ATLANTIC STATES MARINE FISHERIES COMMISSION

REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN

FOR ATLANTIC MENHADEN
(*Brevoortia tyrannus*)

2021 FISHING YEAR

Prepared by the Plan Review Team

Prepared July 15, 2022

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

REVIEW OF THE ASMFC FISHERY MANAGEMENT PLAN AND STATE COMPLIANCE FOR ATLANTIC MENHADEN *(Brevoortia tyrannus)* FOR THE 2021 FISHERY

Management Summary

Date of FMP:	Original FMP: August 1981
Amendments:	Plan Revision: September 1992 Amendment 1: July 2001 Amendment 2: December 2012 Amendment 3: November 2017
Management Unit:	The range of Atlantic menhaden within U.S. waters of the Northwest Atlantic Ocean, from the estuaries eastward to the offshore boundary of the Exclusive Economic Zone (EEZ).
States With Declared Interest:	Maine – Florida, including Pennsylvania
Additional Jurisdictions:	Potomac River Fisheries Commission, National Marine Fisheries Service, United States Fish and Wildlife Service
Active Boards/Committees:	Atlantic Menhaden Management Board, Advisory Panel, Technical Committee, Stock Assessment Subcommittee, Plan Review Team, Plan Development Team, Ecological Reference Point Workgroup
Stock Status:	Not overfished, and overfishing is not occurring relative to the current single-species reference points (2019 Single-Species Benchmark Stock Assessment)

I. Status of the Fishery Management Plan

Atlantic menhaden management authority is vested in the states because the vast majority of landings come from state waters. All Atlantic coast states and jurisdictions, with the exception of the District of Columbia, have declared interest in the Atlantic menhaden management program.

The first coastwide fishery management plan (FMP) for Atlantic menhaden was passed in 1981. The FMP did not recommend or require specific management actions, but provided a suite of options should they be needed. In 1992, the plan was revised to include a suite of objectives intended to improve data collection and promote awareness of the fishery and its research needs.

Amendment 1, implemented in 2001, provided specific biological, ecological and socioeconomic management objectives. Addenda I and V revised the biological reference points for menhaden and specified that stock assessments are to occur every three years. Although Amendment 1 did not implement any recreational or commercial management measures, Addenda II through IV instituted a harvest cap on the reduction fishery in Chesapeake Bay. Specifically, Addendum II implemented a harvest cap for 2006-2010 fishing seasons; before its first year of implementation, Addendum III revised the cap amount to be the average landings from 2001 to 2005 (or 109,020 mt); and Addendum IV extended the provisions of Addendum III through 2013.

Amendment 2, implemented in 2012, established a 170,800 metric ton (mt) total allowable catch (TAC) for the commercial fishery beginning in 2013. This TAC represented a 20% reduction from average landings between 2009 and 2011. This Amendment also used the 2009-2011 period to allocate the TAC among jurisdictions. Additionally, the Amendment established timely reporting requirements for commercial landings and required states to be accountable for their respective quotas by paying back any overages the following year. Amendment 2 also included provisions that allowed for the transfer of quota between jurisdictions and a bycatch allowance of 6,000 pounds per day for non-directed fisheries that operate after a jurisdiction's quota has been landed. Addendum 1 to Amendment 2 allows two licensed individuals to harvest up to 12,000 pounds of menhaden bycatch when working from the same vessel using stationary multi-species gear; the intent of this provision is to accommodate cooperative fishing practices that traditionally take place in Chesapeake Bay. The Amendment also reduced the Chesapeake Bay reduction fishery harvest cap by 20% to 87,216 mt.

Amendment 2 also enabled the Board to set aside 1% of the coastwide TAC for episodic events. Episodic events are times and areas where Atlantic menhaden are available in more abundance than they normally occur. Technical Addendum I to Amendment 2 established a mechanism for New England states from Maine to Connecticut[1] to use the set aside, which includes a qualifying definition of episodic events, required effort controls to scale a state's fishery to the set aside amount, and a timely reporting system to monitor the set aside. Any unused set aside quota as of October 31 is redistributed to jurisdictions on November 1 based on the Amendment 2 allocation percentages.

In 2015, the TAC was increased by 10% to 187,880 mt for the 2015 and 2016 fishing years. In 2016, the Board again increased the TAC by 6.45% to 200,000 mt for the 2017 fishing year.

Atlantic menhaden are managed under Amendment 3. Approved in November 2017, the Amendment maintained the management program's single-species biological reference points until the review and adoption of menhaden-specific ecological reference points (ERPs) as part of the 2019 benchmark stock assessment process. In doing so, the Board placed development of menhaden-specific ERPs as its highest priority and supports the efforts of the ERP Workgroup to reach that goal.

[1] At its May 2016 meeting, the Board added New York as an eligible state to harvest under the set aside.

