₁₀	AGCTGGAACCAAGAAATGCG	GAAACGCTCGGGTTACATCG	TAATACGACTCACTATAGGG	FAM	2
CM_4718692	49	(AGAT) ₁₆	AAGAGGACCAGGAACGAGTG	CTATTTCAACGCCGGTGGAG	GGTAAAACGACGGCCAGT	NED	2
CM_931277	49	(AGAT) ₁₄	TCACCACGACTGCCACTG	GACAGGCTCACACATACTGC	AATTAACCCTCACTAAAGGG	VIC	2
CM_1741665	54.6	(AGAT) ₁₆	CTCCCACCCTCTGCACAC	CTCCTTCGCAACCTCTCTAAC	TAATACGACTCACTATAGGG	FAM	3
CM_1827829	54.6	(AGAT) ₁₁	AGAAGAGCAAGACAGGAGCC	TGGCTCCATTACCAATAATGC	GGTAAAACGACGGCCAGT	NED	3
CM_2660427	54.6	(AGAT) ₁₀	GACAGCCTTATTCTCGCAG	TACCGGACTGCTGCTATGAC	GGCAGGAAACAGCTATGAC	PET	3
CM_1065459	54.6	(AGAT) ₁₁	GACACGCGGTTCTCAAAG	TCCTTGGGCCATGTTGTAGG	AATTAACCCTCACTAAAGGG	VIC	3
CM_459957	55	(ACAG) ₁₃	TGCTCTCTGTCCCGAGTATTC	AGAGGGATCGAAAGCTGAGTC	AATTAACCCTCACTAAAGGG	NED	4
CM_2212380	55	(AATG) ₁₁	AGGGAGGAGTTTCACACTG	ATCACTGCCATCTTCCCACC	GCCTCCCTCGCGCCA	FAM	4
CM_2149957	55	(ATCC) ₁₁	GTGTATGAGACCCAGAGCCC	TTGGAGTCCGGCTGTCTATG	TAATACGACTCACTATAGGG	VIC	4
CM_2374475	58.7	(AGAT) ₁₁	CTGTTGCTTCTAGTCTCTGGC	GATCGGCTCCTCTCCCAC	TAATACGACTCACTATAGGG	FAM	5
CM_4591723	58.7	(AGAT) ₁₇	TGTTGGTTTCTGCCTGGAG	AGACATGCAGATAGACGGAGAC	GGTAAAACGACGGCCAGT	NED	5
CM_2404273	58.7	(AGAT) ₁₀	TACCGGACTGCTGCTATGAC	GGAAGAGCTGCATTTCTCCG	GGCAGGAAACAGCTATGAC	PET	5
CM_310413	58.7	(AGAT) ₁₀	CCTCCTGCACTGTTTCTG	ACCTGAATTTCCCTCGGTACC	AATTAACCCTCACTAAAGGG	VIC	5
CM_119168	62	(AGAT) ₂₂	TGTCCAGCGCATCAATAAAGG	CTCGCCATGTCACAGTGTTG	TAATACGACTCACTATAGGG	FAM	6
CM_2186404	62	(ATCC) ₁₃	ACCCGTGGATAAGCGGTATAG	GTGAGTGTCAATCAGGGAAGG	GGCAGGAAACAGCTATGAC	PET	6
CM_732781	62	(AGAT) ₁₀	GGATACCTACATTTCCCTCAGG	AGTCTGTCTACATTGTCATCGC	AATTAACCCTCACTAAAGGG	VIC	6
CM_90501	65	(AGAT) ₁₂	ACCACCTCACATCTGACCAC	TGTCATCTCATCTCAGCCAAG	TAATACGACTCACTATAGGG	FAM	7
CM_1080088	65	(AGAT) ₁₈	GTCCAACAGCAGTCCTTGAAG	CACACAGAAAGGCGGGATTC	AATTAACCCTCACTAAAGGG	NED	7
CM_1009046	63.5	(AGAT) ₁₀	TCCAAACTGTTTCCAAGGGC	TGTTCCCAGACATGTGTAGC	GGCAGGAAACAGCTATGAC	PET	8
CM_764003	63.5	(AGAT) ₁₂	TGTACAACCTACCGCCTAG	GGTTAATAACAGCCCAGGAGC	AATTAACCCTCACTAAAGGG	FAM	8
CM_4391826	63.5	(AGAT) ₁₈	GGTCGATGGTAGAAGCACAC	CGTCCCATCCATCAACAAC	GCCTTGCCAGCCCCG	VIC	8

Table 2. Sample Size (N), No. Alleles (N_a), No. Effective Alleles (N_e), Information Index (I), Observed Heterozygosity (H_o), Expected Heterozygosity (H_e), Probability of Conformance to HWE (P_{HWE}), and Unbiased Expected Heterozygosity (uH_e), and Fixation Index (F) for each locus. Bolded values are out of HWE (P < 0.0001). Detailed list of locus names is at the bottom of the table. New York (NY), Delaware (DE), Virginia (VA), North Carolina North of Cape Hatteras (NCN), North Carolina South of Cape Hatteras (NCS), South Carolina (SC), Florida Keys (FL), Western Florida (WF).

Location	Statistic	Loc1	Loc2	Loc3	Loc4	Loc5	Loc6	Loc7	Loc8	Loc9	Loc10	Loc11	Loc12	Loc13
NY	N	79	77	77	79	79	74	79	78	79	79	79	79	79
	Na	10	8	8	9	6	13	11	13	8	9	6	8	12
	Ne	4.080	3.885	2.836	3.797	1.809	6.602	7.456	4.952	4.733	4.613	2.170	3.751	5.249
	I	1.685	1.572	1.383	1.550	0.943	2.142	2.182	1.907	1.687	1.689	1.051	1.584	1.944
	Ho	0.810	0.805	0.662	0.722	0.481	0.446	0.861	0.808	0.734	0.671	0.557	0.810	0.810
	He	0.755	0.743	0.647	0.737	0.447	0.849	0.866	0.798	0.789	0.783	0.539	0.733	0.809
	uHe	0.760	0.747	0.652	0.741	0.450	0.854	0.871	0.803	0.794	0.788	0.543	0.738	0.815
	P _{HWE}	0.399	0.026	0.638	0.508	0.889	0.000	0.900	0.908	0.102	0.120	0.924	0.743	0.698
	F	-0.073	-0.084	-0.023	0.021	-0.076	0.474	0.006	-0.012	0.069	0.143	-0.033	-0.105	-0.001
DE	N	45	43	44	45	44	42	44	43	45	43	45	45	45
	Na	6	8	8	6	6	8	11	9	7	7	6	9	12
	Ne	3.540	3.594	2.505	3.325	2.251	4.612	7.854	5.561	4.731	4.037	2.259	3.395	4.799
	I	1.491	1.573	1.277	1.339	1.142	1.765	2.189	1.876	1.688	1.539	1.133	1.520	1.905
	Ho	0.644	0.674	0.705	0.667	0.568	0.429	0.909	0.814	0.822	0.814	0.644	0.800	0.844
	He	0.718	0.722	0.601	0.699	0.556	0.783	0.873	0.820	0.789	0.752	0.557	0.705	0.792
	uHe	0.726	0.730	0.608	0.707	0.562	0.793	0.883	0.830	0.798	0.761	0.564	0.713	0.800
	P _{HWE}	0.053	0.491	0.771	0.049	0.730	0.000	0.513	0.100	0.907	0.994	0.965	0.861	0.585
	F	0.102	0.066	-0.173	0.047	-0.022	0.453	-0.042	0.008	-0.043	-0.082	-0.156	-0.134	-0.067
VA	N	107	107	107	107	107	101	107	107	107	107	107	107	107
	Na	9	10	8	8	6	14	11	10	9	9	7	10	12
	Ne	3.437	3.528	2.710	3.278	2.256	7.204	6.793	5.155	4.384	4.501	2.278	4.197	5.188
	I	1.558	1.513	1.309	1.400	1.137	2.227	2.071	1.856	1.659	1.702	1.138	1.706	1.919
	Ho	0.720	0.682	0.561	0.664	0.542	0.564	0.850	0.766	0.776	0.822	0.598	0.766	0.850
	He	0.709	0.717	0.631	0.695	0.557	0.861	0.853	0.806	0.772	0.778	0.561	0.762	0.807
	uHe	0.712	0.720	0.634	0.698	0.559	0.865	0.857	0.810	0.776	0.781	0.564	0.765	0.811
	P _{HWE}	0.882	0.783	0.356	0.190	0.799	0.000	0.332	0.091	0.825	0.684	0.386	0.809	0.237
	F	-0.015	0.048	0.111	0.045	0.026	0.345	0.003	0.049	-0.005	-0.057	-0.066	-0.006	-0.054

