



Atlantic States Marine Fisheries Commission

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MEMORANDUM

TO: Atlantic Menhaden Management Board
FROM: Atlantic Menhaden Advisory Panel
DATE: July 14, 2016
SUBJECT: AP Recommendations on Draft Addendum I and 2017 Fishery Specifications

The Advisory Panel (AP) met via conference call on July 14, 2016 to formulate comments on Draft Addendum I and provide recommendations for the 2017 fishery specification process. Panel members in attendance represented commercial harvesters, recreational anglers, and conservation coalition members. The following is a summary of the conference call.

Attendees

Advisory Panel Members

Donald Swanson (NH)
Jeff Kaelin (NJ, Chair)
John Dean (MD)
David Sikorski (MD)
Ken Hinman (Non-trad)

ASMFC Staff
Megan Ware

TC Members
Jeff Brust (NJ)

Commissioners
Bob Ballou
Michelle Duval
Nichola Meserve
Rob O'Reilly

Public
Peter Himchak
Kate Wilke
John Rosano
Shaun Gehan
Aaron Kornbluth

2017 Fishery Specifications

AP members reviewed the TC's June 22, 2016 memo on projection runs for the 2017 fishery specifications. The AP was split in its recommendations to the Board with two members recommending the coastwide TAC remain the same until final action on Amendment 3 (**187,880 mt**) and two members supporting a TAC which has a 50% probability of being below the F target (**267,500 mt**).

- Two AP members advised the Board maintain the current TAC (187,880 mt) until Amendment 3 is completed and implemented in 2018. They stated that the purpose of the Amendment is to re-allocate menhaden between states and the ecosystem. To change the TAC before this time would be premature given ecological reference points are being developed and there is an on-going socio-economic study on the commercial fishery. Furthermore, they expressed concern that the projections are based on the current single-species reference points and therefore do not consider the impact of an increased TAC on predators. Overall, these AP members recommended the Board maintain the 187,880 mt TAC until the ecological and socio-economic implications of an increase can be fully understood.

- Two AP members recommended the Board increase the TAC to a level that has a 50% probability of being below the F target in 2017 (267,500 mt). They felt that the resource is under-fished since there is a high abundance of juvenile fish in the bays and estuaries and many state's directed fisheries are already closed. As a result, they felt the risk associated with a 50% probability of exceeding the F target is well within the sustainable limits of the menhaden fishery. These AP members also stated the recent stock assessment was robust in considering predator needs and they were not concerned that the projections are based on single-species reference points. Furthermore, they stated that Amendment 3 will primarily focus on allocation and, as a result, there is no need to hold off on a decision regarding an increase to the coastwide TAC.
- One AP member felt that a 40% increase in the coastwide TAC was too large, but did not provide specific detail on what level of TAC he preferred.

Draft Addendum I

AP members also reviewed Draft Addendum I and supported **Option C**, which allows two authorized individuals working from the same vessel fishing stationary multi-species gear in a limited entry fishery to land up to 12,000 pounds per day, and **Option D**, which allows two permitted fishermen working from the same vessel fishing pound nets to land up to 12,000 pounds per day.

- Two AP members supported Option C, highlighting that this option is a robust way to provide flexibility to multiple gear types which harvest under the bycatch provision. They felt it was important these gears be part of a limited entry fishery since this would ease enforcement.
- One AP member supported Option D, noting that for some states Options B, C, and D are the same.
- Another AP member supported an option which ensures bycatch allowances can be accurately monitored and easily enforced.
- One AP member did not have a preference for an option.

Atlantic States Marine Fisheries Commission

PUBLIC INFORMATION DOCUMENT

**For Amendment 3 to the
Interstate Fishery Management Plan For**

ATLANTIC MENHADEN



July 2016

Vision: Sustainably Managing Atlantic Coastal Fisheries

This initial draft document was developed for Management Board feedback and discussion.

This document is not intended to solicit public comment as part of the Commission/State formal public input process. The Board will consider approval of an updated draft document for public comment in October 2016.

The Atlantic States Marine Fisheries Commission seeks your input on the initiation of Amendment 3 to the Atlantic Menhaden Fishery Management Plan

The public is encouraged to submit comments regarding this document during the public comment period. Comments must be received by **5:00 PM (EST) on Month Day, 201X**. Regardless of when they were sent, comments received after that time will not be included in the official record. The Atlantic Menhaden Management Board will consider public comment on this document when developing the first draft of Amendment 3.

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

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

Megan Ware
Fishery Management Plan Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland Street, Suite 200A-N
Arlington, Virginia 22201
Fax: (703) 842-0741
mware@asmfc.org (subject line: Menhaden PID)

If you have any questions please call Megan Ware at (703) 842-0740.

***YOUR
COMMENTS ARE
INVITED***

The Atlantic States Marine Fisheries Commission (Commission) is developing an amendment to revise the interstate fishery management plan (FMP) for Atlantic menhaden. The Commission, through the coastal states of Maine through Florida, is responsible for managing Atlantic menhaden.

This is your opportunity to inform the Commission about changes observed in the fishery, actions you feel should or should not be taken in terms of management, regulation, enforcement, and research, and any other concerns you have about the resource or the fishery, as well as the reasons for your concerns.

***WHY IS THE
ASMFC
PROPOSING THIS
ACTION?***

At the May 2015 meeting, the Menhaden Board initiated the development of Amendment 3 to the Atlantic Menhaden FMP to pursue the development of Ecological Reference Points (ERPs) and revisit allocation methods.

The 2015 Atlantic Menhaden Benchmark Stock Assessment and Peer Review Report categorized the development of ERPs as a high priority for Atlantic menhaden management. Currently, the stock is assessed with single-species biological reference points based on maximum spawning potential. However, this method does not consider the ecological role that menhaden serve as forage fish or how changes in the population of predator species may impact the abundance of menhaden. ERPs will consider the broad role that menhaden play in the ecosystem by incorporating data on the status of several predator and prey species, and is a tool that could improve the management of menhaden. Additionally, Amendment 2 (2012) requires that state quota allocations be revisited every 3 years. Atlantic menhaden quota is currently allocated to states based on a three average catch between 2009 and 2011. In revisiting the allocations, the Board decided to investigate different allocation methods and timeframes given concerns that the current allocation scheme does not strike an equitable balance between gear types and regions.

In order to pursue the implementation of ERPs as well as changes to the current quota allocations, the Board needs to consider changes in the management tools used to regulate the fishery. This document proposes a suite of management tools which consider different types of current reference points and allocation methods.

***WHAT IS THE
PROCESS FOR
DEVELOPING AN
AMENDMENT?***

The publication of this document and announcement of the Commission's intent to amend the existing FMP for Atlantic menhaden is the first step of the formal amendment process. Following the initial phase of information gathering and public comment, the Commission will evaluate potential management alternatives and the impacts of those alternatives. The Commission will then develop Draft Amendment 3, incorporating the identified management options, for public review. Following that review and

INITIAL DRAFT DOCUMENT FOR BOARD FEEDBACK, NOT FOR PUBLIC COMMENT

public comment, the Commission will specify the management measures to be included in Amendment 3, as well as a timeline for implementation. In addition to issues identified in this Public Information Document (PID), the Draft Amendment may include issues identified during the public comment period of the PID.

The timeline for completion of Amendment 3 is as follows:

	Oct 2016	Nov 2016 – Jan 2017	Feb 2017	Mar – July 2017	Aug 2017	Sept – Oct 2017	Nov 2017
Approval of Draft PID by Board Current Step	X						
Public review and comment on PID		X					
Board review of public comment; Board direction on what to include in Draft Amendment 3			X				
Preparation of Draft Amendment 3				X			
Review and approval of Draft Amendment 3 by Board for public comment					X		
Public review and comment on Draft Amendment 3						X	
Board review of public comment on Draft Amendment 3							X
Review and approval of the final Amendment 3 by the Board, Policy Board and Commission							X

WHAT IS THE PURPOSE OF THIS DOCUMENT?

The purpose of this document is to inform the public of the Commission's intent to gather information concerning Atlantic menhaden and to provide an opportunity for the public to identify major issues and alternatives relative to the management of this species. Input received at the start of the amendment development process can have a major influence in the final outcome of the amendment. This document is intended to solicit observations and suggestions from fishermen, the public, and other interested parties, as well as any supporting documentation and additional data sources.

To facilitate public input, this document provides a broad overview of the issues already identified for consideration in the amendment; background information on the Atlantic menhaden population, fisheries, and management; and a series of questions for the public to consider about the management of the species. In general, the primary question on which the Commission is seeking public comment is: **"How would you like the Atlantic menhaden fisheries to look in the future?"**

WHAT ISSUES WILL BE ADDRESSED?

The primary issues considered in the PID are:

- Reference Points
- Commercial Fishery Management Tools

ISSUE 1: Reference Points

Background: The 2015 Atlantic Menhaden Benchmark Stock Assessment established single-species biological reference points based on the maximum spawning potential of the population. The reference points include a measure of fishing mortality (F) to determine an overfishing designation and a measure of fecundity to determine an overfished status. The F target and threshold are 0.38 and 1.26, respectively, while the fecundity target and threshold are 189,270 billion eggs and 86,821 billion eggs, respectively. As of 2013, the stock is not overfished (170,536 billion eggs) and overfishing is not occurring (F=0.22). These reference points were recommended for use by the Technical Committee and Stock Assessment Peer Review Panel.

Given the crucial biological role which menhaden play as a forage fish, the Board has expressed interest in developing ecological reference points by which to manage the menhaden stock. Forage fish serve an important role in the ecosystem as they provide a food source to a variety of species including larger fish (ie: weakfish, striped bass), birds, and marine mammals. As a result, changes in the abundance of menhaden may have implications for the larger ecosystem. Ecological reference points (ERPs) provide a method to assess the status of menhaden while considering the interactions with predators and other prey species. This method accounts for changes in the abundance of several species when setting an overfished and overfishing threshold for menhaden. The benefit of this approach is that it allows fishery managers to consider the harvest of menhaden within the context of the predators that the species supports.

In May 2015, the Board tasked the Biological Ecological Reference Point Workgroup (BERP) with developing ERPs for Atlantic menhaden. As a first step in this process, the BERP identified four modeling approaches which could be used to successfully calculate ERPs for menhaden. Given the complexity of these models and the large amounts of data required, it is expected that these ERPs will be finished after Amendment 3 is finalized. The BERP will be having several data, assessment, and modeling workshops over the next few years in order to finish the ERPs by 2019.