Amendment 3 also changed commercial quota allocations in order to strike an improved balance between gear types and jurisdictions. The Amendment allocated a baseline quota of 0.5% to each jurisdiction, and allocated the rest of the TAC based on average landings between 2009 and 2011. This measure provides fishing opportunities to states that had little quota under Amendment 2, while still recognizing historic landings in the fishery. States also have the option to relinquish all or part of its quota which is then redistributed to the other jurisdictions based on the 2009-2011 landings period. The Amendment also prohibits the rollover of unused quota; maintains the quota transfer process; maintains the bycatch provision (which was rebranded as the 'incidental catch' provision and applicable gear types were defined) and the episodic event set aside program for the states of Maine – New York. Finally, the Amendment reduced the Chesapeake Bay cap to 51,000 mt, recognizing the importance of the Chesapeake Bay as nursery grounds for many species by capping recent reduction landings from the Bay at current levels.

State	Allocations
Maine	0.52%
New Hampshire	0.50%
Massachusetts	1.27%
Rhode Island	0.52%
Connecticut	0.52%
New York	0.69%
New Jersey	10.87%
Pennsylvania	0.50%
Delaware	0.51%
Maryland	1.89%
PRFC	1.07%
Virginia	78.66%
North Carolina	0.96%
South Carolina	0.50%
Georgia	0.50%
Florida	0.52%
Total	100%

In addition to its Amendment 3 deliberations, the Board increased the TAC by 8% to 216,000 mt for the 2018 and 2019 fishing seasons with the expectation that setting of the TAC for subsequent years would be guided by menhaden-specific ERPs. However, the 2019 benchmark stock assessments and peer-review reports would not be available for Board review until February 2020. As a result, in August 2019, the Board maintained the 216,000 mt TAC for 2020.

In October 2019, the Commission found the Commonwealth of Virginia out of compliance with the Interstate FMP for failing to implement and enforce Section 4.3.7 of Amendment 3: Chesapeake Bay Reduction Fishery Cap (cap). Implementation of this measure is necessary to achieve the goals and objectives of Amendment 3 and maintain the Chesapeake Bay marine environment to assure the availability of the ecosystem's resources on a long-term basis. The noncompliance finding was sent to the Secretary of Commerce who concurred with the Commission's finding and declared a moratorium on Atlantic menhaden fisheries in Virginia waters, effective June 17, 2020 if the correct cap was not implemented. In May 2020, ASMFC withdrew the noncompliance finding as the Commonwealth promulgated regulations to implement the 51,000 mt cap. To account for the 2019 overage, the cap for the 2020 fishing year was set at 36,000 mt.

In August 2020, the Board formally approved the use of ERPs to manage Atlantic menhaden, with Atlantic striped bass as the focal species in maintaining their population. Atlantic striped bass was chosen for the ERP definitions because it was the most sensitive predator fish species to Atlantic menhaden harvest, so an ERP target and threshold sustaining striped bass would likely provide sufficient forage for other predators under current ecosystem conditions. For the development of the ERPs, all other focal species in the model (bluefish, weakfish, spiny dogfish, and Atlantic herring) were assumed to be fished at 2017 levels.

In October 2020, the Board approved a TAC for 2021 and 2022 of 194,000 mt, based on the ERPs approved in August. The new TAC represents a 10% reduction from the 2018-2022 TAC level. Based on projections, the TAC is estimated to have a 58.5% and 52.5% probability of exceeding the ERP fishing mortality target in the first and second year, respectively. The Board is currently in the process of considering Addendum I to Amendment 3, which could modify the state allocation process, as well as the Episodic Events Set Aside (EESA) and Incidental Catch and Small-Scale Fisheries Provision (IC/SSF).

II. Status of the Stock

Atlantic menhaden are now managed by menhaden-specific ERPs as indicated above. The ERP target is the maximum fishing mortality rate (*F*) on Atlantic menhaden that sustains Atlantic striped bass at their biomass target when striped bass are fished at their F target, a measure of the intensity with which the population is being fished, is used to evaluate whether the stock is experiencing overfishing. The ERP threshold is the maximum F on Atlantic menhaden that keeps Atlantic striped bass at their biomass threshold when striped bass are fished at their *F* target. Population fecundity, a measure of reproductive capacity, is used to evaluate whether the stock is overfished. According to the latest assessment results, the 2017 estimate of fecundity, was above both the ERP FEC target and threshold, indicating the stock was not overfished. The next single-species stock assessment update is underway and scheduled to be presented to the Board in August, 2022.

In February 2020, the Board accepted the results of the Single-Species and Ecological Reference Point (ERP) Benchmark Stock Assessments and Peer Review Reports for management use. These assessments were peer-reviewed and approved by an independent panel of scientific experts through the 69th SouthEast, Data, Assessment and Review (SEDAR) workshop. The single-species assessment acts as a traditional stock assessment using the Beaufort Assessment Model (BAM), a statistical catch-at-age model that estimates population size-at-age and recruitment. According to the model, the stock is not overfished or experiencing overfishing relative to the current single-species reference points. Population fecundity in 2017 is above the single-species threshold and *F* has remained below the single-species overfishing threshold (0.6) since the mid-1970s, and below the single-species overfishing target (0.22) since the mid-1990s. The model also found juvenile abundance was low in 2017, while biomass was relatively high.