NCN	N	56	56	56	56	56	53	56	55	56	56	56	56	56
	Na	8	7	8	7	6	13	11	11	8	10	7	7	12
	Ne	2.938	3.568	2.814	3.190	2.001	6.602	8.396	4.394	4.674	4.436	2.436	3.762	5.271
	I	1.356	1.487	1.359	1.365	1.061	2.141	2.252	1.813	1.686	1.747	1.168	1.545	1.926
	Ho	0.643	0.732	0.607	0.661	0.554	0.453	0.857	0.745	0.821	0.804	0.571	0.696	0.839
	He	0.660	0.720	0.645	0.687	0.500	0.849	0.881	0.772	0.786	0.775	0.589	0.734	0.810
	uHe	0.666	0.726	0.650	0.693	0.505	0.857	0.889	0.779	0.793	0.782	0.595	0.741	0.818
	P _{HWE}	0.896	0.660	0.116	0.888	0.235	0.000	0.024	0.917	0.093	0.903	0.149	0.313	0.798
	F	0.025	-0.017	0.058	0.038	-0.106	0.466	0.027	0.035	-0.045	-0.037	0.031	0.051	-0.036
NCS	N	66	66	66	66	66	63	66	66	66	66	66	66	66
	Na	7	8	7	7	6	11	11	12	9	8	7	8	11
	Ne	3.457	4.069	2.840	2.933	2.172	6.665	7.020	5.476	4.402	4.100	1.929	4.180	4.998
	I	1.454	1.626	1.308	1.299	1.117	2.103	2.102	1.945	1.655	1.624	1.018	1.683	1.912
	Ho	0.742	0.742	0.636	0.682	0.576	0.476	0.818	0.864	0.773	0.727	0.470	0.742	0.803
	He	0.711	0.754	0.648	0.659	0.540	0.850	0.858	0.817	0.773	0.756	0.482	0.761	0.800
	uHe	0.716	0.760	0.653	0.664	0.544	0.857	0.864	0.824	0.779	0.762	0.485	0.767	0.806
	P _{HWE}	0.3446	0.744	0.904	0.904	0.136	0.000	0.212	0.826	0.374	0.089	0.576	0.497	0.474
	F	-0.045	0.016	0.018	-0.034	-0.067	0.440	0.046	-0.057	0.000	0.038	0.025	0.024	-0.004
SC	N	74	76	76	76	75	72	76	75	75	75	76	75	76
	Na	8	8	7	7	6	15	12	10	9	8	6	9	12
	Ne	3.206	4.182	2.782	2.920	2.038	6.513	7.496	4.691	4.015	4.496	2.343	3.974	5.742
	I	1.452	1.629	1.361	1.245	1.037	2.157	2.158	1.759	1.588	1.652	1.179	1.647	2.014
	Ho	0.689	0.750	0.592	0.618	0.560	0.556	0.868	0.813	0.840	0.787	0.605	0.720	0.776
	He	0.688	0.761	0.641	0.658	0.509	0.846	0.867	0.787	0.751	0.778	0.573	0.748	0.826
	uHe	0.693	0.766	0.645	0.662	0.513	0.852	0.872	0.792	0.756	0.783	0.577	0.753	0.831
	P _{HWE}	0.820	0.369	0.535	0.535	0.496	0.000	0.365	0.050	0.629	0.666	0.762	0.094	0.090
	F	-0.002	0.014	0.076	0.060	-0.099	0.344	-0.002	-0.034	-0.119	-0.012	-0.056	0.038	0.060
FL	N	61	61	61	61	61	58	61	61	61	61	61	61	61
	Na	6	8	8	9	5	13	12	9	8	9	7	9	12
	Ne	3.316	3.607	3.229	3.369	2.059	5.721	8.278	4.829	4.289	3.834	2.056	3.917	5.782
	I	1.409	1.509	1.453	1.416	1.034	2.042	2.248	1.775	1.632	1.583	1.028	1.669	1.984
	Ho	0.721	0.705	0.574	0.836	0.459	0.414	0.885	0.820	0.738	0.803	0.508	0.656	0.885
	He	0.698	0.723	0.690	0.703	0.514	0.825	0.879	0.793	0.767	0.739	0.514	0.745	0.827
	uHe	0.704	0.729	0.696	0.709	0.519	0.832	0.886	0.799	0.773	0.745	0.518	0.751	0.834
	P _{HWE}	0.628	0.619	0.091	0.091	0.315	0.000	0.666	0.347	0.514	0.944	0.300	0.213	0.676
	F	-0.033	0.025	0.169	-0.189	0.108	0.499	-0.007	-0.034	0.038	-0.087	0.011	0.119	-0.070

WF	N	15	15	15	15	15	14	15	14	15	14	15	15	15
	Na	6	7	4	6	4	8	10	9	7	5	3	7	9
	Ne	3.982	4.839	2.027	2.980	1.230	4.962	7.258	5.521	3.947	3.806	1.737	4.412	5.488
	I	1.566	1.740	0.877	1.325	0.435	1.787	2.113	1.900	1.593	1.430	0.756	1.681	1.912
	Ho	0.733	0.800	0.533	0.733	0.200	0.786	0.867	0.786	0.733	0.714	0.467	0.867	0.800
	He	0.749	0.793	0.507	0.664	0.187	0.798	0.862	0.819	0.747	0.737	0.424	0.773	0.818
	uHe	0.775	0.821	0.524	0.687	0.193	0.828	0.892	0.849	0.772	0.765	0.439	0.800	0.846
	P_{HWE}	0.531	0.652	0.940	0.940	1.000	0.870	0.066	0.610	0.914	0.521	0.717	0.795	0.237
	F	0.021	-0.008	-0.053	-0.104	-0.071	0.016	-0.005	0.040	0.018	0.031	-0.099	-0.121	0.022