The Lenfest Ocean Program, a grantmaking program which is managed by Pew Charitable Trusts, has also developed guidelines for the development of ERPs for forage fish. In their 2012 report by Pikitch et al, Lenfest describes how they applied a suite of 10 published models to evaluate a variety of harvest control rules which specify fishing intensity. From these models they developed a general equation to predict predator responses to specific levels of forage fish abundance. This equation by Pikitch et al. (2012) proposes that fishing mortality for menhaden not exceed half of the species natural mortality rate and that, when biomass falls below 40% of the biomass expected under an unfished stock, fishing be prohibited.

The BERP was asked to review the ERPs proposed by Pikitch et al (2012) and noted several concerns with the analysis. The primary concern of the BERP was that the Lenfest equation was developed for forage species that are a main component (> 50%) of a predator's overall diet. Although menhaden are important forage for a number of marine species, and may be a main food source for some species during certain seasons, they do not account for more than 20% of the overall diet for any of the finfish predators currently included in the BERP multispecies model. The BERP also raised concerns that the Pikitch et al (2012) equation assumes a stock-recruit relationship can be defined for the forage species. Available data indicate, however, that recruitment of menhaden is driven primarily by environmental effects rather than stock size. For these reasons, the BERP recommended that the Lenfest equation was not an appropriate method for developing ERPs for menhaden (See Appendix 1 for BERP Memo dated April 20, 2015).

Moving forward, there are several options for the Board (Table 1) with respect to reference points. The Board could continue use of the single-species reference points approved in the 2015 stock assessment. The Board could also adopt the ERPs proposed by Pikitch et al (2012) or, upon completion, adopt the ERPs created by the BERP. Given that the BERP ERPs will not be completed before 2019, the Board would have to choose interim reference points by which to manage the menhaden stock.

Table 1. Current reference points and those proposed by Pikitch et al (2012). FEC is a fecundity reference point to determine an overfished status while F is a fishing mortality reference point to determine whether overfishing is occurring.

Reference Points	Benchmark
F (current single species threshold)	1.26
F (current single species target)	0.38
F (Pikitch et al 2012)	0.29
F (in 2013)	0.22
FEC (current singles species threshold)	86,821 billion eggs
FEC (current single species target)	189,270 billion eggs
FEC (in 2013)	170,536 billion eggs

Statement of the Problem: Given the ecological importance of menhaden as a forage fish, the Board is interested in developing ERPs for the stock. Options for ERPs include those proposed by Pikitch et al (2012) and those which are currently being developed by the BERP. If the Board wants to pursue the ERPs developed by the BERP, interim reference points must be selected given this modeling work will not be completed until 2019.

Option A: Single Species Reference Points (Status Quo)

The Atlantic menhaden stock is managed with single-species biological reference points developed in the 2015 benchmark stock assessment. These set an F target and threshold of 0.38 and 1.26, respectively, and a fecundity target and threshold of 189,270 billion eggs and 86,821 billion eggs, respectively.

Option B: Pikitch et al (2012) Ecological Reference Points

The Atlantic menhaden stock is managed with the ecosystem based reference points proposed by Pikitch et al (2012). Under these reference points, fishing is prohibited when biomass levels fall below 40% of the unfished biomass. Above this level, fishing mortality does not exceed half the species' natural mortality rate. The calculated F reference point under this scenario is 0.29.

Option C: Interim Reference Points Until New Ecological Reference Points Are Developed

The Atlantic menhaden stock is managed under interim reference points until the ecological reference points developed by the BERP are completed in 2019. Potential interim reference points could include the current single species biological reference points, the Pikitch et al (2012) ecological reference points, or another control rule.

Public Comment Questions: Should the Board manage the Atlantic menhaden stock with ecological reference points? Do you support the use of interim reference points until analysis is complete by the BERP?

ISSUE 2:
Quota
Allocation

Background: Amendment 2 established a commercial total allowable catch (TAC) for Atlantic menhaden and divided this catch into commercial quotas for participating jurisdictions (ME through FL). A TAC and quota system were adopted in order to respond to the overfishing stock status from the 2010 stock assessment and cap landings in the commercial fishery. Since it was implemented in 2013, the quota system has been able to successfully limit the harvest of menhaden. The 2015 benchmark stock assessment found that the Atlantic menhaden stock is not overfished and overfishing is not occurring. As a result, the 2015 and 2016 TACs were raised 10%, from the 2013–2014 level of 170,800 mt to 187,880 mt. (See Table 1 in Appendix 1 for the state allocations and yearly quotas).

Amendment 2 requires that allocation be revisited every three years. Currently, the TAC is divided among jurisdictions based on average landings between 2009 and 2011. In beginning the discussion on quotas, the Board decided to re-visit the allocation methods given concern that this approach does not strike an equitable balance between gear types and regions, as well as the present needs of the fishery versus future growth opportunities. More specifically, because 85% of the quota is allocated to Virginia, where the last remaining menhaden reduction fishery takes place, increases in the TAC provide limited benefit to the small-scale bait fisheries along the coast. Additionally, given improvements in the condition of the Atlantic menhaden stock, the process of determining allocation on historical catch could limit states who currently have minimal quota from participating in the growing fishery. Some states have also found evidence of un-reported landings during the reference period, meaning the quota system may have reduced their fisheries to a greater extent than originally intended.

Given these concerns, the Board is interested in exploring other allocation strategies. Many fisheries use quotas to limit effort in the fishery and provide examples of how catch can be allocated. Atlantic herring quota is currently allocated by season in the inshore management area. None of the quota is allocated between January and May due to spring spawning and interactions with other fisheries; 72.8% of the quota is available from June through September and 27.2% from October through December. Northern shrimp allocates its quota by gear-type with 87% of catch allocated to the trawl fishery and 13% allocated to the trap fishery. This was done to ensure participation by trap fishermen who harvest northern shrimp later in the season. Spiny dogfish uses both a regional and state allocation system with the northern region (ME–CT) receiving 58% of the quota and the states of NY through NC receiving individual state shares. This allocation system was used to allow Southern states the ability to participate in the fishery before the total allowable catch is caught by the northern most states.

In May 2015, the Menhaden Board established an Allocation Working Group to initiate the process of revisiting quota allocation. During their discussion the

Allocation Working Group considered landings history, the performance of state fisheries, and the challenges associated with the current management plan. As a result, they created a broad range of allocation options which are presented below. Information on menhaden landings by jurisdiction, gear type, and disposition can be found in Tables 2 and 3 and Figure 1 of Appendix 1. Graphical representations of each of the quota options, including how they relate to quota transfers, overage pay-back, and rollovers are included in Appendix 3.

Statement of the Problem: Amendment 2 requires that menhaden allocation be revisited every three years. The Board is exploring different allocation strategies due to several concerns with the current state by state quotas, including inequitable access to quota among gear types and the inability for some states to participate in the growing fishery.

Option A. Jurisdictional Quotas (Status Quo)

Quotas are allocated to each state/jurisdiction in the management unit based on its landings during a selected reference period.

Option B. State-specific Quotas with Fixed Minimum

Quotas are allocated to each state/jurisdiction in the management unit based on its landings during a selected reference period; however, no state/jurisdiction receives less than a minimum fixed percent quota (e.g., 1% of the coastwide TAC). A minimum fixed quota allocation provides growth opportunity for states that have small quotas and has been used in other ASMFC management plans (e.g., American eel).

Option C. Coastwide Quota

There is one coastwide quota which applies to the entire Atlantic menhaden fishery.

Option D. Seasonal Quotas

The TAC is divided into designated seasons. Under this option, it may be possible to consider further allocation (e.g., regional, state by state) of the season-specific quotas to provide equitable access to the fishery.

Option E. Regional Quotas

Quotas are allocated to designated regions. The intent of these geographic delineations would be to capture the spatial dynamics of the fishery. Specific regional options include:

1. Two region split: (1) North, defined as waters north of Machipongo Inlet, VA, on the Delmarva Peninsula; and (2) South, defined as waters south of Machipongo Inlet, including the Chesapeake Bay. These regions match those used for stock assessment purposes in the 2015 Benchmark Stock Assessment.
2. Two region split: (1) Chesapeake Bay; and (2) Coast.

3. Three region split: (1) New England, defined as ME–CT; (2) Mid-Atlantic, defined as NY–DE; and (3) Chesapeake Bay South, defined as MD–FL.
4. Four region split: (1) New England, defined as ME–CT; (2) Mid-Atlantic, defined as NY–DE; (3) Chesapeake Bay, defined as MD–VA; and (4) South Atlantic, defined as NC–FL.

Option F. Disposition Quotas

Quotas are allocated to the bait and reduction fisheries separately. The intent of this option is to capture the different dynamics that exist between the bait and reduction fisheries. Under this option, it may be possible to consider further allocation (e.g., regional, state by state) of the disposition-specific quotas to provide equitable access to the quota.

Option G. Fleet Capacity Quotas

Quotas are allocated to various fleets based on their harvest capacity, as determined by gear type. The intent of this option is to capture the different scales of operation that exist in the fishery and their dynamics. It may be possible to consider further allocation (e.g., regional, state by state, disposition) of the capacity-specific quotas to provide equitable access to the quota. Some of the specific fleet capacity options below include a “soft quota” concept, which sets a target quota but does not subject the fleet to a fishery closure. The intent of a soft quota is to restrict the retention of menhaden but add flexibility for additional catch in years when fish are abundant.

Specific fleet options include:

1. Two Fleet Capacity Allocation

Small Capacity Fleets:

Types of gears in the small-capacity fleet include, but are not limited to, cast net, trawl, trap/pot, haul seine, fyke net, hook and line, pound nets and gill nets. Total coastwide landings for these small capacity gears are approximately 22 million pounds annually or 5% of coastwide landings from 2009–2012. The small capacity fleet could be defined by a trip limit such that a vessel must land less than X pounds of menhaden to fish in the small capacity fleet; otherwise they would move to the large capacity fleet. Alternatively (or additionally), a trip limit could be established if small capacity fleet harvest grows to an unacceptable level. Given the small capacity of these gear types, this fleet would be managed with a soft quota (e.g., 5% of the coastwide TAC), but this harvest would be allowed to fluctuate above the quota in years when fish are available (Figure 1). The majority of non-purse seine menhaden harvest is taken by fixed, multi-species gears, which include pound nets, anchored/staked gill nets, and fyke nets. Harvest from these gears fluctuates with the availability of fish in the area. Flexibility in the quota would minimize menhaden discards from this fleet.