The ERP assessment evaluates the health of the stock in an ecosystem context, and indicates the *F* reference points for menhaden should be lower to account for the species' role as a

forage fish[2]. The ERP assessment uses the Northwest Atlantic Coastal Shelf Model of Intermediate Complexity for Ecosystems (NWACS-MICE) to develop Atlantic menhaden ERPs. NWACS-MICE is an ecosystem model that focuses on four key predator species (striped bass, bluefish, weakfish, and spiny dogfish) and three key prey species (Atlantic menhaden, Atlantic herring, and bay anchovy). These species were chosen because diet data indicate they are top predators of Atlantic menhaden or are key alternate prey species for those predators.

The ERP assessment indicates the *F* reference points for menhaden should be lower than the single-species reference points, but it also concluded that the final ERP definitions, including the appropriate harvest level for menhaden, depend on the management objectives for the ecosystem (i.e., management objectives for both Atlantic menhaden and its predators). Accordingly, instead of proposing a specific ERP definition, the assessment recommends a combination of the BAM and the NWACS-MICE models as a tool for managers to evaluate trade-offs between menhaden harvest and predator biomass.

III. Status of the Fishery

Commercial

Total commercial Atlantic menhaden landings in 2021, including directed, incidental catch, and EESA landings, are estimated at 195,092 mt (430.1 million pounds), an approximate 6% increase relative to 2020 (Table 1). The non-incidental catch fishery landings (directed landings plus landings under the EESA) total for 2021 is estimated at 189,497 mt (417.8 million pounds) and represents approximately 97% of the coastwide commercial TAC of 194,400 mt (428.6 million pounds). Landings from the incidental catch fishery are estimated at 5,596 mt (12.3 million pounds) and do not count towards the coastwide TAC.

Reduction Fishery

The 2021 harvest for reduction purposes is estimated at 136,690 mt (301.3 million pounds), a 10% increase from 2020 and 0.06% above the previous 5-year average of 136,614 mt (301.2 million pounds) (Table 3; Figure 3). Omega Protein's plant in Reedville, Virginia, is the only active Atlantic menhaden reduction factory on the Atlantic coast. In 2020, the reduction plant was shut down for 3 weeks due to the COVID-19 pandemic. Anecdotal reports indicate that in addition to the pandemic, bad weather may have also contributed to lower harvest.

Bait Fishery

The coastwide bait harvest estimate for 2021 from state compliance reports, including directed, incidental catch, and EESA landings, is 58,403 mt (128.8 million pounds). This represents a 2% decrease relative to 2020 and a 13% increase compared to the previous 5-year average (Table 3; Figure 3). New Jersey (36%), Virginia (26%), Maine (17%), and Massachusetts (8%) landed the four largest shares in 2021. For some states, landings validated by ACCSP differed to some

[2] it should be noted, however, that the conservative TAC the Board has set for recent years is consistent with the ERP *F* target provided in the ERP Assessment

degree from the state compliance report values, resulting in a total coastwide bait harvest of 58,887 mt (129.8 million pounds; Table 2).

Incidental Catch and Small Scale Fisheries Landings

Incidental catch landings in 2021 are estimated at 5,596 mt (12.3 million pounds), which is a 9% decrease relative to 2020 (Table 4). Maine, Massachusetts, Rhode Island, Connecticut, New York, and New Jersey reported incidental catch landings (88% from purse seines and 8% from gill nets) in 2021 (Table 5). Maine accounted for 96% of total incidental fishery landings. The number of incidental catch trips (3,099) was lower than in 2019 (3,113) and 2020 (3,565) but higher than trips from 2016 through 2018 (Table 5).

Episodic Events Set Aside Program

The 2021 EESA quota was 1,944 mt (4.29 million pounds). Maine began harvesting under the EESA program on June 25th and continued until their EESA fishery closed on July 1st. Although, the directed fishery was able to reopen from July 2nd through 16th with the state's acquisition of 4.2 million pounds of quota through six state-to-state transfers. Massachusetts began harvesting under the EESA program on June 18th and closed the fishery on July 16th. Another six quota transfers allowed Massachusetts to continue the directed fishery from July 19th until August 10th. Rhode Island participated in the EESA program from June 8th until July 7th and closed the directed fishery on October 19th, before reopening it from October 22nd until October 25th to utilize a small amount of remaining quota. An estimated 2,213 mt (4.9 million pounds) of menhaden were landed under the EESA fishery (Table 6), which is 592,250 pounds over the set aside quota. In November and December 2021, and April 2022, a number of quota transfers were made to cover the overage (see Table 8).

Chesapeake Bay Reduction Fishery Cap (cap)

Amendment 3 implemented a 51,000 mt harvest cap for the reduction fishery in the Chesapeake Bay. Due to the cap being exceeded in 2019, the cap was reduced to 36,000 mt for 2020 to account for the overage. Reported reduction landings from Chesapeake Bay in 2020 were about 27,700 mt, under the adjusted cap by approximately 9,000 mt. As a result, the cap for 2021 is set once again at 51,000 mt. Reported reduction landings from Chesapeake Bay in 2021 were about 50,000 mt, under the cap by approximately 1,000 mt.