Location	Statistic	Loc14	Loc15	Loc16	Loc17	Loc18	Loc19	Loc20	Loc21	Loc22	Loc23	Loc24	Loc25
NY	N	79	79	77	79	78	79	79	79	79	77	75	76
	Na	16	10	12	6	5	7	9	16	14	10	15	9
	Ne	6.566	4.500	7.822	2.181	2.475	5.487	3.382	5.482	8.201	3.707	4.676	4.247
	I	2.221	1.732	2.209	1.083	1.087	1.784	1.498	2.109	2.307	1.656	2.048	1.709
	Ho	0.848	0.823	0.857	0.595	0.564	0.861	0.722	0.797	0.873	0.740	0.507	0.789
	He	0.848	0.778	0.872	0.542	0.596	0.818	0.704	0.818	0.878	0.730	0.786	0.765
	uHe	0.853	0.783	0.878	0.545	0.600	0.823	0.709	0.823	0.884	0.735	0.791	0.770
	P_{HWE}	0.858	0.795	0.454	0.081	0.181	0.581	0.929	0.451	0.416	0.054	0.000	0.908
F	0.000	-0.058	0.017	-0.099	0.054	-0.053	-0.024	0.025	0.005	-0.014	0.355	-0.033	
DE	N	45	45	45	45	45	45	45	45	45	45	45	45
	Na	10	9	12	7	5	6	8	14	14	9	13	10
	Ne	6.072	4.748	7.656	2.318	2.399	5.179	3.320	4.480	9.332	3.406	5.219	4.592
	I	2.050	1.761	2.194	1.186	1.034	1.703	1.516	1.984	2.380	1.523	2.046	1.761
	Ho	0.867	0.711	0.889	0.533	0.644	0.889	0.644	0.756	0.889	0.756	0.489	0.800
	He	0.835	0.789	0.869	0.569	0.583	0.807	0.699	0.777	0.893	0.706	0.808	0.782
	uHe	0.845	0.798	0.879	0.575	0.590	0.816	0.707	0.786	0.903	0.714	0.817	0.791
	P_{HWE}	0.725	0.174	0.095	0.246	0.775	0.181	0.332	0.598	0.405	0.023	0.000	0.467
F	-0.038	0.099	-0.022	0.062	-0.105	-0.102	0.078	0.027	0.004	-0.070	0.395	-0.023	
VA	N	107	107	107	107	107	107	107	107	107	107	107	107
	Na	16	12	12	6	6	7	10	19	15	12	16	10
	Ne	6.529	5.297	7.437	2.158	2.336	5.134	3.492	4.428	8.210	3.635	6.122	4.925
	I	2.159	1.890	2.158	1.067	1.044	1.733	1.514	2.050	2.318	1.679	2.240	1.866
	Ho	0.832	0.822	0.907	0.570	0.607	0.804	0.729	0.776	0.841	0.692	0.561	0.804

	He	0.847	0.811	0.866	0.537	0.572	0.805	0.714	0.774	0.878	0.725	0.837	0.797
	uHe	0.851	0.815	0.870	0.539	0.575	0.809	0.717	0.778	0.882	0.728	0.841	0.801
	P_{HWE}	0.550	0.078	0.964	0.288	0.653	0.832	0.321	0.623	0.552	0.464	0.000	0.795
NCN	F	0.018	-0.014	-0.047	-0.063	-0.062	0.002	-0.021	-0.002	0.042	0.046	0.330	-0.008
	N	56	56	56	56	56	56	56	56	56	56	55	56
	Na	14	9	11	4	6	7	7	12	14	11	14	9
	Ne	5.934	4.129	7.538	1.889	2.524	5.435	3.702	3.841	8.363	3.324	6.464	4.900
	I	2.089	1.649	2.154	0.913	1.130	1.759	1.494	1.841	2.296	1.586	2.203	1.770
	Ho	0.750	0.804	0.946	0.464	0.500	0.804	0.750	0.732	0.875	0.732	0.655	0.821
	He	0.831	0.758	0.867	0.471	0.604	0.816	0.730	0.740	0.880	0.699	0.845	0.796
	uHe	0.839	0.765	0.875	0.475	0.609	0.823	0.736	0.746	0.888	0.705	0.853	0.803
	P_{HWE}	0.200	0.075	0.203	0.184	0.247	0.393	0.868	0.840	0.036	0.309	0.005	0.691
	F	0.098	-0.060	-0.091	0.013	0.172	0.015	-0.028	0.010	0.006	-0.047	0.226	-0.032
NCS	N	66	66	66	66	66	66	66	66	66	66	66	66
	Na	16	11	12	5	5	8	10	17	14	10	16	11
	Ne	7.352	4.624	7.135	2.094	2.442	5.143	3.270	4.689	6.892	4.151	7.164	5.556
	I	2.281	1.772	2.136	1.019	1.058	1.772	1.492	2.067	2.198	1.682	2.341	1.957
	Ho	0.788	0.818	0.833	0.561	0.682	0.833	0.727	0.742	0.848	0.727	0.576	0.864
	He	0.864	0.784	0.860	0.522	0.590	0.806	0.694	0.787	0.855	0.759	0.860	0.820
	uHe	0.871	0.790	0.866	0.526	0.595	0.812	0.700	0.793	0.861	0.765	0.867	0.826
	P_{HWE}	0.313	0.226	0.944	0.930	0.823	0.791	0.652	0.328	0.519	0.394	0.000	0.614
	F	0.088	-0.044	0.031	-0.073	-0.155	-0.034	-0.048	0.056	0.008	0.042	0.331	-0.053
	SC	N	76	76	76	76	76	76	76	76	74	75	76
Na		14	7	12	5	6	7	11	16	14	12	16	10
Ne		6.616	4.036	6.955	2.360	2.506	5.583	3.445	5.208	8.583	3.575	5.383	5.132
I		2.176	1.601	2.107	1.111	1.110	1.792	1.597	2.027	2.353	1.703	2.123	1.828
Ho		0.895	0.645	0.789	0.632	0.592	0.868	0.684	0.855	0.905	0.720	0.592	0.811
He		0.849	0.752	0.856	0.576	0.601	0.821	0.710	0.808	0.883	0.720	0.814	0.805
uHe		0.854	0.757	0.862	0.580	0.605	0.826	0.714	0.813	0.890	0.725	0.820	0.811
P_{HWE}		0.317	0.018	0.129	0.037	0.305	0.871	0.261	0.472	0.027	0.761	0.000	0.777
F		-0.054	0.143	0.078	-0.096	0.015	-0.058	0.036	-0.058	-0.025	0.000	0.273	-0.007
FL		N	61	61	61	61	61	61	61	61	61	61	61
	Na	12	8	12	5	6	6	9	12	13	10	12	11
	Ne	6.399	4.605	7.368	2.197	2.371	5.175	3.375	4.040	8.116	3.923	6.045	4.845
	I	2.089	1.728	2.160	1.058	1.093	1.712	1.441	1.847	2.265	1.719	2.068	1.852
	Ho	0.885	0.754	0.902	0.590	0.492	0.885	0.689	0.672	0.951	0.721	0.590	0.803