Large-Capacity Fleet:

Types of gears in the large-capacity fleet include, but are not limited to, purse seines and pair trawls. Total coastwide landings are approximately 436.2 million

pounds annually or approximately 95% of the coastwide TAC from 2009–2012, and include both bait and reduction fishery harvest. Given the large capacity of these gear types, this fleet would be managed with a hard quota (e.g., 93–96% of the coastwide TAC).

2. Three Fleet Capacity Allocation

Small-Capacity Fleet:

Types of gears in the small-capacity fleet include, but are not limited to, cast net, trawl, trap/pot, haul seine, fyke net, and hook and line. Total coastwide landings for these small-capacity gears are approximately 3.14 million pounds annually or roughly 1% of the coastwide TAC from 2009–2012. Given the small capacity of these gear types, this fleet would be managed with a soft quota (e.g., 1% of the coastwide TAC).

Medium-Capacity Fleet:

Types of gears in the medium-capacity fleet include, but are not limited to, pound nets and gill nets. Total coastwide landings for these gear types are approximately 18.92 million pounds annually or 4% of the coastwide TAC from 2009–2012. Given the medium capacity of these gear types, this fleet would be managed with a soft or hard quota (e.g., 6–8% of the coastwide TAC).

Large-Capacity Fleet:

Types of gears in the large-capacity fleet include, but are not limited to, purse seines and pair trawls. Total coastwide landings for these gears are approximately 436.2 million pounds annually or 95% of the coastwide TAC from 2009–2012, and include both bait and reduction fishery harvest. Given the large capacity of these gear types, this fleet would be managed with a hard quota (e.g., 93–96% of the coastwide TAC).

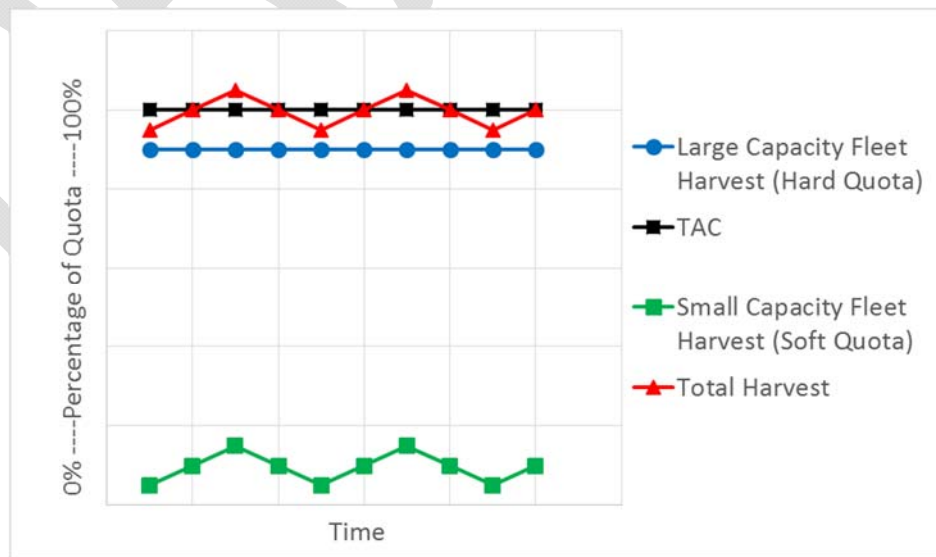


Figure 1. A graphical representation of the two fleet capacity allocation showing the fluctuating small capacity bait harvest and its impact on total harvest relative to the quota.

Public Comment Questions: What allocation mechanisms provide for the fair and equitable distribution of coastwide total allowable catch? Which allocation scheme strikes a balance between current needs and future growth opportunities? Do you support the use of soft quotas for some user groups?

**ISSUE 3:
Allocation
Timeframe**

Background: As part of its required review of menhaden allocation, the Board is also considering changes to the reference period on which quota is based. Amendment 2 divides the total allowable catch into jurisdictional quotas based on average landings between 2009 and 2011. The primary question facing the Board is whether this timeframe represents a fair and equitable picture of coastwide menhaden catch.

Statement of the Problem: Amendment 2's reference period does not consider recent changes in the fishery. In addition, some states have expressed concerns about underreported harvest during 2009–2011. In revisiting state-by-state quotas, the Board must decide if these three years are an appropriate timeframe on which to base allocation.

Option A: 2009–2011 Average (Status Quo)

Quota allocation is based on a three-year average catch between 2009 and 2011.

Option B: 2009–2012 Average

Quota allocation is based on a four-year average catch between 2009 and 2012. 2012 was the last year prior to the implementation of Amendment 2 in 2013.

Option C: Weighted Allocation

Allocation is weighted over two time periods: a more distant period and a more recent period. For example, 50% of the allocation could be based on average landings between 2009 and 2012 while the other 50% of allocation could be based on average landings between 2013 and 2015. Weighting is intended to balance prior trends in the fishery with recent changes in catch.

Public Comment Questions: Should the Board consider changes to the reference period on which menhaden allocation is based? Should allocation consider prior trends as well as recent changes in the fishery?

ISSUE 4:
Quota
Transfers and
Overage
Payback

Background: Amendment 2 allows for two or more states to transfer (or combine) their Atlantic menhaden quota. Transfers often occur when a jurisdiction has exceeded its allocation for the year; rather than reduce its subsequent year quota by the amount of the overage, as required by Amendment 2, a state can receive quota from another state which did not harvest its entire allocation. These transfers do not permanently affect a state's quota allocation. All states participating in a transfer (i.e., the donor states and the receiving states) must individually submit signed letters to the Commission, requesting approval for the transfer of a specified poundage of menhaden. Transfers are not final until written approval is granted by the Executive Director.

As a practical matter, fisheries routinely yet inadvertently exceed or under perform their quota due to the challenges of quota monitoring, including delays in reporting and unanticipated changes in catch rates. Transfers are a highly useful technique to address these occurrences. However, some regions may be disadvantaged by the quota transfer system due to the timing of their fishery relative to other fisheries along the coast, meaning they may not know that they've had an overage until late in the year when available quota has already been donated. Furthermore, there is no ASMFC guidance on how to apportion unused quota if there are multiple transfer requests at the same time.

Other fisheries allow for quota transfers and provide examples of potential management tools. The black sea bass fishery allows for quota reconciliation such that, in a year where the coastwide quota is not exceeded, any state-specific overage is automatically forgiven in its entirety. This streamlines the transfer process and avoids the need for written approval from the individual states and the ASMFC Executive Director. In years when the coastwide quota is exceeded, states which did not meet their allocation may transfer their un-used quota to a common pool. This common pool quota is then re-distributed to states that exceeded their quota based on the existing allocation proportions and the magnitude of the overage. Any overages that remain after the re-distribution of unused quota are deducted the subsequent year.

Statement of the Problem: Amendment 2's procedure for quota transfers may not benefit states evenly, lacks specific guidance, and can be an administrative burden on donor and receiving states. Consequently, the Board is considering a quota reconciliation process to address quota overages, as a replacement of quota transfers for this purpose. Quota transfers could still occur for other reasons (e.g., a state grants a vessel safe harbor with catch destined for another state that is then unloaded there). In the case of the fleet capacity quota allocation options, reconciliation would not be necessary for any fleet assigned a soft quota.

Option A: Quota Transfers (Status Quo)

Two or more jurisdictions, under mutual agreement, may transfer or combine their Atlantic menhaden quota to address an overage, per the Amendment 2 process. Any remaining overage, after all quota transfers are conducted, is deducted from the jurisdictions subsequent year's quota.

Option B: Voluntary Quota Transfers to Shared Pool

Any jurisdiction with a quota underage can determine whether to make all or part of its unused quota accessible to states with quota overages via a shared pool. Quota in the shared pool is distributed to states with overages through an established process (e.g., state negotiations or based on existing allocation proportions). Any remaining overage, after all shared pool transfers are conducted, is deducted from the jurisdictions subsequent year's quota. The intent of this option is to add equity and guidance to the transfer process, without sacrificing a state's option to rollover unused quota.

Option C: Overage Reconciliation

In a year where the coastwide TAC is not exceeded, any quota overage would be automatically forgiven in its entirety. In a year where the coastwide TAC is exceeded, but at least one entity has an underage, the unused quota is automatically pooled and distributed to those with overages, thereby lessening the amount of their payback the following year. A process is followed for how the pooled unused quota is distributed (e.g., negotiations or based on existing allocation proportions). The reconciliation process replaces the quota transfer process to address quota overages. Additionally, because states must forfeit their unused quota for the shared pool, this option is incompatible with quota rollovers.

Public Comment Questions: Should the process for quota transfers be further defined or replaced by an automatic reconciliation process? Should state-specific quota overages be automatically forgiven in years when the coastwide total allowable catch is not exceeded? When the coastwide TAC is exceeded, would a transfer or reconciliation process following established protocols treat all states more fairly than the current quota transfer system?

**ISSUE 5:
Quota Rollovers**

Background: Amendment 2 allows for unused quota to be rolled over for use in the subsequent fishing year only when the stock is not overfished and overfishing is not occurring. At the time of implementation (2013), the Atlantic menhaden stock was considered not overfished but overfishing was occurring. As a result, the amendment deferred defining the specifics of the rollover program until overfishing was no longer occurring.

In 2015, a new benchmark stock assessment was approved for management use which found the stock is not overfished and overfishing is not occurring. As a result,

the stock met the qualifications for quota rollovers; however, how much quota can be carried into the next year has not been established. In August 2015, the Board agreed to consider the details of quota rollovers in Amendment 3. Other species, including spiny dogfish and Atlantic herring, allow for a percentage (5% and 10%, respectively) of unused quota to be rolled over from one year to the next. For example, in the spiny dogfish fishery, if a state's annual quota is 1 million pounds, a maximum of 50,000 pounds (5%) of unused quota can be rolled over into the subsequent year.

Statement of the Problem: The Atlantic menhaden stock is not overfished and overfishing is not occurring, thereby qualifying the stock for quota rollovers per Amendment 2. However, the details of a quota rollover program were not specified in Amendment 2, preventing any rollovers from occurring.

Option A: Quota Rollover Permitted

Any unused quota may be rolled over from one year to the next. The issues of quota reconciliation and quota rollover are mutually exclusive, such that it is not possible to have quota overages automatically forgiven via reconciliation and unused quota rollover over into the subsequent fishing year. Any soft quota would also not be eligible for any unused quota rollover over into the subsequent fishing year.