Recreational

Menhaden are important bait in many recreational fisheries; some recreational fishermen use cast nets to capture menhaden or snag them with hook and line for use as bait, both dead and alive. The Marine Recreational Information Program (MRIP) estimate for Atlantic menhaden harvest (A + B1) in 2021 is 3.1 million pounds (PSE of 31.1) which is a 21% increase from 2020 (2.55 million pounds). Please note due to COVID-19 pandemic disruptions to the Access Point Angler Intercept Survey and subsequent gaps in catch records, 2020 catch estimates are based in part on imputed data (i.e. proxy or replacement data from 2018 and 2019). For Menhaden in 2020, the contribution of imputed data to total harvest was 26% for harvest in number of fish and 19% for harvest in weight (pounds).

Additionally, it is important to note recreational harvest is not well captured by MRIP because there is not a known, identified direct harvest for menhaden, other than for bait. MRIP intercepts typically capture the landed fish from recreational trips as fishermen come to the dock or beach. However, since menhaden caught by recreational fishermen are often used as bait during their trip, they are typically not part of the catch that is seen by the surveyor completing the intercept.

IV. Status of Research and Monitoring

Commercial fisheries monitoring

Reduction fishery - The NMFS Southeast Fisheries Science Center Beaufort Laboratory in Beaufort, North Carolina, continues to monitor landings and collect biological samples from the Atlantic menhaden purse-seine reduction fishery. The Beaufort Laboratory processes and ages all reduction samples collected on the East Coast. In addition, the purse-seine reduction fishery continues to provide Captains Daily Fishing Reports (CDFRs) to the Beaufort Laboratory where NMFS personnel enter data into a database for storage and analysis.

Bait fishery - Per Amendment 3, states are required to implement a timely quota monitoring system to maintain menhaden harvest within the TAC and minimize the potential for quota overages. The Standard Atlantic Fisheries Information System (SAFIS) daily electronic dealer reporting system allows near real time data acquisition for federally permitted bait dealers in the Mid-Atlantic and Northeast. Landings by Virginia's purse-seine for-bait vessels (snapper rigs) in Chesapeake Bay are tabulated at season's end using CDFRs maintained on each vessel during the fishing season. A bait-fishery sampling program for size and age composition has also been conducted since 1994. The Beaufort Laboratory, and some states, age the bait samples collected. See *Section VII* for more information on quota monitoring and biological sampling requirements.

Atlantic menhaden research

The following studies relevant to menhaden assessment and management have been published within the last few years:

- Anstead, K. A., K. Drew, D. Chagaris, A. M. Schueller, J. E. McNamee, A. Buchheister, G. Nesslage, J. H. Uphoff Jr., M. J. Wilberg, A. Sharov, M. J. Dean, J. Brust, M. Celestino, S. Madsen, S. Murray, M. Appelman, J. C. Ballenger, J. Brito, E. Cosby, C. Craig, C. Flora, K. Gottschall, R. J. Latour, E. Leonard, R. Mroch, J. Newhard, D. Orner, C. Swanson, J. Tinsman, E. D. Houde, T. J. Miller, and H. Townsend. 2021. The path to an ecosystem approach for forage fish management: A case study of Atlantic menhaden. Front. Mar. Sci. 8: 607657.
- Chargaris D., K. Drew, A. M. Schueller, M. Cieri, J. Brito, and A. Buchheister. 2020. Ecological Reference Points for Atlantic Menhaden Established Using an Ecosystem Model of Intermediate Complexity. Front. Mar. Sci. 7:606417.
- Deyle, E., A. M. Schueller, H. Ye, G. M. Pao, and G. Sugihara. 2018. Ecosystem-based forecasts of recruitment in two menhaden species. Fish and Fisheries 19(5): 769-781.
- Drew, K., M. Cieri, A. M. Schueller, A. Buchheister, D. Chagaris, G. Nesslage, J. E. McNamee, and J. H. Uphoff. 2021. Balancing Model Complexity, Data Requirements,

and Management Objectives in Developing Ecological Reference Points for Atlantic Menhaden. Front. Mar. Sci. 8: 608059.
- Liljestrand, E.M., M.J. Wilberg, and A.M. Schueller. 2019. Estimation of movement and mortality of Atlantic menhaden during 1966-1969 using a Bayesian multi-state mark recapture model. Fisheries Research 210: 204-213.
- Liljestrand, E.M., M. J. Wilberg, and A. M. Schueller. 2019. Multi-state dead recovery mark-recovery model performance for estimating movement and mortality rates. Fisheries Research 210: 214-233.
- Lucca, B. M., and J. D. Warren. 2019. Fishery-independent observations of Atlantic menhaden abundance in the coastal waters south of New York. Fisheries Research 218: 229-236.
- Nesslage, G. M., and M. J. Wilberg. 2019. A performance evaluation of surplus production models with time-varying intrinsic growth in dynamic ecosystems. Canadian Journal of Fisheries and Aquatic Sciences 76(12): 2245-2255.
- Schueller, A.M., A. Rezek, R. M. Mroch, E. Fitzpatrick, and A. Cheripka. 2021. Comparison of ages determined by using an Eberbach projector and a microscope to read scales from Atlantic menhaden (Brevoortia tyrannus) and Gulf menhaden (B. patronus). Fishery Bulletin 119(1): 21-32.

Theses and Dissertations of Potential Interest:

- McNamee, J. E. 2018. A multispecies statistical catch-at-age (MSSCAA) model for a Mid-Atlantic species complex. University of Rhode Island.

V. Implementation of FMP Compliance Requirements for 2022

All states are required to submit annual compliance reports by April 1.