	He	0.844	0.783	0.864	0.545	0.578	0.807	0.704	0.752	0.877	0.745	0.835	0.794
	uHe	0.851	0.789	0.871	0.549	0.583	0.813	0.710	0.759	0.884	0.751	0.841	0.800
	P_{HWE}	0.878	0.248	0.789	0.445	0.034	0.798	0.165	0.047	0.466	0.258	0.000	0.393
	F	-0.049	0.037	-0.043	-0.083	0.149	-0.097	0.022	0.107	-0.084	0.032	0.293	-0.012
WF	N	15	15	15	15	15	15	15	15	15	15	15	15
	Na	11	7	9	4	5	6	7	8	11	8	11	7
	Ne	7.143	4.500	6.818	2.406	2.778	5.294	4.167	5.172	7.627	3.782	7.500	4.891
	I	2.165	1.665	2.020	1.104	1.186	1.725	1.617	1.831	2.183	1.633	2.202	1.728
	Ho	0.867	0.800	0.867	0.667	0.600	0.867	1.000	0.800	0.933	0.867	0.600	0.867
	He	0.860	0.778	0.853	0.584	0.640	0.811	0.760	0.807	0.869	0.736	0.867	0.796
	uHe	0.890	0.805	0.883	0.605	0.662	0.839	0.786	0.834	0.899	0.761	0.897	0.823
	P_{HWE}	0.814	0.956	0.672	0.878	0.796	0.930	0.666	0.562	0.947	0.578	0.000	0.789
	F	-0.008	-0.029	-0.016	-0.141	0.062	-0.068	-0.316	0.008	-0.074	-0.178	0.308	-0.089

	Locus		Locus		Locus
Loc1	CM54794	Loc10	CM2660427	Loc19	CM732781
Loc2	CM2316467	Loc11	CM2212380	Loc20	CM2186404
Loc3	CM2352680	Loc12	CM2149957	Loc21	CM90501
Loc4	CM2492523	Loc13	CM459957	Loc22	CM1080088
Loc5	CM1787993	Loc14	CM2374475	Loc23	CM764003
Loc6	CM931277	Loc15	CM310413	Loc24	CM4391826
Loc7	CM4718692	Loc16	CM4591723	Loc25	CM1009046
Loc8	CM1065459	Loc17	CM2404273		
Loc9	CM1827829	Loc18	CM1191685		

Table 3. Population pairwise F_{ST} values based on 23 microsatellite loci (lower matrix). Population pairwise Φ_{ST} values based on the mitochondrial control region (lower matrix). New York (NY), Delaware (DE), Virginia (VA), North Carolina North of Cape Hatteras (NCN), North Carolina South of Cape Hatteras (NCS), South Carolina (SC), Florida Keys (FL), Western Florida (WF). There were no significant pairwise comparisons based on either class of molecular marker.

	NY	DE	VA	NCN	NCS	SC	FL	WF
NY	*	-0.00144	-0.00047	0.01391	0.00106	-0.00700	-0.00789	-0.0111
DE	-0.00151	*	0.00205	-0.00279	-0.00209	-0.02601	-0.00906	0.0391
VA	-0.00045	-0.00218	*	0.01045	-0.01496	-0.00513	-0.01110	-0.0130
NCN	-0.00056	-0.00112	-0.00025	*	-0.00291	-0.00734	-0.00519	0.0162
NCS	-0.00012	-0.00204	0.00082	0.00074	*	-0.00399	-0.00436	-0.0043
SC	-0.00066	-0.00166	-0.00084	0.00036	-0.00088	*	-0.01320	0.0011
FL	-0.00067	-0.00216	-0.00057	-0.00085	-0.00054	-0.00004	*	-0.0160
WF	-0.00073	-0.00277	0.00042	0.00014	0.00329	-0.00057	0.00023	*

Table 4. Distribution of mtDNA haplotypes. New York (NY), Delaware (DE), Virginia (VA), North Carolina North of Cape Hatteras (NCN), North Carolina South of Cape Hatteras (NCS), South Carolina (SC), Florida Keys (FL), Western Florida (WF).

Haplotype	NY	DE	VA	NCN	NCS	SC	FL	WF	Total
Hap_1	0	0	0	0	0	2	0	0	2
Hap_2	0	0	1	0	0	0	1	0	2
Hap_3	0	0	1	0	0	0	0	0	1
Hap_4	0	0	0	0	0	2	1	0	3
Hap_5	2	0	1	0	0	1	0	0	4
Hap_6	0	0	2	0	0	1	0	1	4
Hap_7	0	0	0	2	2	0	2	3	9
Hap_8	1	0	1	0	0	2	1	0	5
Hap_9	4	1	13	4	8	4	5	0	39
Hap_10	1	0	1	0	1	1	0	2	6
Hap_11	1	0	1	1	1	1	2	2	9
Hap_12	0	0	0	0	1	0	0	1	2
Hap_13	0	0	0	0	1	0	1	2	4
Hap_14	1	0	0	0	0	1	0	1	3
Hap_15	0	0	0	2	1	0	1	1	5
Hap_16	1	0	1	0	0	0	0	0	2
Hap_17	0	0	1	0	0	0	0	0	1
Hap_18	0	0	2	0	0	0	0	0	2
Hap_19	0	0	1	0	0	0	0	0	1
Hap_20	0	0	1	1	0	0	0	0	2
Hap_21	1	0	0	1	2	0	0	0	4
Hap_22	0	0	0	0	1	0	0	0	1
Hap_23	0	0	0	0	1	0	0	0	1
Hap_24	0	0	1	0	1	0	0	0	2
Hap_25	0	0	0	0	1	0	0	0	1
Hap_26	0	0	1	0	1	0	1	0	3
Hap_27	0	1	1	0	1	2	0	0	5
Hap_28	0	0	1	0	1	1	0	0	3
Hap_29	0	0	0	0	0	1	0	0	1
Hap_30	0	0	0	0	0	1	0	0	1
Hap_31	0	0	0	0	0	1	0	0	1
Hap_32	2	0	1	1	0	1	1	0	6
Hap_33	1	1	0	0	0	1	0	0	3
Hap_34	0	0	0	0	0	1	0	0	1
Hap_35	0	0	0	0	0	1	0	0	1
Hap_36	0	0	2	0	0	0	0	0	2
Hap_37	0	0	1	0	0	0	1	0	2
Hap_38	0	0	2	0	0	0	1	0	3
Hap_39	0	0	1	0	0	0	0	0	1
Hap_40	0	1	1	1	0	0	0	0	3
Hap_41	0	0	1	0	0	0	0	0	1
Hap_42	0	0	0	0	0	0	1	0	1
Hap_43	0	0	0	0	0	0	1	0	1
Hap_44	0	0	0	0	0	0	1	0	1
Hap_45	2	0	0	1	0	0	1	0	4
Hap_46	0	0	0	0	0	0	1	0	1
Hap_47	0	0	0	0	0	0	1	0	1