Option B: Limited Quota Rollover Permitted

A jurisdiction's unused quota may be rolled over into the subsequent year as long as the amount does not exceed a percentage of the jurisdiction's allocation. For example, a jurisdiction may be allowed to rollover up to 10% of its quota. This means that if a state is allocated 1 million pounds of quota and lands 500,000 pounds, the state may only roll over 100,000 pounds (10% of 1 million pounds) into the subsequent fishing year. The issues of quota reconciliation and quota rollover are mutually exclusive, such that it is not possible to have quota overages automatically forgiven via reconciliation and unused quota rollover over into the subsequent year. Any soft quota would also not be eligible for any unused quota rollover over into the subsequent fishing year.

Option C: No Quota Rollover Permitted

Quota underages may not be rolled over from one year to the next.

Public Comment Questions Should unused quota be rolled over into the subsequent year? Should the amount rolled over be limited to a percent of quota? Should all sectors of the fishery be allowed to roll over quota?

**ISSUE 6:
Bycatch
Allowance**

Background: Upon a state reaching its individual quota and closing its directed fishery, Amendment 2 provides an incidental bycatch allowance of up to 6,000 pounds of Atlantic menhaden per trip for non-directed fisheries. The bycatch allowance is tied to a vessel such that a single vessel cannot land more than 6,000 pounds per trip. As specified in Amendment 2, bycatch landings which occur during a state designated open season count towards a state's quota; however, bycatch landings following the closure of a state's directed fishery do not count towards the quota.

Coastwide, the vast majority of menhaden harvested under the bycatch allowance is with stationary multi-species gears. Table 4 in Appendix 1 shows the average bycatch landings between 2013 and 2015 by gear and jurisdiction. On average, 5.7 million pounds of menhaden bycatch are landed each year, representing 1-2% of total landings in the fishery. Over 80% of the bycatch harvest comes from stationary gears with the biggest contributors being the Maryland pound net fishery and the Virginia anchored gill net fishery. Cast nets contribute 6% of bycatch landings and represent the largest contributor from the mobile gear sector. This is followed by drift gill nets (5%) and beach seines (3.7%). Jurisdictions in the Chesapeake Bay contribute the most to bycatch landings of menhaden, with Maryland harvesting 40.7%, Virginia harvesting 24.9%, and the Potomac River Fisheries Commission harvesting 15.4% of annual coastwide bycatch landings. Between 2013 and 2015, 59.6% of bycatch trips using stationary gears landed less than 1,000 pounds of menhaden and 80.7% trips landed less than 3,000 pounds of menhaden (Table 5 in Appendix 1).

Several concerns have been raised regarding the current bycatch provision. The first is that landings under the bycatch allowance do not count toward a state's quota. As a result, bycatch landings could undermine the efficacy of the coastwide TAC since there is no yearly bycatch limit. Another concern is that neither bycatch nor non-directed fisheries are defined in Amendment 2. This leads to questions of whether Atlantic menhaden bycatch must remain under a specific percent composition of catch and whether small-capacity gears which direct on menhaden, such as cast nets, should be included in the bycatch provision. Currently, Massachusetts is the only state to require menhaden bycatch be less than 5% of the weight of the entire catch landed on that trip. Finally, the current bycatch provision dissuades cooperative fishing since the bycatch allowance is per vessel rather than permitted individual. This is particularly problematic in the Chesapeake Bay where it is traditional for multiple permitted individuals to work together from the same vessel to harvest menhaden. Addendum I...*[Paragraph to be updated following final action on Addendum I]*

Statement of the Problem: Under Amendment 2, there is 6,000 pound incidental bycatch limit per vessel per trip for non-directed fisheries. Several issues have been identified with this bycatch allowance, namely that bycatch is not included in the

TAC, the allowances does not support cooperative fishing, and there is no definition of what constitutes bycatch or a directed fishery.

Option A: 6,000 lbs Bycatch Limit per Vessel (Status Quo)

Currently, there is a 6,000 pound incidental bycatch limit per vessel per trip. This bycatch limit is permitted for non-directed fisheries following the closure of the directed fishery. [*Option to be updated following final action on Addendum I*].

Option B: Bycatch Included in Quota

All bycatch of menhaden would count toward the directed fishery quota. Once the quota is reached, the menhaden fishery would be closed and no landings would be allowed.

Option C: Bycatch Cap and Trigger

Rather than a trip limit, bycatch in the Atlantic menhaden fishery would be limited by a harvest cap. If the collective bycatch landings exceed this cap by a certain percentage in a single year or by any percentage in two consecutive years, management action would be triggered by the Board to reduce bycatch landings in the fishery.

Option D: Bycatch Allowance per Permitted Individual

An incidental bycatch limit would be established per person/trip, rather than per vessel/trip. As a result, multiple permitted individuals on the same vessel could each land the bycatch limit.

Option E: Bycatch Trips Defined by Percent Composition

Trips landing greater than 1,000 pounds of menhaden would be required to maintain their menhaden landings under a specific percent composition of catch. This option can be combined with either a bycatch allowance per trip or a bycatch cap in order to limit menhaden bycatch landings in the non-directed fisheries.

Public Comment Questions? Should there be a cap on bycatch landings in the Atlantic menhaden fishery? Should bycatch be defined as a percent composition? Should the bycatch allowance be allocated to vessels or permit holders?

ISSUE 7: Episodic Events Set Aside Background: Amendment 2 sets aside 1% of the overall TAC for episodic events, which are times and areas where Atlantic menhaden are available in more abundance than they normally occur. The purpose of the set aside is to enable increased harvest of menhaden during episodic events so as to minimize discards in the fishery. The details of the program were approved by the Board in May 2013 and are outlined in Technical Addendum I.

Eligibility in the episodic events set aside program is reserved for the New England states (Maine through Connecticut). To participate in the program, these states must implement daily trip level harvest reporting, restrict the harvest and landing of menhaden under the episodic events program to state waters, and implement a maximum daily trip limit no greater than 120,000 pounds/vessel. In order for a state to declare participation in the episodic events program, a state must demonstrate that it has reached its quota prior to September 1 and provide information indicating the presence of unusually large amounts of menhaden in its state waters. Any set aside quota that is not used by October 31 can be added to the coastwide quota and redistributed to the states. If the set aside quota is exceeded, overages are deducted from the next year’s episodic event set aside amount.

In 2014 and 2015, Rhode Island was the only state to declare participation in the episodic set aside program, harvesting 8% of the set aside in 2014 and 45% of the set aside in 2015 (Table 2). In 2016, Rhode Island again declared participation in the program and New York requested inclusion in the episodic events set aside. While New York is not considered a New England state under Technical Addendum I, New York highlighted the unusually large amounts of menhaden in the Peconic Bay estuary and the potential for fish kills. The Board approved New York’s request to harvest under the episodic events set aside, capping New York’s harvest under the program to 1 million pounds.

Table 2: Episodic events set aside for 2013-2015 and the percent used by participating states.

Year	Set Aside (lbs)	Landed (lbs)	% Used	State	Unused Set Aside Reallocated (lbs)
2013	3,765,491				
2014	3,765,491	295,000	8%	RI	3,470,491
2015	4,142,040	1,883,292	45%	RI	2,258,748

Given the increasing amounts of menhaden landed under the episodic events program and New York’s request to harvest under the set aside, the Board is considering changes to the program. Specific questions include whether the percent of TAC allocated to the set aside should be increased, which states should be allowed to participate in the program, and whether the current definition of an episodic event is appropriate. Furthermore, the Board is considering whether changes to the allocation of quota may negate the need for such a set aside.

Statement of the Problem: Since 2013, participation in and landings under the Episodic Events Set Aside Program have increased. As a result, the Board is considering changes to the scope of the program, including the amount of quota allocated to the set aside and which states are qualified to participate.

Option A: 1% of TAC (Status Quo)

The states of Connecticut through Maine are allowed to participate in the episodic events set aside program. 1% of the TAC each year is set aside for episodic events, which are defined as a state meeting its quota before September 1st and experiencing large amounts of menhaden in its state waters.

[Additional options will be included following August Board discussion]

Public Comment Questions? Should a percentage of the TAC be set aside for episodic events? If yes, how much quota should be set aside and which states should be allowed to participate in this program?

**ISSUE 8:
Chesapeake Bay
Reduction
Fishery Cap**

Background: The Chesapeake Bay reduction fishery is currently limited by a harvest cap of 87,216 metric tons. The goal of this restriction is to prevent all of the reduction fishery harvest from occurring in the Chesapeake Bay, a critical nursery area for Atlantic menhaden. Harvest by the reduction fishery is prohibited within the Chesapeake Bay when 100% of the cap has been reached. A maximum of 10,976 metric tons of un-landed fish can be rolled over into the subsequent year's harvest cap. The Chesapeake Bay reduction fishery has consistently underperformed the 87,216 metric ton harvest cap, landing less than 50,000 metric tons in 2015, less than 45,000 metric tons in 2014, and less than 40,000 metric tons in 2013.

The Chesapeake Bay Reduction Fishery Cap, which was originally implemented in 2005, was intended to prevent the localized depletion of menhaden. There was an assumption that the potential for localized depletion exists in the Chesapeake Bay given the concentrated harvest of the species in the area, particularly from the reduction fishery. Possible outcomes of localized depletion include compromised predator-prey relationships and chronic low recruitment of larval menhaden. The Board committed to assessing the potential for localized depletion at its February 2005 meeting and established the Atlantic Menhaden Research Program (AMRP) to evaluate the possibility of such depletion occurring. In 2009, work completed under the AMRP was peer reviewed by the NOAA Center for Independent Experts (CIE). The peer review concluded localized depletion was not occurring in the Chesapeake Bay. It also noted that given the high mobility of menhaden, the potential for localized depletion could only occur on a "relatively small scale for a relatively short time".

Given that harvest by the reduction fishery has consistently been below the cap and recent evidence suggests that localized depletion is not occurring in the Chesapeake Bay, the Board would like feedback on whether this is an important management tool in the Atlantic menhaden fishery.

Statement of the Problem:

The Chesapeake Bay Reduction Fishery Cap was intended to protect menhaden nursery areas and prevent against localized depletion; however the reduction fishery has consistently under-performed its harvest cap and a peer review report concluded localized depletion is not occurring in the Chesapeake Bay. The Board would like feedback on whether this is an essential management tool.

Public Comment Questions: Should the Chesapeake Bay Reduction Fishery Cap be maintained? Is it an important tool for the management of Atlantic menhaden?