Quota Results

Table 8 contains 2021 state-specific quotas and directed harvest. The final quotas for 2021 account for 1.7 million pounds of quota relinquished by Delaware and the result of 25 state-to-state transfers (Table 9), as well as transfers to the EESA. Quota transfers were generally pursued to ameliorate overages. Based on preliminary 2021 landings and quota transfers through April 2022, no jurisdiction's quota has been adjusted due to quota overage.

The Board set the TAC at 194,400 mt (428.5 million pounds) for 2021 and 2022 based on the adopted ERPs. 1% is set aside for episodic events. States may relinquish all or part of its annual quota by December 1st of the previous year. Delaware relinquished 1.2 million pounds of quota which was redistributed to the states according to procedures outlined in Amendment 3 and is reflected in the 2022 Preliminary Quota (Table 8).

Quota Monitoring

The Board approved timely quota monitoring programs for each state through implementation of Amendment 3. Monitoring programs are intended to minimize the potential for quota overages. Table 7 contains a summary of each state's approved quota monitoring system.

Menhaden purse seine and bait seine vessels (or snapper rigs) are required to submit CDFRs. Maine, New York, and Virginia fulfilled this requirement in 2021. New Jersey did not require purse seine vessels to fill out the specific CDFR but did require monthly trip level reporting on state forms that include complementary data elements to the CDFR. Rhode Island purse seine vessels must call in daily reports to RI DMF and fill out daily trip level logbooks. New Hampshire also does not require the specific CDFR, but does require daily, trip-level reporting from dealers and monthly trip-level reporting from harvesters. Massachusetts requires trip level reporting for all commercial fishermen. Menhaden purse seine fisheries do not currently operate in all other jurisdictions in the management unit.

Biological Monitoring Requirements

Amendment 3 maintains biological sampling requirements for non *de minimis* states as follows:

- One 10-fish sample (age and length) per 300 mt landed for bait purposes for Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Delaware; and
- One 10-fish sample (age and length) per 200 mt landed for bait purposes for Maryland, Potomac River Fisheries Commission, Virginia, and North Carolina

Table 10 provides the number of 10-fish samples required and collected for 2021. These are based on the best available 2021 total bait landings data (including directed, incidental, and EESA landings) provided to the Commission by the states. In 2021, Massachusetts, Rhode Island, and Connecticut fell short of the required samples. Massachusetts received a number of quota transfers to extend the fishery on August 5th, but staff were unable to complete the additional monitoring before the fishery closed on August 10th. Due to late reported landings, Rhode Island missed one of the required 5 10-fish sampling events but noted that over the four completed events, 55 fish were sampled from the fishery, as well as an additional 49 from the coastal trawl survey. Connecticut has faced difficulties collecting bait samples and relies primarily on the Long Island Sound Trawl Survey for sampling, which produced 103 age samples and 302 length samples over 139 tows. All other jurisdictions met the biological monitoring requirements in 2021.

The PRT continued to discuss whether a sufficient number of age and length samples are being collected from different commercial gear types as well as regions, and whether substituting samples from fishery-independent sources is appropriate for meeting the requirement. The PRT recommends this requirement be evaluated as part of the next management action or during the next benchmark stock assessment.

Adult CPUE Index Requirement

Amendment 3 requires that, at a minimum, each state with a pound net fishery must collect catch and effort data elements for Atlantic menhaden as follows; total pounds landed per day, number of pound nets fished per day. These are harvester trip level ACCSP data requirements. In May of 2013, the Board approved North Carolina's request to omit this information on the basis that it did not have the current reporting structure to require a quantity of gear field by

harvesters or dealers. In recent years, NC DMF staff have worked to develop a proxy method to estimate effort but this approach likely would not work for developing an adult CPUE index.

De Minimis Status

To be eligible for *de minimis* status, a state's bait landings must be less than 1% of the total coastwide bait landings for the most recent two years. State(s) with a reduction fishery are not eligible for *de minimis* consideration. If granted *de minimis* status by the Board, states are exempt from implementing biological sampling as well as pound net catch and effort data reporting. The Board also previously approved a *de minimis* exemption for New Hampshire, South Carolina and Georgia from implementation of timely reporting. The states of Pennsylvania, South Carolina, Georgia, and Florida requested and qualify for *de minimis* status for the 2021 fishing season.

VI. Plan Review Team Recommendations and Notable Comments

Management Recommendations

- The PRT recommends that the *de minimis* requests from Pennsylvania, South Carolina, Georgia, and Florida, be approved.
- The PRT recommends that the Technical Committee be tasked with evaluating the biological sampling requirement to be readdressed in a future management document or stock assessment.

VII. Literature Cited

Atlantic States Marine Fisheries Commission (ASMFC). 2017. Atlantic Menhaden Stock Assessment Update. Prepared by the ASMFC Atlantic Menhaden Stock Assessment Subcommittee. 180 pp.

Southeast Data, Assessment, and Review (SEDAR). 2015. SEDAR 40 – Atlantic Menhaden Stock Assessment Report. SEDAR, North Charleston SC. 643 pp.