Hap_48	1	1	0	0	0	0	0	0	2
Hap_49	0	1	0	0	0	0	0	0	1
Hap_50	0	1	0	0	0	0	0	0	1
Hap_51	0	1	0	0	0	0	0	0	1
Hap_52	0	0	0	0	0	1	0	0	1
Hap_53	0	0	0	0	0	1	0	0	1
Hap_54	0	0	0	0	0	1	0	0	1
Hap_55	0	0	0	0	0	1	0	0	1
Hap_56	0	0	0	0	0	1	0	0	1
Hap_57	0	0	0	0	0	1	0	0	1
Hap_58	1	0	0	0	0	0	0	0	1
Hap_59	1	0	0	0	0	0	0	0	1
Hap_60	1	0	0	0	0	0	0	0	1
Hap_61	1	0	0	0	0	0	0	0	1
Hap_62	1	0	0	0	0	0	0	0	1
Hap_63	1	0	0	0	0	0	0	0	1
Hap_64	0	0	0	1	0	0	0	0	1
Hap_65	0	0	0	1	0	0	0	0	1
Hap_66	0	0	0	1	0	0	0	0	1
Hap_67	0	0	0	1	0	0	0	0	1
Hap_68	0	0	0	1	0	0	0	0	1
Hap_69	0	0	0	2	0	0	0	0	2
Hap_70	0	0	0	1	0	0	0	0	1
Hap_71	0	0	0	1	0	0	0	0	1
Hap_72	0	0	0	1	0	0	0	0	1
Total	24	8	40	24	24	31	24	13	188

Table 5. Mean number of pairwise differences (K), nucleotide diversity (π), haplotype diversity (H), Tajima's D, Probability of significance for Tajima's D (P_D), Fu's F, Probability of significance for Fu's D (P_F), values across all samples (All), New York (NY), Delaware (DE), Virginia (VA), North Carolina North of Cape Hatteras (NCN), North Carolina South of Cape Hatteras (NCS), South Carolina (SC), Florida Keys (FL), Western Florida (WF). All probabilities based on 10 000 permutations of the data.

Sample	K	π	H	Tajima's D	P_D	Fu's F	P_F
All	3.099 +/- 1.618	0.008 +/- 0.004	0.943 +/- 0.013	-2.101	0.001	-26.240	0.000
NY	3.409 +/- 1.807	0.008 +/- 0.005	0.967 +/- 0.024	-1.439	0.061	-13.112	0.000
DE	3.607 +/- 2.043	0.009 +/- 0.006	1.000 +/- 0.062	-1.336	0.097	-4.958	0.003
VA	2.931 +/- 1.569	0.007 +/- 0.004	0.894 +/- 0.04	-1.836	0.014	-19.816	0.000
NCN	2.754 +/- 1.511	0.007 +/- 0.004	0.967 +/- 0.024	-1.609	0.038	-15.451	0.000
NCS	2.442 +/- 1.370	0.006 +/- 0.004	0.891 +/- 0.057	-1.662	0.034	-10.239	0.000
SC	3.914 +/- 2.017	0.010 +/- 0.006	0.978 +/- 0.015	-1.903	0.010	-20.286	0.000
FL	2.953 +/- 1.601	0.007 +/- 0.004	0.956 +/- 0.031	-1.366	0.075	-14.667	0.000
WF	2.692 +/- 1.530	0.007 +/- 0.004	0.923 +/- 0.050	-0.657	0.278	-2.577	0.051

Figure 1. Sample collection locations for Blueline Tilefish used in the VIMS genetics study. Closed circles indicate a known lat/long fish capture location. Open circles indicate an approximate location or statistical area reported by the sample collector. NY-New York, NJ-New Jersey, DE-Delaware, VA-Virginia, NCN-North Carolina North of Cape Hatteras, NCS-North Carolina South of Cape Hatteras, SC-South Carolina, GA-Georgia, FL-Florida Keys, WFL-Western Florida.

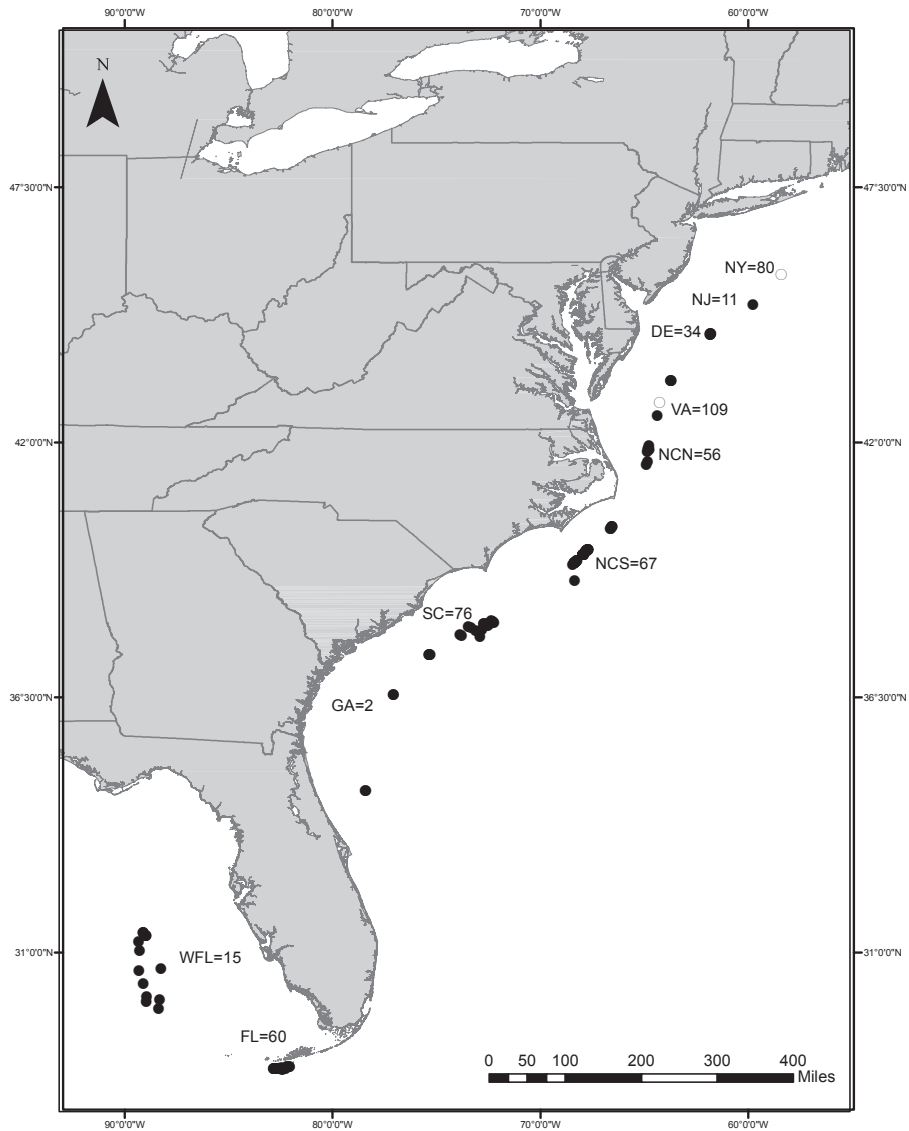


Figure 2. Factorial correspondence analysis based on microsatellite data: a) Samples divided NY-NCN (yellow) and NCS-WF (blue) b) NY-DE (yellow), VA-NCN (blue) and SC-WF (white) and c) NY (yellow), DE (bright blue), VA (white) NCN (grey), NCS (pink), SC (green), FL (dark blue), WF (red).