**BACKGROUND
INFORMATION
ON THE
MANAGEMENT
AND STOCK
STATUS OF
ATLANTIC
MENHADEN**

Summary of Fishery Management

The Commission has coordinated interstate management of Atlantic menhaden (*Brevoortia tyrannus*) in state waters (0-3 miles) since 1981. Management authority in the exclusive economic zone (3-200 miles from shore) lies with NOAA Fisheries.

In 1988, the Commission initiated a revision to the FMP. The Plan revision included a suite of objectives to improve data collection and promote awareness of the fishery and its research needs, including six management triggers used to annually evaluate the menhaden stock and fishery. In 2001, Amendment 1 was passed, providing specific biological, social, economic, ecological, and management objectives for the fishery. Subsequent addenda (I-V) to Amendment 1 sought to improve the biological reference points for menhaden and cap the reduction fishery. Addenda II and III instituted a harvest cap on the Chesapeake Bay Atlantic menhaden reduction fishery for the 2006 through 2010 fishing seasons. Addendum IV extended this harvest cap through 2013. Addendum V, which was approved in November 2011, established a new F threshold and target rate (based on MSP) with the goal of increasing abundance, spawning stock biomass, and menhaden availability as a forage species.

The Atlantic menhaden fishery is currently managed through Amendment 2 to the Atlantic Menhaden FMP, which was passed in 2012 and implemented in 2013. It sets a coastwide total allowable catch for the stock and allocates this harvest into state quotas. Amendment 2 also establishes a bycatch provision which allows for the harvest of up to 6,000 pounds of Atlantic menhaden per trip for non-directed fisheries and sets aside 1% of the overall TAC for episodic events. In order to effectively implement the management measures established in Amendment 2, states are required to implement timely reporting systems to monitor catch.

Technical Addendum I outlines the provisions of the episodic events set aside program. It restricts participation in the program to the New England states and requires these states to implement daily harvester reporting, restrict harvest to states waters, and set a 120,000 pound daily trip limit in order to harvest under the

set aside. Technical Addendum I also outlines a process for declaring participation in the program.

Addendum I to Amendment 2 revisits the bycatch provision and considers allowing two licensed individuals to harvest up to 12,000 pounds of menhaden bycatch when working from the same vessel fishing stationary, multi-species gear. *[Additional information will be added following final action on Addendum I]*

Summary of Stock Status

The latest peer reviewed stock assessment is the 2015 benchmark assessment. The assessment used the Beaufort Assessment Model, a statistical catch-at-age model which estimates population size at age and recruitment in 1955 and then projects the population forward in time to the terminal year of the assessment (2013). The model estimates trends in population dynamics, including abundance at age, recruitment, spawning stock biomass, egg production, and fishing mortality rates.

Model results indicate the population has undergone several periods of both high and low abundance over the time series. Biomass has fluctuated over time from an estimated high of over 2,284,000 metric tons in 1958 to a low of 667,000 metric tons in the mid-1990s. Population fecundity (measured as number of maturing ova, or eggs) has also varied throughout the time series with a large number of eggs seen in the early 1960s, the 1970s, the early 1990s, and the 2000's. Fishing mortality has steadily decreased throughout the model time series. This is primarily due to a decrease in harvest in the reduction fishery which peaked in the late 1950's at over 700,000 metric tons and decreased to roughly 130,000 metric tons in 2013. In contrast, bait landings have slowly increased from roughly 30,000 metric tons in the late 1980s to over 60,000 metric tons in 2012.

Population fecundity in 2013 was estimated to be 170,536 billion eggs, well above the fecundity threshold of 86,821 eggs (Figure 2). As a result, the population is deemed not overfished. Overfishing is also not occurring as the fishing mortality in 2013 (0.22) is below the fishing mortality target of 0.38 (Figure 3).

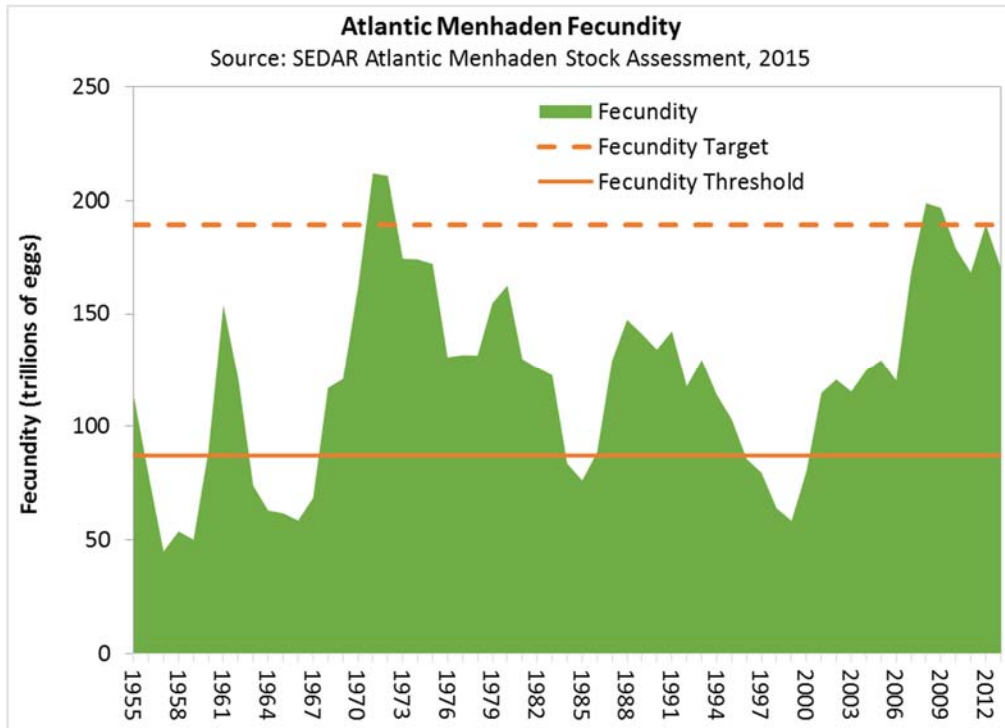


Figure 2: Atlantic menhaden fecundity target and threshold from the 2015 stock assessment. Population fecundity in 2013 was estimated to be 170,536 billion eggs, well above the fecundity threshold of 86,821 eggs.

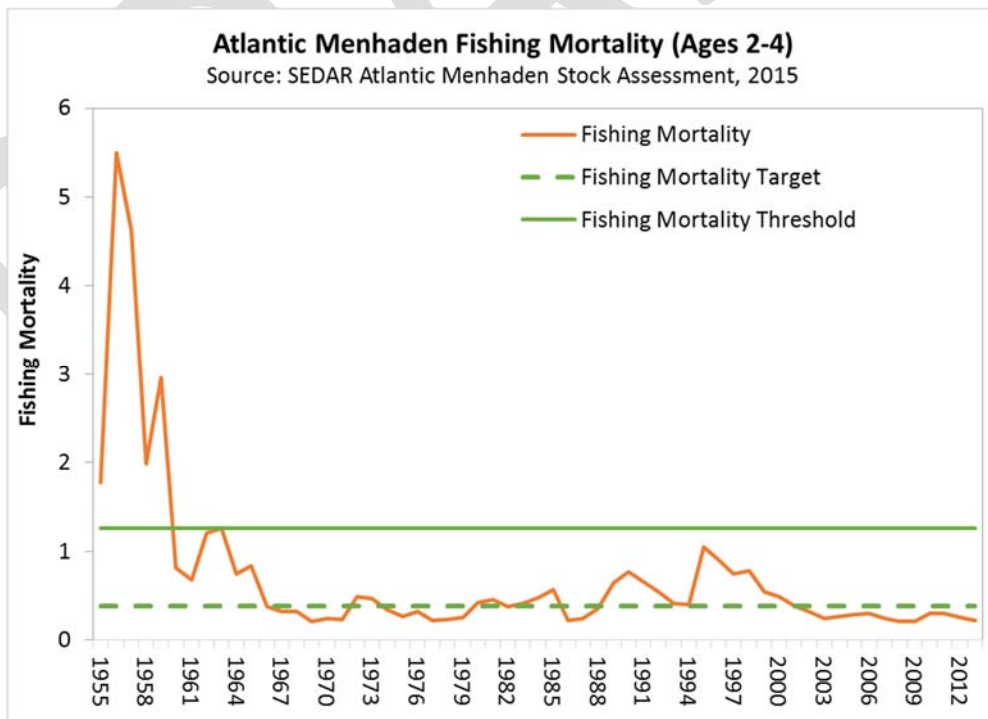


Figure 3: Atlantic menhaden fishing mortality target and threshold from the 2015 stock assessment. Overfishing is also not occurring as the fishing mortality in 2013 (0.22) is below the fishing mortality target of 0.38.

Social and Economic Impacts

Changes in the allocation of total allowable catch are expected to have socioeconomic impacts on affected states/jurisdictions, regions, and fishery interests. Overall, improvements in the menhaden stock which lead to increased TAC should benefit fishery participants; however, reductions in allocation to a particular area or interest could lead to reduced employment and associated reductions in the economic benefits derived from menhaden. In general, the reduction sector is expected to take fish in response to the allowable catch in relation to prices of competing oils (for example flax or other vegetable oils), and demand for oil and fishmeal products. The bait sector is expected to take fish in response to allowable catch in relation to the following factors: available fish, competing products (for example herring as bait for lobster), demand for menhaden as a primary desired bait, and prices for competing products in addition to the cost of fishing, fuel and vessel maintenance.

Currently, there is little socioeconomic data available with which to assess the specific effects of changes in allocation and other management actions. The Commission's Committee on Economics and Social Sciences (CESS) issued a request for proposals to fund research in order to characterize the coastwide commercial fisheries, including the bait and reduction sectors and the fishery communities they support. The study will gather both primary and secondary information from stakeholders to understand spatial trends in landings, the distribution of revenue, operational costs, and participation in the fishery. A project was selected early in 2016 and the research is presently being conducted. It is anticipated that this data and other project deliverables will be available to the Commission and CESS early in 2017. Information from this survey will be incorporated into Draft Amendment 3.

References

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- ASMFC. 2015. Atlantic Menhaden Stock Assessment and Review Panel Reports. SEDAR 40.
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Appendix 1

Table 1. Atlantic Menhaden Allocation and Quotas for 2013-2016. Current state-by-state allocation is based off of average landings between 2009 and 2011. Quota totals do not include the 1% of the TAC which is reserved for the Episodic Events Set Aside Program. Florida exceeded their quota in 2015 and this overage is deducted from their 2016 quota.