SEDAR. 2020. SEDAR 69 – Atlantic Menhaden Benchmark Stock Assessment Report. SEDAR, North Charleston SC. 691 pp. available online at: http://sedarweb.org/sedar-69

SEDAR. 2020. SEDAR 69 - Atlantic Menhaden Ecological Reference Points Stock Assessment Report. SEDAR, North Charleston SC. 560 pp. available online at: http://sedarweb.org/sedar-69

Table 1. Directed, bycatch, and episodic events set aside landings in 1000s of pounds for 2021 by jurisdiction. Source: 2022 ASMFC state compliance reports for Atlantic menhaden. NA = not applicable; C = confidential (Some states are listed as confidential to protect the confidentiality of other states)

State	Directed	Incidental Catch	EESA
ME	7,501	11,771	C
NH	C	-	NA
MA	7,782	174	C
RI	3,393	C	C
CT	163	C	NA
NY	2,912	310	NA
NJ	45,640	C	NA
DE	C	-	NA
MD	2,801	-	NA
PFRC	2,534	-	NA
VA	334,790	-	NA
NC	419	-	NA
SC	C	-	NA
GA	C	-	NA
FL	111	-	NA

Table 2. 2021 validated bait landings by jurisdiction in 1000s of pounds. C = confidential (Some states are listed as confidential to protect the confidentiality of other states)

State	Bait Landings
ME	22,769
NH	C
MA	9,916
RI	3,575
CT	C
NY	3,337
NJ	45,694
DE	C
MD	2,802
PRFC	2,536
VA	33,441
NC	424
SC	C
GA	C
FL	111

Table 3. Atlantic menhaden reduction and bait landings in thousand metric tons, 1987-2021

	Reduction Landings (1000 mt)	Bait Landings (1000 mt)
1987	310	25.5
1988	278	43.8
1989	284	31.5
1990	343	28.1
1991	330	29.7
1992	270	33.8
1993	310	23.4
1994	260	25.6
1995	340	28.4
1996	293	21.7
1997	259	24.2
1998	246	38.4
1999	171	34.8
2000	167	33.5
2001	234	35.3
2002	174	36.2
2003	166	33.2
2004	183	34.0
2005	147	38.4
2006	157	27.2
2007	174	42.1
2008	141	47.6
2009	144	39.2
2010	183	42.7
2011	174	52.6
2012	161	63.7
2013	131	37.0
2014	131	41.6
2015	143	45.8
2016	137	43.1
2017	129	43.8
2018	141	50.2
2019	151	58.1
2020	125	59.6
2021	137	58.4
Avg 2016-2020	137	50.9

Table 4. Incidental fishery landings by state in 1000s of pounds, 2013-2021. Only states that have reported incidental catch landings are listed. Average total incidental catch landings for the time series is 7.5 million pounds.

State	2013	2014	2015	2016	2017	2018	2019	2020	2021
ME		-	-	506	5,374	2,995	10,751	13,605	11,771
MA								49	174
RI	16	99	70	40	136	-	-	-	C
CT	0	-	10	-	124	-	-	-	C
NY	0	325	769	281	807	-	-	282	310
NJ	0	626	241	196	-	204,240	-	20	C
DE	76	112	92	21	29	-	-	-	-
MD	2,864	2,201	1,950	996	-	-	-	-	-
PRFC	1,087	1,112	455	106	670	-	-	-	-
VA	268	2,232	2,103	326	-	110,281	-	-	-
FL	65	126	302	111	264	-	-	-	-
Total	4,377	6,831	5,992	2,581	7,404	3,215	10,751	13,957	12,336

Table 5. Total incidental landings (1000s of pounds), number of trips, and number of states reporting landings in the incidental catch fishery, 2013-2021.

Year	Landings (1000s of pounds)	Number of Trips	Number of states landing
2013	4,377	2,783	4
2014	6,831	5,275	8
2015	5,992	4,498	9
2016	2,581	2,222	9
2017	7,407	2,108	7
2018	3,310	1,224	3
2019	10,751	3,113	1
2020	13,957	3,565	4
2021	12,336	3,099	6
Total	67,037	27,887	

Table 6. Episodic Events Set-Aside (EESA) fishery quota, landings, and participating states by year. *The 2018 EESA quota was reduced due to an overage in 2017. The 2018 EESA overage was paid back in full by the state of Maine. **The 2021 overage was covered by quota transfers in 2021 and 2022, and there will be no deduction for the 2022 fishing year.

Year	States Declared Participation	EESA Quota (MT)	Landed (MT)	% EESA Quota Used
2013		1,708	-	-
2014	RI	1,708	134	7.8%
2015	RI	1,879	854	45.5%
2016	ME, RI, NY	1,879	1,728	92.0%
2017	ME, RI, NY	2,000	2,129	106.5%
2018*	ME	2,031	2,103	103.6%
2019	ME	2,160	1,995	92.4%
2020	ME & MA	2,160	2,080	96.3%
2021**	ME, MA, RI	1,944	2,213	113.8%

Table 7. State quota reporting timeframes in 2021. The **bold** text indicates which reporting program (dealer or harvesters) the states use to monitor its quotas. Blue text indicates changes from 2020.