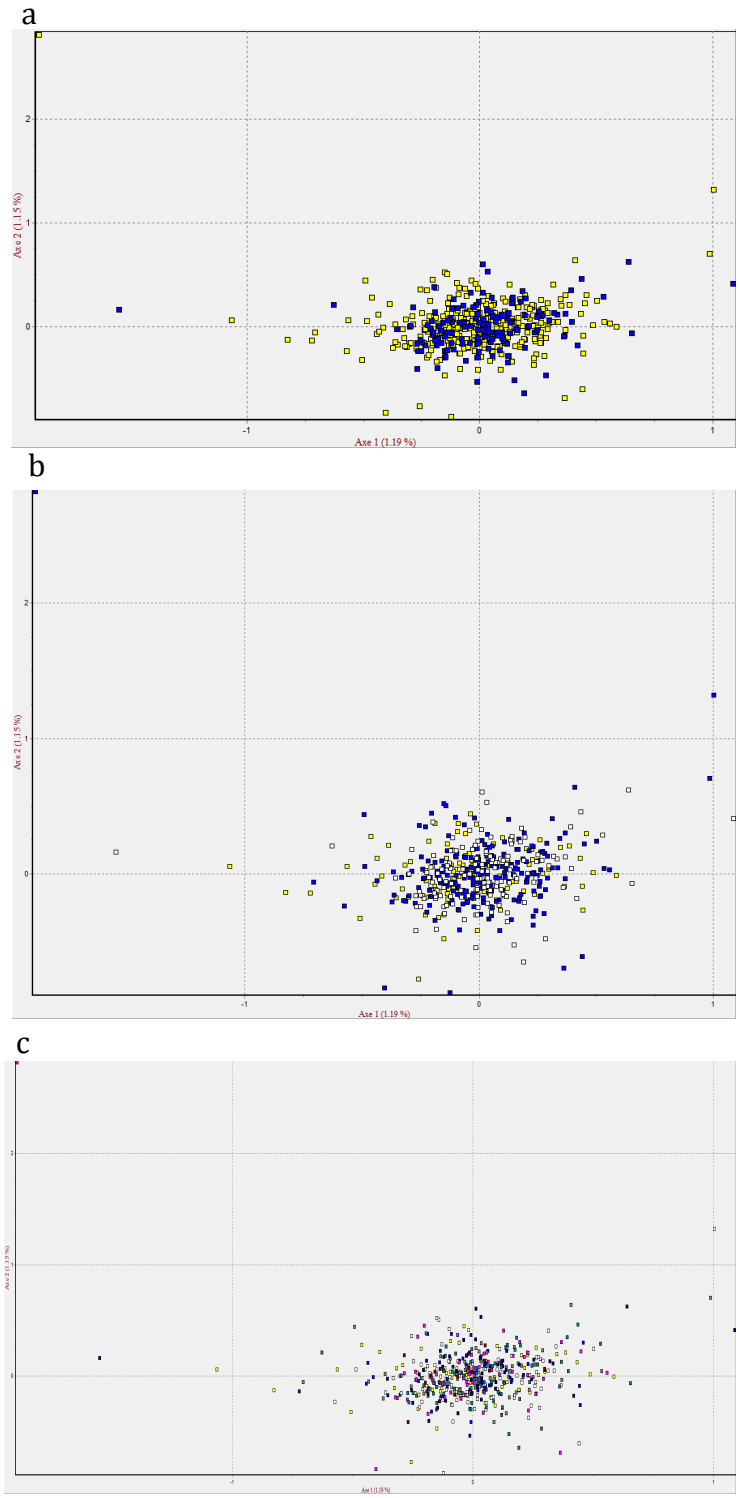
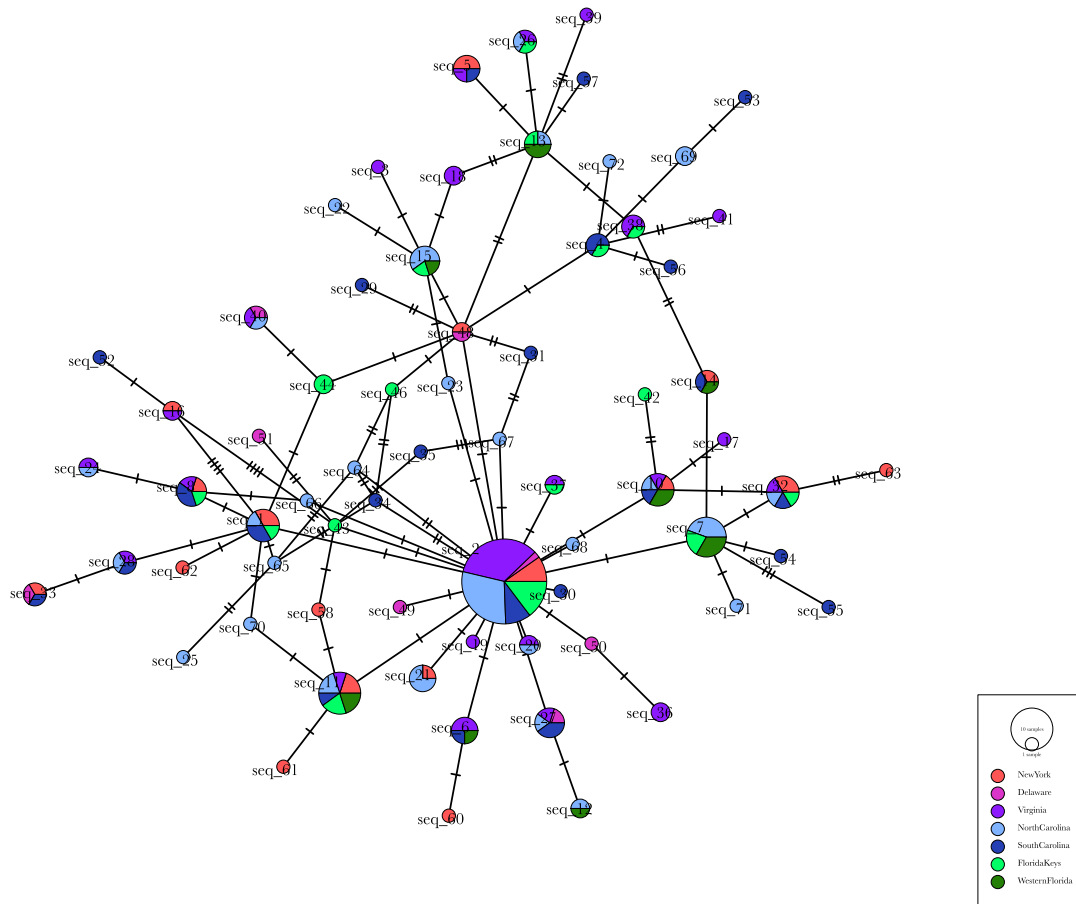
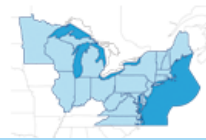


Figure 3. Minimum spanning network of the relationship among mtDNA haplotypes. Hash marks represent the number of base pair differences between haplotypes.