State	Allocation	2013-2014 Quota (lbs)	2015-2016 Quota (lbs)
ME	0.00039	146,787	161,466
NH	0.0000003	112	123
MA	0.00839	3,126,024	3,438,630
RI	0.00018	66,779	73,457
CT	0.00017	65,034	71,537
NY	0.00055	206,695	227,365
NJ	0.11192	41,721,164	45,893,335
DE	0.00013	49,230	54,153
MD	0.01373	5,116,874	5,628,568
PFRC	0.00621	2,314,174	2,545,595
VA	0.85322	318,066,790	349,873,884
NC	0.00493	1,836,948	2,020,645
SC	0.00000	-	-
GA	0.00000	-	-
FL	0.00018	66,995	73,695 (72,030 in 2016)
TOTAL	-	372,783,605	410,062,453

INITIAL DRAFT DOCUMENT FOR BOARD FEEDBACK, NOT FOR PUBLIC COMMENT

Table 2: Atlantic menhaden total landings (1985-2015) by jurisdiction. Total landings include directed harvest, bycatch, and landings from the Episodic Events Set Aside Program.

	ME	NH	MA	RI	CT	NY	NJ	DE	MD	PFRC	VA	NC	SC	GA	FL
1985	33,192,713		3,039,625	8,388,046	234,800	901,800	2,879,766	176,135	5,372,193	16,768,889	17,320,505	97,738,403	C		7,579,674
1986	C		3,411,000	10,389,187	254,400	399,650	2,453,593	20,081	5,449,350	10,971,973	9,885,311	66,377,931	9,952		7,997,973
1987	18,668,660		1,215,175	13,609,224	94,900	206,795	2,563,163	22,034	5,793,683	13,120,698	14,318,627	55,498,571	C		2,776,777
1988	19,687,805	C	8,047,320	15,583,437	175,200	504,100	1,984,045	127,713	6,430,164	13,231,368	44,976,740	73,715,713	500		1,026,228
1989	380,619	C	1,459,402	19,033,173	148,500	449,100	2,854,361	104,382	6,166,236	8,334,174	24,310,430	66,756,288			1,372,959
1990	5,744,597	264,500	1,709,605	17,102,650	96,706	649,710	9,041,459	167,116	1,662,275	4,523,776	18,224,186	72,231,989			2,636,497
1991	16,107,463	204,000	12,798,310	5,090,375	96,300	650,150	16,597,402	278,774	3,540,179	5,376,264	14,487,238	110,528,754			2,062,983
1992	14,857,195	C	13,499,450	2,849,359	91,200	1,131,701	27,470,906	130,833	1,777,088	5,061,565	16,233,980	57,515,712	C		2,788,592
1993	19,520,455	C	1,211,569	5,146,280	195,827	1,048,993	28,296,741	164,046	2,326,613	7,884,001	296,453,210	64,711,384			2,584,766
1994			351,251	533,800	60,128	961,474	38,176,201	78,672	2,369,071	6,680,937	270,775,349	73,853,901			1,387,012
1995			2,910,613	5,873,315	255,264	1,087,978	36,572,507	101,388	4,264,754	7,002,818	360,140,489	58,374,081			687,944
1996			8,500	802	82,851	11,135	35,516,726	100,063	3,906,808	5,111,423	294,195,660	53,850,943			294,936
1997			238,500	5,750	72,329	553,953	38,118,579	55,733	3,457,237	5,757,370	267,021,139	97,727,057	C		408,492
1998	C	C	121,200	400	338,817	430,084	33,287,641	58,048	2,933,818	3,980,738	513,879,901	57,976,455			301,566
1999	C		292,800	2,330	30,298	242,886	27,753,567	78,551	4,460,534	4,860,883	374,942,360	42,799,080			288,144
2000	C		72,600	320,000	14,423	565,800	31,266,780	47,980	3,935,307	5,023,374	358,236,761	56,280,112			260,710
2001	C		144,600	-	38,865	576,426	26,375,573	53,257	3,970,243	3,329,035	484,528,580	56,012,396			179,951
2002	70,062		301,500	5,750	1,138,788	444,739	24,716,412	80,261	4,023,389	3,122,050	362,640,618	69,190,596			55,304
2003			218,255	62	46,515	384,875	17,080,463	42,593	3,163,252	2,438,790	372,486,794	48,936,502			35,810
2004		C	-	39,232	33,210	543,481	20,678,813	75,635	5,369,952	5,411,043	394,100,339	50,577,983			21,220
2005	30,302		2,177,724	14,453	30,636	871,081	17,574,826	120,658	10,635,776	4,759,905	368,988,147	13,386,245			39,404
2006	37,297		2,524,255	15,524	866,235	811,934	21,290,309	111,405	6,841,296	3,413,517	365,305,722	962,648			157,117
2007	C	C	5,543,805	8,948	90,254	483,557	37,202,485	81,850	11,370,064	5,036,906	405,836,300	1,134,167			71,373
2008	4,310,055	C	14,131,256	269,288	104,881	410,121	38,210,688	72,970	8,153,008	4,820,645	339,001,968	645,231			60,098
2009	166,942	33	6,719,048	107,548	170,907	330,496	33,329,177	69,476	7,756,192	3,191,905	335,238,841	2,124,733			52,800
2010	C	C	4,973,857	78,149	42,489	394,556	50,497,253	51,933	6,903,300	2,790,728	404,384,758	1,299,130			76,593
2011	C		116,151	83,899	26,929	279,117	74,324,485	70,326	6,506,430	2,759,597	389,652,459	3,529,967			146,534
2012	39,383	C	1,648,395	106,606	37,454	258,271	85,457,890	130,725	13,737,314	5,892,228	386,552,474	538,783			126,141
2013	C		2,314,888	99,821	26,463	1,187,525	39,819,342	125,909	7,074,727	3,295,295	316,537,921	454,172			224,872
2014	C		2,226,294	500,903	36,552	825,549	41,449,670	161,509	7,005,271	3,175,893	322,492,690	917,375			220,587
2015	C		2,932,128	1,802,089	77,003	1,468,165	47,811,837	150,542	7,551,430	2,739,035	350,524,668	839,637	C		377,729
% of total landings 1985-2015	1.4%	0.0%	0.8%	0.9%	0.0%	0.2%	7.9%	0.0%	1.5%	1.6%	73.6%	11.8%	0.0%	0.0%	0.3%

Table 3: Atlantic menhaden coastwide landings averages by gear type for 2009-2012 and 2013-2014. Bycatch allowance landings are included in the 2013-2014 average. Data are preliminary and subject to change.

Landings in Pounds	2009-2012 Average	Percent by Gear	2013-2014 Average	Percent by Gear
Purse Seine	436,211,312	95.188%	353,766,645	94.207%
Pound Net	16,129,566	3.520%	13,990,507	3.726%
Trawl	2,639,414	0.576%	1,444,210	0.385%
Gill Net	2,784,530	0.608%	5,052,734	1.346%
Cast Net	213,494	0.047%	750,823	0.200%
Trap/Pots	104,775	0.023%	156,790	0.042%
Fyke Net	51,994	0.011%	3,865	0.001%
Haul Seine	64,215	0.014%	118,651	0.032%
Other	65,608	0.014%	237,735	0.063%
Total	458,264,908	100%	375,521,959	100%

Table 4: Average landings under the bycatch allowance from 2013-2015 by gear type and jurisdiction. The highlighted cells indicate the high bycatch landings in the Maryland pound net fishery and the Virginia anchored gill net fishery. (C)= confidential landings and (-)=no landings. Total confidential landings were 209,277 pounds (i.e., the sum of all C's in the table below). Note that the sum of pounds and percent of total columns do not include confidential data.

State/Jurisdiction	RI*	NY	NJ**	DE	MD	PRFC	VA	FL	Sum lbs (NonConf)	% of Total
Stationary Gears While Fishing										
Pound net	57,231	128,854	C	-	2,306,552	884,843	122,913	-	3,500,393	60.9%
Anchored/stake gill net	C	-	100,202	28,998	5,131	-	1,242,512	C	1,376,843	24.0%
Pots	-	C	-	C	10,001	-	-	C	10,001	0.2%
Fyke nets	-	-	C	-	C	-	C	-	<1000	0.0%
Mobile Gears While Fishing										
Cast Net	C	183,137	C	-	C	-	-	163,776	346,913	6.0%
Drift Gill net	-	18,175	129,620	66,117	16,082	-	57,794	-	287,788	5.0%
Seines Haul/Beach	-	206,587	-	-	C	-	5,119	-	211,706	3.7%
Trawl	C	9,733	C	-	-	-	-	-	9,733	0.2%
Hook & Line	C	-	-	-	C	-	-	C	<300	0.0%
Sum lbs (NonConf)	57,231	546,485	229,822	95,116	2,337,766	884,843	1,428,339	163,776	5,744,572	
% of Total	1.0%	9.5%	4.0%	1.7%	40.7%	15.4%	24.9%	2.9%		

NJ** an ad hoc method was used to split gill net data between stationary and mobile gears

RI* trips do not include those landed under the episodic events set aside because those landings are counted as part of the directed fishery.

Table 5: Total number of bycatch allowance trips landing menhaden by stationary gears from 2013-2015 by jurisdiction and percent of total trips by 1,000 pound landings bins. (C)= confidential landings.

Bins (LBS)	VA	MD	PRFC	NJ	NY	DE	RI*	FL	Total Trips	Total Bin%
1-1000	71%	35%	31%	85%	88%	91%	53%	100%	5,350	59.6%
1001-2000	13%	12%	21%	10%	9%	4%	14%	0%	1,176	13.1%
2001-3000	7%	8%	15%	3%	C	4%	18%	0%	716	8.0%
3001-4000	3%	7%	10%	1%	3%	1%	4%	0%	426	4.7%
4001-5000	3%	7%	13%	C	C	1%	3%	0%	441	4.9%
5001-6000	2%	14%	10%	C	C	0%	6%	0%	519	5.8%
6000+	0%	16%	0%	C	C	0%	3%	0%	351	3.9%
Total Trips	4672	2057	1138	477	345	165	102	23	8,979	
Total Trips %	52.0%	22.9%	12.7%	5.3%	3.8%	1.8%	1.1%	0.3%		

RI* trips do not include those landed under the episodic event set aside because those landings are counted as part of the directed fishery.