State+A2:D14	Dealer Reporting	Harvester Reporting	Notes
ME	monthly	**daily/weekly**	Harvesters must report same day during directed and episodic event trips; harvesters report daily trips weekly for trips <6,000 lbs. Harvest reports are used for quota monitoring.
NH	**weekly**	monthly	Exempt from timely reporting. Implemented weekly, trip level reporting for state dealers.
MA	**weekly**	monthly/daily	Harvesters landing greater than 6,000 lbs must report daily
RI	**twice weekly**	quarterly/daily	Harvesters using purse seines must report daily
CT	**weekly/monthly**	monthly/daily	CT operates as directed fisheries until 90% of the quota is harvested. Then operates at the 6,000 pound bycatch trip limit.
NY	**Weekly**	monthly	Capability to require weekly harvester reporting if needed
NJ	**weekly**	monthly	All menhaden sold or bartered must be done through a licensed dealer
DE	—	**monthly/daily**	Harvesters landing menhaden report daily using IVR
MD	monthly	**monthly/daily**	PN harvest is reported daily, while other harvest is reported monthly.
PRFC	—	**weekly**	Trip level harvester reports submitted weekly. When 70% of quota is estimated to be reached, then pound netters must call in weekly report of daily catch.
VA	—	**monthly/weekly/daily**	Purse seines submit weekly reports until 97% of quota, then daily reports. Monthly for all other gears until 90% of quota, then reporting every 10 days.
NC	**monthly (combined reports)**		Single trip ticket with dealer and harvester information submitted monthly. Larger dealers (>50,000 lbs of landings annually) can report electronically, updated daily.
SC	**monthly (combined reports)**		Exempt from timely reporting. Single trip ticket with dealer and harvester information.
GA	**monthly (combined reports)**		Exempt from timely reporting. Single trip ticket with dealer and harvester information.
FL	**monthly/weekly (combined reports)**		Monthly through the FWC Marine Fisheries Trip Ticket system until 75% of quota is projected to have been met, then weekly phone calls to dealers who have been reporting menhaden landings until the directed fishery is closed.

Table 8. Results of 2021 quota accounting in pounds. The 2021 landings do not include landings from the incidental catch fishery because they do not count towards the TAC. A majority of the 2021 episodic events set aside (EESA) quota was used by Maine with the remainder used by Massachusetts and Rhode Island. There was an EESA overage of about 592,000 pounds that was covered by quota transfers. The 2022 base quotas account for the redistribution of relinquished quota by Delaware (1.2 million pounds).
*Includes redistributed relinquished quota for that year and any overages from the previous season.
^Includes inter-state transfers and transfers to the EESA quota.

State	2021 Base Quota*	Returned Set Aside	Transfers^	Final 2021 Quota	Overages	2022 Base Quota*
ME	2,194,396		5,317,590	7,511,986		2,194,303
NH	2,121,582		2,686,318	4,807,900		2,121,582
MA	5,422,022		2,362,791	7,784,813		5,417,812
RI	2,196,815		1,228,533	3,425,348		2,196,719
CT	2,188,634		-2,000,000	188,634		2,188,548
NY	2,934,618		0	2,934,618		2,933,580
NJ	46,323,661		275,000	46,598,661		46,267,280
PA	2,121,464		-1,086,318	1,035,146		2,121,464
DE	474,821		0	474,821		974,821
MD	8,037,057		-1,000,000	7,037,057		8,029,511
PRFC	4,564,863		-900,000	3,664,863		4,561,747
VA	335,206,390		0	335,206,390		334,781,533
NC	4,065,016		-2,000,000	2,065,016		4,062,537
SC	2,121,464		-1,775,000	346,464		2,121,464
GA	2,121,464		-1,971,164	150,300		2,121,464
FL	2,198,584		-1,400,000	798,584		2,198,486
Total	**424,292,851**			**424,030,601**		**424,292,851**

Table 9. State-to-state transfers of menhaden commercial quota for the 2021 Fishing year.

Transfer Date	ME	NH	MA	RI	CT	NY	NJ	PA	DE	MD	PRFC	VA	NC	SC	GA	FL
1-Jul-21	300,000				-300,000											
1-Jul-21		750,000			-750,000											
6-Jul-21	675,000													-675,000		
6-Jul-21	800,000												-800,000			
13-Jul-21	972,698														-972,698	
14-Jul-21	840,000															-840,000
16-Jul-21				500,000									-500,000			
17-Jul-21			262,500		-262,500											
17-Jul-21			700,000										-700,000			
17-Jul-21				187,500	-187,500											
19-Jul-21				210,000												-210,000
27-Jul-21				300,000										-300,000		
27-Jul-21			525,000											-525,000		
27-Jul-21				243,175											-243,175	
27-Jul-21			405,291												-405,291	
28-Jul-21		1,000,000								-1,000,000						
5-Aug-21				150,000				-150,000								
5-Aug-21	600,000							-600,000								
5-Aug-21			250,000					-250,000								
5-Aug-21			350,000													-350,000
13-Oct-21		500,000			-500,000											
22-Oct-21		350,000													-350,000	
27-Oct-21							275,000							-275,000		
28-Oct-21	900,000										-900,000					
8-Dec-21	350,000			-350,000												
11-Jul-22		86,318						-86,318								
Total	5,437,698	2,686,318	2,492,791	1,240,675	-2,000,000	0	275,000	-1,086,318	0	-1,000,000	-900,000	0	-2,000,000	-1,775,000	-1,971,164	-1,400,000