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Successful conservation efforts pay off for humpback whales

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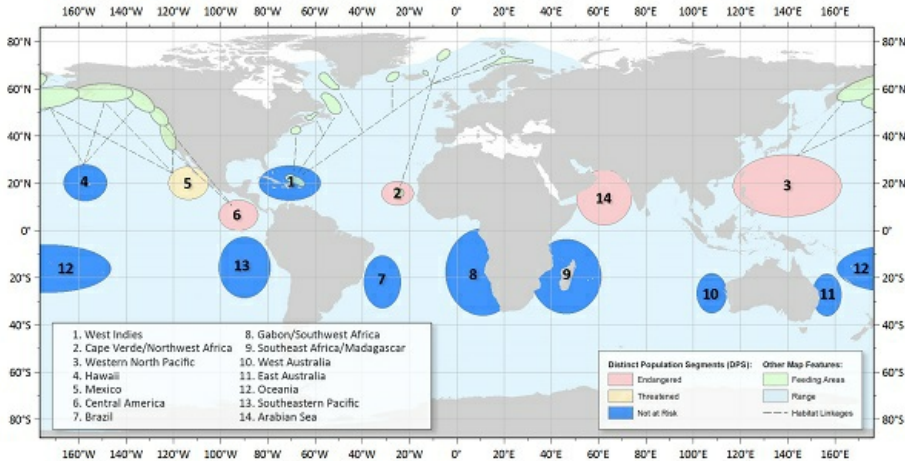
FOR IMMEDIATE RELEASE:
September 6, 2016

Division into distinct populations paves the way for tailored conservation efforts

Endangered humpback whales in nine of 14 newly identified distinct population segments have recovered enough that they don't warrant listing under the Endangered Species Act, NOAA Fisheries said today. International conservation efforts to protect and conserve whales over the past 40 years proved successful for most populations. Four of the distinct population segments are still protected as endangered, and one is now listed as threatened.

Commercial whaling severely reduced humpback whale numbers from historical levels, and the United States listed all humpback whales as endangered in 1970. NOAA Fisheries worked nationally and internationally to identify and apply protections for humpback whales. The International Whaling Commission's whaling moratorium, imposed in 1982, played a major role in the comeback of humpback whales, and remains in effect.

"Today's news is a true ecological success story," said Eileen Sobeck, assistant NOAA administrator for fisheries. "Whales, including the humpback, serve an important role in our marine environment. Separately managing humpback whale populations that are largely independent of each other allows us to tailor conservation approaches for each population."



Two of the four populations that remain endangered are found in U.S. waters at certain times of the year. The Central America population feeds off the West Coast, while the Western North Pacific population does so in the Bering Sea and Aleutian Islands. The Mexico population – listed as threatened – also feeds off the West Coast of the United States and Alaska.

Two separate, complementary regulations filed today maintain protections for whales in waters off Hawaii and Alaska by specifying distance limits for approaching vessels. All humpback whales remain protected in U.S. waters and on the high seas under the Marine Mammal Protection Act, regardless of their ESA status.

Get more information on [humpback whales](#) and the [rules filed today](#).

B-roll from: <https://vimeo.com/111689294>

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Humpback Whale (*Megaptera novaeangliae*)

Status

ESA Threatened- 1 "distinct population segment" (DPS)
» Mexico DPS

ESA Endangered- 4 "distinct population segments" (DPSs)
» Arabian Sea DPS
» Cape Verde Islands/Northwest Africa DPS
» Central America DPS
» Western North Pacific DPS

Species Description

- Weight:** 25-40 tons (50,000-80,000 pounds; 22,000-36,000 kg); newborns weigh about 1 ton (2,000 pounds; 900 kg)
- Length:** up to 60 feet (18 m), with females larger than males; newborns are about 15 feet (4.5 m) long
- Appearance:** primarily dark grey, with some areas of white
- Lifespan:** about 50 years
- Diet:** tiny crustaceans (mostly krill), plankton, and small fish; they can consume up to 3,000 pounds (1360 kg) of food per day
- Behavior:** breaching (jumping out of the water), or slapping the surface

Humpback whales are well known for their long "pectoral" fins, which can be up to 15 feet (4.6 m) in length. Their scientific name, *Megaptera novaeangliae*, means "big-winged New Englander" as the New England population was the one best known to Europeans. These long fins give them increased maneuverability; they can be used to slow down or even go backwards.

Similar to all baleen whales, adult females are larger than adult males, reaching lengths of up to 60 feet (18 m). Their body coloration is primarily dark grey, but individuals have a variable amount of white on their pectoral fins and belly. This variation is so distinctive that the pigmentation pattern on the undersides of their "flukes" is used to identify individual whales, similar to a human fingerprint.

Humpback whales are the favorite of whale watchers, as they frequently perform aerial displays, such as breaching (jumping out of the water), or slapping the surface with their pectoral fins, tails, or heads.

In the summer, humpbacks are found in high latitude feeding grounds, such as the Gulf of Maine in the Atlantic and Gulf of Alaska in the Pacific. In the winter, they migrate to calving grounds in subtropical or tropical waters, such as the Dominican Republic in the Atlantic and the Hawaiian Islands in the Pacific. The Arabian Sea humpback does not migrate, remaining in tropical waters all year.

Humpback whales travel great distances during their seasonal migration, the farthest migration of any mammal. The longest recorded migration was 11,706 miles (18,840 km), with a trek from American Samoa to the Antarctic Peninsula. One of the more closely studied routes is between Alaska and Hawaii, where humpbacks have been observed making the 3,000-mile (4,830 km) trip in as few as 36 days.

During the summer months, humpbacks spend the majority of their time feeding and building up fat stores (blubber) that they will live off of during the winter. Humpbacks filter feed on tiny crustaceans (mostly krill), plankton, and small fish and can consume up to 3,000 pounds (1,360 kg) of food per day. Several hunting methods involve using air bubbles to herd, corral, or disorient fish. One highly complex variant, called "bubble netting," [This link is an external site.](#) is unique to humpbacks. This technique is often performed in groups with defined roles for distracting, scaring, and herding before whale's lunge at prey corralled near the surface.

In their wintering grounds, humpback whales congregate and engage in mating activities. Humpbacks are generally "polygynous" with males exhibiting competitive behavior on wintering grounds. Aggressive and antagonistic behaviors include chasing, vocal and bubble displays, horizontal tail thrashing, and rear body thrashing. Males within these groups also make physical contact, striking or surfacing on top of one another. These bouts can cause injuries ranging from bloody scrapes to, in one recorded instance, death. Also on wintering grounds, males sing complex songs that can last up to 20 minutes and be heard 20 miles (30 km) away. A male may sing for hours, repeating the song several times. All males in a population sing the same song, but that song continually evolves over time. Humpback whale singing has been studied for decades, but scientists still understand very little about its function.