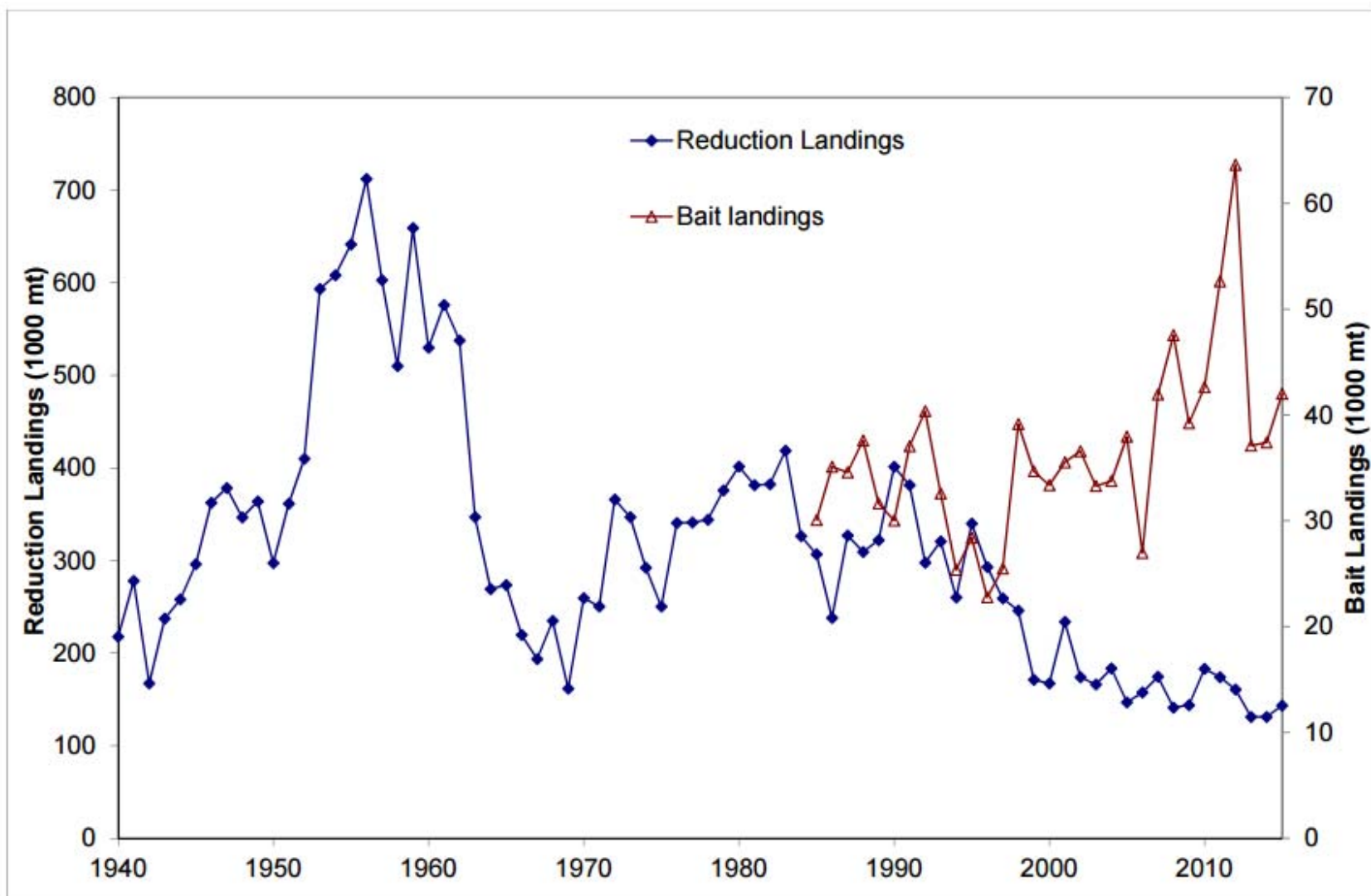


Figure 1: Landings from the reduction purse seine fishery (1940-2015) and the bait fishery (1985-2015) for Atlantic menhaden.

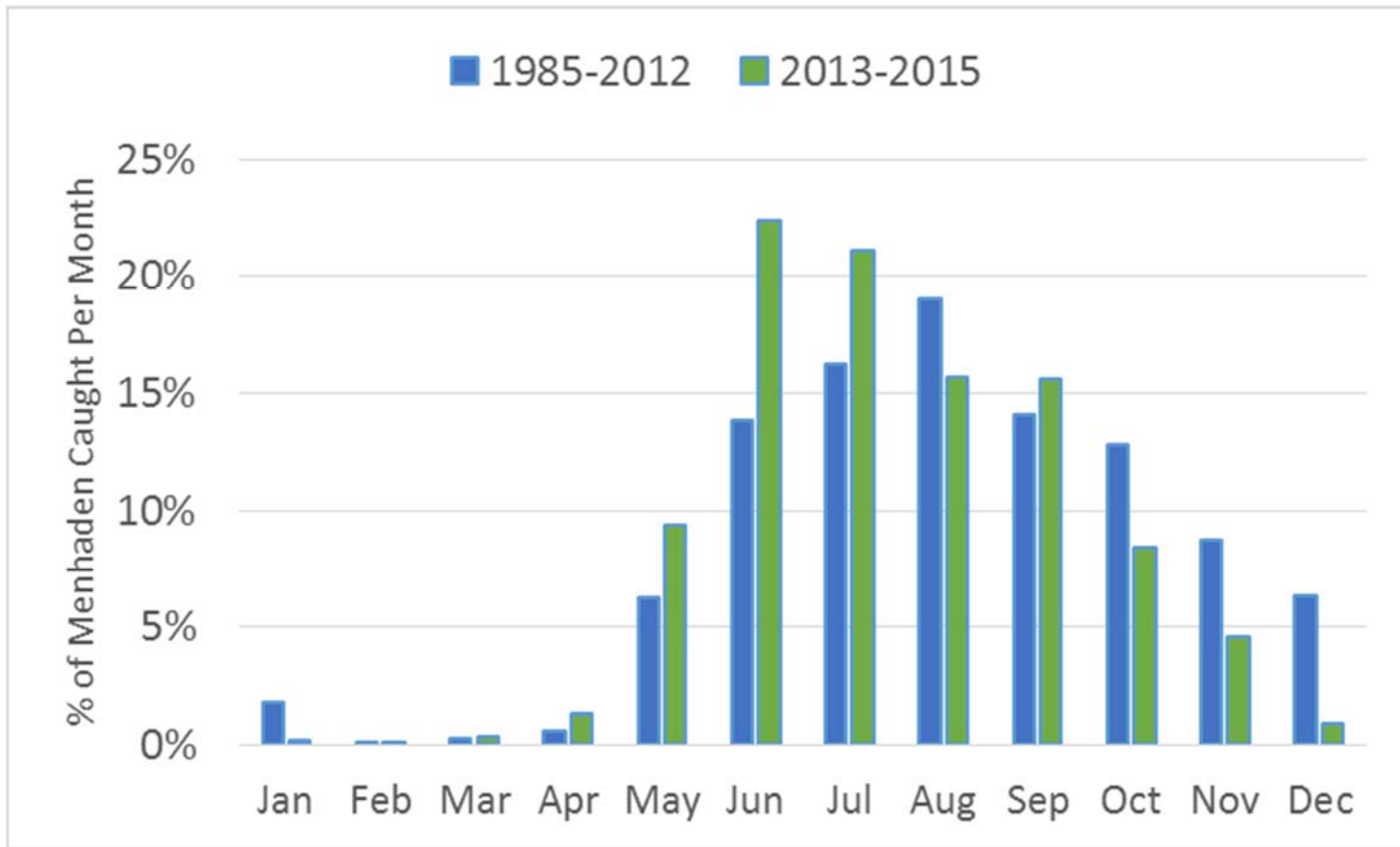


Figure 2: Percent of landings from the menhaden commercial fishery by month. Blue bars show landings from 1985 to 2012 and the green bars show landings from 2013-2015 (following the implementation of Amendment 2).

Appendix 2



Atlantic States Marine Fisheries Commission

1050 N. Highland Street • Suite 200A-N • Arlington,
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MEMORANDUM

April 20, 2015

To: Atlantic Menhaden Management Board
From: Biological Ecological Reference Points Workgroup
RE: Ecological Reference Points using Pikitch et al. (2012)

At its February meeting, the Atlantic Menhaden Management Board (Board) tasked the BERP WG with developing ecological reference points for Atlantic menhaden using Pikitch et al. (2012) as described in the ERP Report. As the Workgroup noted in the ERP Report, models or ERPs presented in the ERP report required further review by the BERP WG. To complete this task, the Workgroup reviewed the methodology by Pikitch et al. (2012) to determine which “information tier” Atlantic menhaden fit into. Subsequently, the WG evaluated the applicability of the recommended management action associated with that information tier. After detailed discussions, the WG concluded:

1. The WG recognizes that the recommendations in Pikitch et al. (2012) are based on the idea that the variable stock dynamics of forage species, like Atlantic menhaden, may require additional management precautions than other non-forage species.
2. The WG acknowledges that while the ERPs referenced in Pikitch et al. (2012) may be a bet-hedging strategy, it assumes that there must be some stock-recruitment relationship that has not yet been identified for Atlantic menhaden.
3. The WG decided that menhaden fall under the “intermediate information tier” as defined by Pikitch et al. (2012), with strong caveats (please see the attached table).
4. The intermediate information tier recommends management actions in the form of applying a hockey stick harvest control rule with $B_{LIM} \geq 0.4B_0$ and $F=0.5M$. In this scenario, fishing would be prohibited when biomass levels fall below 40 percent of unfished biomass. When biomass is greater than 40 percent of unfished biomass, the fishing mortality would not exceed half the species’ natural mortality rate. The recommended fishing mortality rate from Pikitch et al. (2012) and a comparison to the

2015 Benchmark Stock Assessment single species reference points are displayed below including the terminal year F_{2013} .