Gestation lasts for about 11 months. Newborns are 13-16 feet (4-5 m) long and grow quickly from the highly nutritious milk of their mothers. Weaning occurs between 6-10 months after birth. Mothers are protective and affectionate towards their calves, swimming close and frequently touching them with their flippers. Males do not provide parental support for calves. Breeding usually occurs once every two years, but sometimes occurs twice in a three-year span.

Habitat

During migration, humpbacks stay near the surface of the ocean.

While feeding and calving, humpbacks prefer shallow waters. During calving, humpbacks are usually found in the warmest waters available at that latitude. Calving grounds are commonly near offshore reef systems, islands, or continental shores.

Humpback feeding grounds are in cold, productive coastal waters.

Distribution

Humpback whales live in all major oceans from the equator to sub-polar latitudes.

In the western North Atlantic Ocean, humpback whales feed during spring, summer, and fall over a range that encompasses the eastern coast of the United States (including the Gulf of Maine), the Gulf of St. Lawrence, Newfoundland/Labrador, and western Greenland. In winter, whales from the Gulf of Maine mate and calve primarily in the West Indies. Not all whales migrate to the West Indies every winter, and significant numbers of animals are found in mid- and high-latitude regions at this time.

In the North Pacific, there are at least three separate populations:

1. California/Oregon/Washington stock that winters in coastal Central America and Mexico and migrates to areas ranging from the coast of California to southern British Columbia in summer/fall;
2. Central North Pacific stock that winters in the Hawaiian Islands and migrates to northern British Columbia/ Southeast Alaska and Prince William Sound west to Kodiak; and

3. Western North Pacific stock that winters near Japan and probably migrates to waters west of the Kodiak Archipelago (the Bering Sea and Aleutian Islands) in summer/fall. There is some mixing between these populations, though they are still considered distinct stocks.

In the Southern Hemisphere, the International Whaling Commission (IWC) This link is an external site. has designated seven major breeding stocks linked to seven major feeding areas. Most breeding areas for Southern Hemisphere humpbacks are at 20°S, although some are in the Northern Hemisphere, including areas along the west coast of Africa and Central America. In Costa Rica, there is overlap with Northern Hemisphere humpbacks geographically, but they are not there at the same time. All Southern Hemisphere humpbacks share feeding grounds in the Antarctic south of 40°S and between 120°E and 110°W.

Based on the most recent status review of the humpback whale, we determined that the species consists of 14 DPSs.

Population Trends

Humpbacks are increasing in abundance in much of their range. While estimating humpback whale abundance is inherently difficult, the best population estimates for U.S. stocks of humpback whales can be found in our most recent stock assessment reports and the latest status review of the species.

Threats

Humpback whales face a series of threats including:

- entanglement in fishing gear (bycatch)
- ship strikes
- whale watch harassment
- habitat impacts
- harvest

Humpbacks can become entangled in fishing gear, either swimming off with the gear or becoming anchored. We have observed incidental "take" of humpback whales in the California/ Oregon swordfish and thresher shark drift gillnet fishery. Potential entanglement from gear from several fisheries can occur on their long

migration from Hawaii to Alaska. Humpbacks in Hawaii have been observed entangled in longline gear, crab pots, and other non-fishery-related lines.

Inadvertent ship strikes can injure or kill humpbacks. We have verified mortality related to ship strikes in the Gulf of Maine and in southeastern Alaska. Ship strikes have also been reported in Hawaii.

Whale watching vessels may stress or even strike whales. The Gulf of Maine stock is the focus of whale watching in New England from late spring to early fall, particularly within the Stellwagen Bank National Marine Sanctuary. The central North Pacific stock is the focus of a whale-watching industry on their wintering grounds in the Hawaiian Islands. The feeding aggregation in southeast Alaska is also the focus of a developing whale-watching industry that may impact whales in localized areas.

Shipping channels, fisheries, and aquaculture may occupy or destroy humpback whale aggregation areas. Recreational use of marine areas, including resort development and increased boat traffic, may displace whales that would normally use that area. In Hawaii, acoustic impacts from vessel operation, oceanographic research using active sonar, and military operations are also of increasing concern.

Japan has issued scientific permits in the Antarctic and in the western North Pacific in recent years. In 2009, the full JARPA II program commenced. Annual sample sizes for the full-scale research (lethal sampling) are set at 50 humpback whales. According to the IWC, Japan has refrained from taking humpback whales.

Conservation Efforts

Efforts to conserve humpback whales include:

- Reduce bycatch in gillnet and trap/pot fisheries in the western North Atlantic through the Atlantic Large Whale Take Reduction Plan.
- Implement marine mammal take reduction measures identified in the Pacific Offshore Cetacean Take Reduction Plan.
- Mitigate ship strikes and respond to humpback whales in distress (see Alaska and Hawaii regulations).
- Educate whale watch vessels and boat operators on practicing safe boating around whales, such as through the Whale SENSE and See a Spout programs.

- Monitor humpbacks in U.S. waters via shipboard surveys and mark recapture studies.
- Research humpback population structure and abundance, though studies like the Structure of Populations, Levels of Abundance, and Status of Humpbacks (SPLASH) and More North Atlantic Humpbacks (MoNAH) projects, as well as work done at the Hawaiian Islands Humpback Whale National Marine Sanctuary.
- Recover the species [pdf]

Regulatory Overview

In 1946, the International Convention for the Regulation of Whaling regulated commercial whaling of humpback whales.

In 1966, the International Whaling Commission prohibited commercial whaling of humpbacks.

In June 1970, humpback whales were designated as "endangered" under the Endangered Species Conservation Act (ESCA). In 1973, the Endangered Species Act (ESA) replaced the ESCA, and continued to list humpback whales as endangered.

In April 2015, we proposed to revise the ESA listing of the humpback whale by identifying 14 DPSs and listing 2 DPSs as threatened and 2 as endangered (80 FR 22304). The other 10 identified DPSs were not proposed for listing.

In September 2016, we revised the ESA listing for the humpback whale to identify 14 Distinct Population Segments (DPS), list 1 as threatened, 4 as endangered, and identify 9 others as not warranted for listing. We also issued two final rules governing approach of humpback whales in Alaska and Hawaii. The first re-codifies existing approach regulations in Alaskan waters under the ESA so they apply to both threatened and endangered humpback whales, and adds similar approach regulations under the MMPA to protect all humpback whales found off Alaska. The other is an interim final rule for approach regulations under the MMPA in Hawaiian waters to replace the previous regulations under the ESA. While the regulations are effective 30 days after their publication in the Federal Register, NOAA Fisheries is accepting public comment for 60 days after their publication and will publish a final rule in the future.

Under the MMPA, threats to humpback whales are mitigated by regulations implementing the Pacific Offshore Cetacean Take Reduction Plan and the Atlantic Large Whale Take Reduction Plan.

Taxonomy

Kingdom: Animalia

Phylum: Chordata

Class: Mammalia

Order: Cetacea

Family: Balaenopteridae

Genus: *Megaptera*

Species: *novaeangliae*