Reference Points/Terminal Year F	Benchmark
$F_{26\%MSP}$ (threshold)	1.26
$F_{57\%MSP}$ (target)	0.38
$F_{64\%MSP}$ (Pikitch et al. 2012)	0.29
$F_{70\%MSP}$ (F in terminal year 2013)	0.22

5. The WG notes that many of the case studies examined in Pikitch et al. (2012) involved predators that were “highly dependent” (i.e., $\geq 50\%$ of diet) on a single forage species, with strong trophic effects caused by changes in forage abundance. However, in the case of the coast-wide stock of Atlantic menhaden, the primary predator species are more opportunistic, consuming a diverse prey base.
6. While the WG was able to identify that striped bass may meet the Pikitch et al. (2012) predator dependency definition (with menhaden as forage) at certain times of the year and in certain areas (e.g., Chesapeake Bay in winter), the WG determined that none of our predator species of interest could fit the criteria of “highly dependent” predator (with menhaden as forage) on a coast-wide scale. Therefore, the WG does not believe the reference point recommendations in Pikitch et al. (2012) are applicable to this system.
7. Ultimately, the BERP WG does not feel that the management actions recommended in Pikitch et al. (2012) are appropriate for Atlantic menhaden specific management. Furthermore, the WG cannot evaluate if the Pikitch et al. (2012) buffers will actually provide enough forage to sustain predators of interest at desired population levels. Overall, although the ERPs in Pikitch et al. (2012) are less than ideal, predator removals are a large source of mortality for this stock. As such, through the framework of the ERP Report, the WG is working to have better ERP advice that is specific to Atlantic menhaden management.

The WG recommends that the Board form a subcommittee to collaborate with the BERP WG and industry to define more concrete ecosystem management goals and objectives. This would help the WG identify which models might be the most appropriate to achieve proposed objectives. Moving forward, the WG would like to combine the recommendations of a Board subcommittee with those of the Atlantic menhaden peer reviewers to define an objective approach to developing ERPs.

References

Pikitch, E., Boersma, P.D., Boyd, I.L., Conover, D.O., Cury, P., Essington, T., Heppell, S.S., Houde, E.D., Mangel, M., Pauly, D., Plagányi, É., Sainsbury, K., and Steneck, R.S. (2012). Little Fish, Big Impact: Managing a Crucial Link in Ocean Food Webs. Lenfest Ocean Program. Washington, DC. 108 pp.



Chesapeake Bay Ecological Foundation, Inc.
Easton, MD 21601
410-822-4400

7/25/16

Predator/Prey Monitoring Program Study Findings and Additional Recommendations for Menhaden Management

(In addition to the paper “**STRIPED BASS & ATLANTIC MENHADEN MANAGEMENT QUESTIONED**” that was submitted with meeting materials at May 2016 ASMFC Spring meeting)

The Chesapeake Bay is the largest production area in North America for young striped bass and young Atlantic menhaden. A shortage of menhaden in the Chesapeake Bay has existed for 2 decades. This imbalance between striped bass prey supply and demand is a threat to the health of the Bay’s striped bass population. Atlantic menhaden have the most influence on the Bay’s ecosystem. They utilize the Chesapeake Bay and most of its tributaries and are the most important and abundant large prey species in the Bay. As prey and filter feeders, Atlantic menhaden are an ecologically critical fish species. They consume and redistribute a significant amount of energy (by turning plankton into menhaden flesh) within and between the Chesapeake Bay and other estuaries, and the coastal ocean. This is due, in part, to their tremendous numbers, individual growth rate, filter feeding capacity, and seasonal movements. Menhaden are an extremely important prey species for many predatory fish. Because of their schooling behavior, they are also a favorite target for the common loon, herons, egrets, gulls, gannets, ospreys, and eagles. Some mammals, such as whales and dolphins, also feed on menhaden. Analysis of Chesapeake Bay Ecological Foundation’s study determined that protecting menhaden less than 9” (purse seine fishery only) can be crucial for multiple prey species and maintenance of healthy Chesapeake Bay non-migratory adult male striped bass.

July 26, 2016

Robert E. Beal, Executive Director
Atlantic States Marine Fisheries Commission
1050 N. Highland Street
Arlington, VA 22201
[sent via email]

Dear Mr. Beal,

On behalf of The Nature Conservancy, I am writing to express our support for the development of Amendment 3 to the Atlantic Menhaden Fishery Management Plan and to comment on 2017 fishery specifications. The Nature Conservancy and many other organizations and agencies are committed to helping create and maintain the conditions necessary for healthy and resilient marine and estuarine food webs. Collectively, we have made deep investments towards this goal. On the Atlantic coast, long-term success requires ensuring that forage fishes, including Atlantic menhaden, remain abundant and available as forage, at all life stages, throughout their historic ranges. Therefore, the importance of the Atlantic States Fisheries Commission's commitment to move away from single species management and instead manage Atlantic menhaden for its role as forage cannot be overstated. The Nature Conservancy continues to support the development and implementation of Ecological Reference Points (ERPs) that maintain enough Atlantic menhaden at all ages and geographies to fulfill the forage needs for all of the managed and unmanaged fish and wildlife that depend upon them.

With regard to the 2017 quota specification process, we urge the Management Board to sustain its commitment to managing Atlantic menhaden for their role as forage by maintaining status quo harvest levels until the Commission establishes ERPs. The Management Board already increased the Total Allowable Catch (TAC) by 10% in 2015 and 2016 based on the updated assessment from 2015. Although this assessment indicated that Atlantic menhaden were not being overfished and that overfishing was not occurring, these findings were based on single species reference points that do not account for the role of Atlantic menhaden in the ecosystem. Similarly, recent stock projections suggest that the TAC could be further increased without causing overfishing, but again, these analyses are based on single species reference points that the Commission has already determined are inappropriate for this species.

The 2017 stock assessment update and completion of Amendment 3 will provide an improved context for making any change to the TAC for Atlantic menhaden. The Commission should refrain from setting a new TAC until the updated information is available. Stability and resilience for fisheries and the ecosystem has been identified as a fundamental objective for Atlantic Menhaden management, and with an assessment update scheduled and a transition to ecological reference points in process, a change in TAC at this time is premature.

Thank you for considering our comments and we look forward to supporting the development of Amendment 3 through its completion. Please contact Kate Wilke at kate.wilke@tnc.org or (804) 249-3412 with any questions or ideas for how we might assist.

Sincerely,



Jay Odell
Mid-Atlantic Marine Program Director
The Nature Conservancy



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To: ASMFC Menhaden Management Board

July 23, 2016

Re: Amendment 3 for Atlantic Menhaden / development and implementation

Dear ASMFC Menhaden Management Board members:

We are writing to express our concern about an increase to the coast wide TAC of Atlantic Menhaden for the 2017 fishing season that is up for discussion at this August's meeting. This, despite having no new data since the 2015 benchmark stock assessment on which to base any quota change. The ASMFC has indicated a desire to manage menhaden based on the needs of predators, many of which are managed by the Commission, through the development of Amendment 3, and should keep this in mind by resisting any pressure for a quota change while waiting for the Amendment 3 development process to be completed.

Specifically, we'd like to request leaving a significantly larger portion of the menhaden stock in the water for the predators that depend on them for their lives. We believe this should be the top priority under amendment 3, and also believe that new ecological reference points (ERP's) once established, will justify a much smaller coast wide TAC than is currently on the books. We'd also suggest including a suite of options be sent out for public comment that would more equitably allocate menhaden to the bait fishery – especially in those states in the northern and southern range of menhaden abundance, where the rebuilding trend will hopefully continue, and where the bulk of those affected by the currently diminished supply of menhaden could use some help. Finally, please make every effort not to further delay the timeline for implementation of amendment 3.

In our area of Massachusetts we've yet to see any significant increase in menhaden abundance despite 3 years of modest belt tightening. In an effort to restore menhaden throughout their historic range, it's worth pointing out that they're still a long way from recovered here on the Outer Cape. It's great to see the whales, osprey, and bluefish returning in droves to feed on menhaden in areas to our south where they had long been absent. We need to ensure that this trend continues. Until such a time that we have enough menhaden to feed all of our predators, and until such a time that our fishermen will no longer need to steam so far south to satisfy our own bait needs, let's err on the side of caution, and resist the pressure to increase the Coast wide TAC to satisfy the needs of a small minority of ASMFC's member states.

Thanks for considering our comments, and for the productive time you've spent in the development of amendment 3.

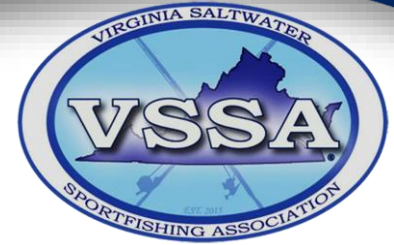
Sincerely,

The Wellfleet Natural Resources Advisory Board
John Riehl (Chair), John Duane, Laura Hewitt, Thomas Slack, Sylvia Smith

Cc: David Pierce
Sarah Peake
William Adler

Virginia Saltwater Sportfishing Association, Inc (VSSA)

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Curtis Tomlin

Mr. John Bull
Commissioner VMRC
2600 Washington Ave.
Newport News, VA 23607

Dear John,

July 26, 2016

I am writing to express our views on matters likely to be discussed in the upcoming ASMFC Menhaden Meetings. Harvest specifications for the 2017 season will be set and, important guidance will be provided to the plan development team on the content of the Amendment 3 public information document. **VSSA is opposed to any increase in the total allowable catch (TAC) for menhaden for the following reasons:**

1. There is no new science or data since the 2015 assessment to justify an increase in the TAC.
2. The updated assessment is coming in 2017, which should be used for Amendment 3.
3. We should wait until we have new science to make an informed decision about quota or TAC increases.
3. The commission has committed to managing menhaden for the ecosystem. Any current increase in quota or TAC diminishes any conservation of the stock until Amendment 3. Increasing the current TAC may later be found to be excessive when the ecological reference points are in place.

Being realistic, we are cognizant there are serious issues relative to quota for the northern "bait states." Having said that, VSSA believes any and all quota increase for the northern "Bait States" should come from a quota reallocation from other states including Virginia. Or, in the worst case, an increase in the TAC of no more 5%, with the entire 5% increase being dedicated to the northern "bait states." **VSSA strongly opposes any increase in the TAC that would go to the Virginia reduction industry.**

Please feel free to contact me for additional discussion on these matters.

Respectfully,

John Bello

John Bello, Chairman

Cc: Rob O'Reilly and Menhaden Board, ASMFC

Tina Berger

From: Brendan Ready <brendan4157@yahoo.com>
Sent: Wednesday, July 27, 2016 8:17 AM
To: Comments
Subject: Menhaden in Maine

We have watched several large seiners over the last 2 weeks load truck loads of Pogies here in Maine. I know Maine has .4% of the quota available which is about 40 truck loads of fish. I know 1 boat alone has surpassed this amount, not sure if it is getting reported or enforced but it is quite apparent that they are way over the quota allowed so far and hearing enforcement maybe be turning a blind eye as bait shortage on herring for lobstering. It would be sad if .4% of the quota couldn't be accurately enforced, as several of the smaller seiners sell direct to lobstermen without any reporting as well. Just don't want to see it get out of hand