Table 10. Biological monitoring results for the 2021 Atlantic menhaden bait fishery.
*Age samples are still being processed

State	#10-fish samples required	#10-fish samples collected	Age samples collected	Length samples collected	Gear/Comments
ME	33	38	380	380	36 from PS; 2 from gillnets
NH	7	7	70	70	Purse Seine
MA	15	13	130	130	all purse seine
RI	5	4	55	55	Otter Trawl, Floating Fish Trap
CT	1	0	103	302	Long Island Sound Trawl Survey - 139 tows in 2021
NY	5	14	127	147	cast net, seine net
NJ	67	109	*	1090	Purse Seine
	3	0	*	0	Other Gears
DE	1	1	10	10	Gill net
MD	6	30	417	1323	Pound net
PRFC	6	13	130	130	pound net
VA	7	55	55	55	Pound Net
	5	200	200	200	Gill Net
	0	20	20	20	Haul Seine
NC	1	6	55	92	gillnet
Total	**163**	**510**	**1752**	**4004**	

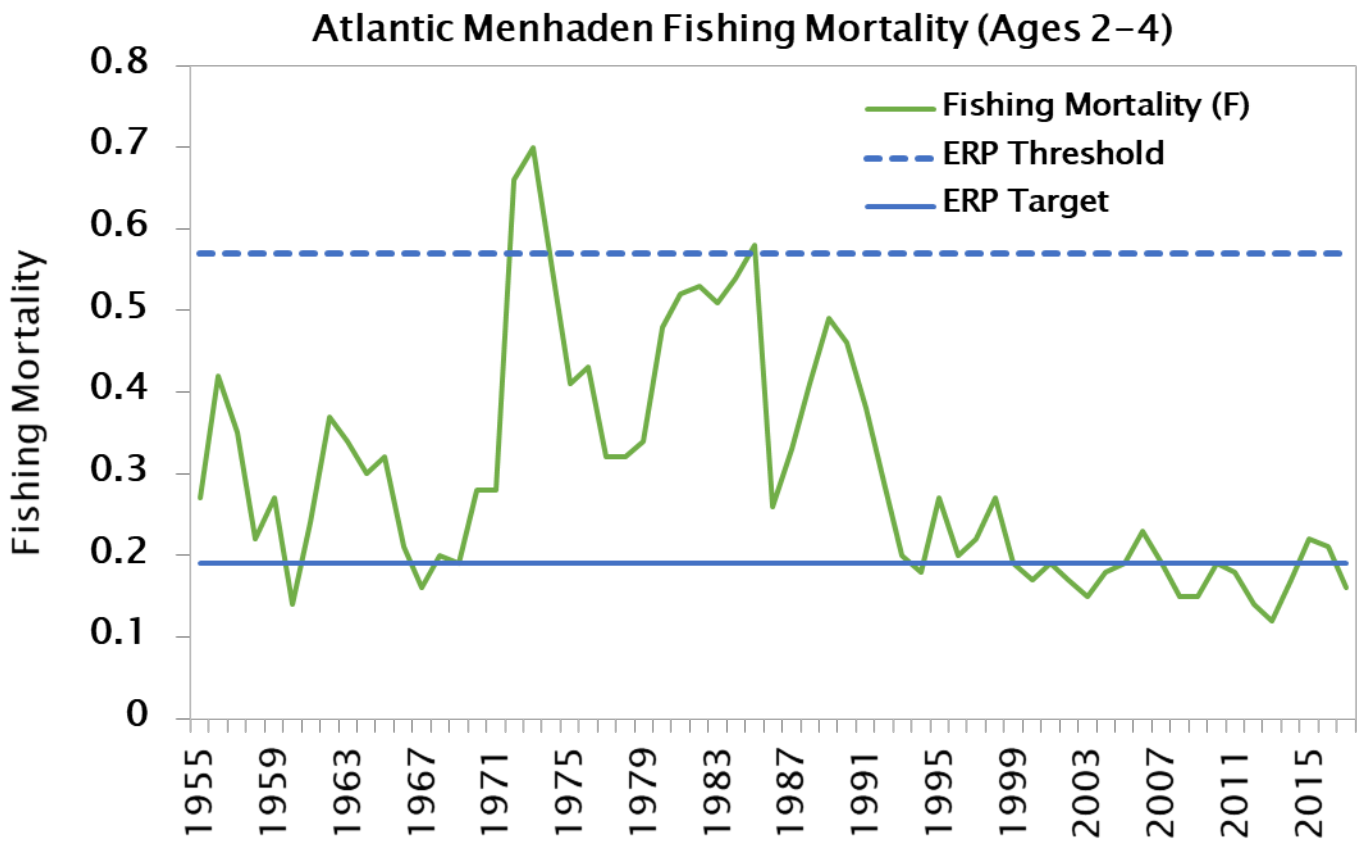

Figure 1. Fishing mortality, 1955-2017. The ERP fishing mortality reference points are F_{target} = 0.19 and $F_{threshold}$ = 0.57. F_{2017} = 0.16. Source: ASMFC 2020.

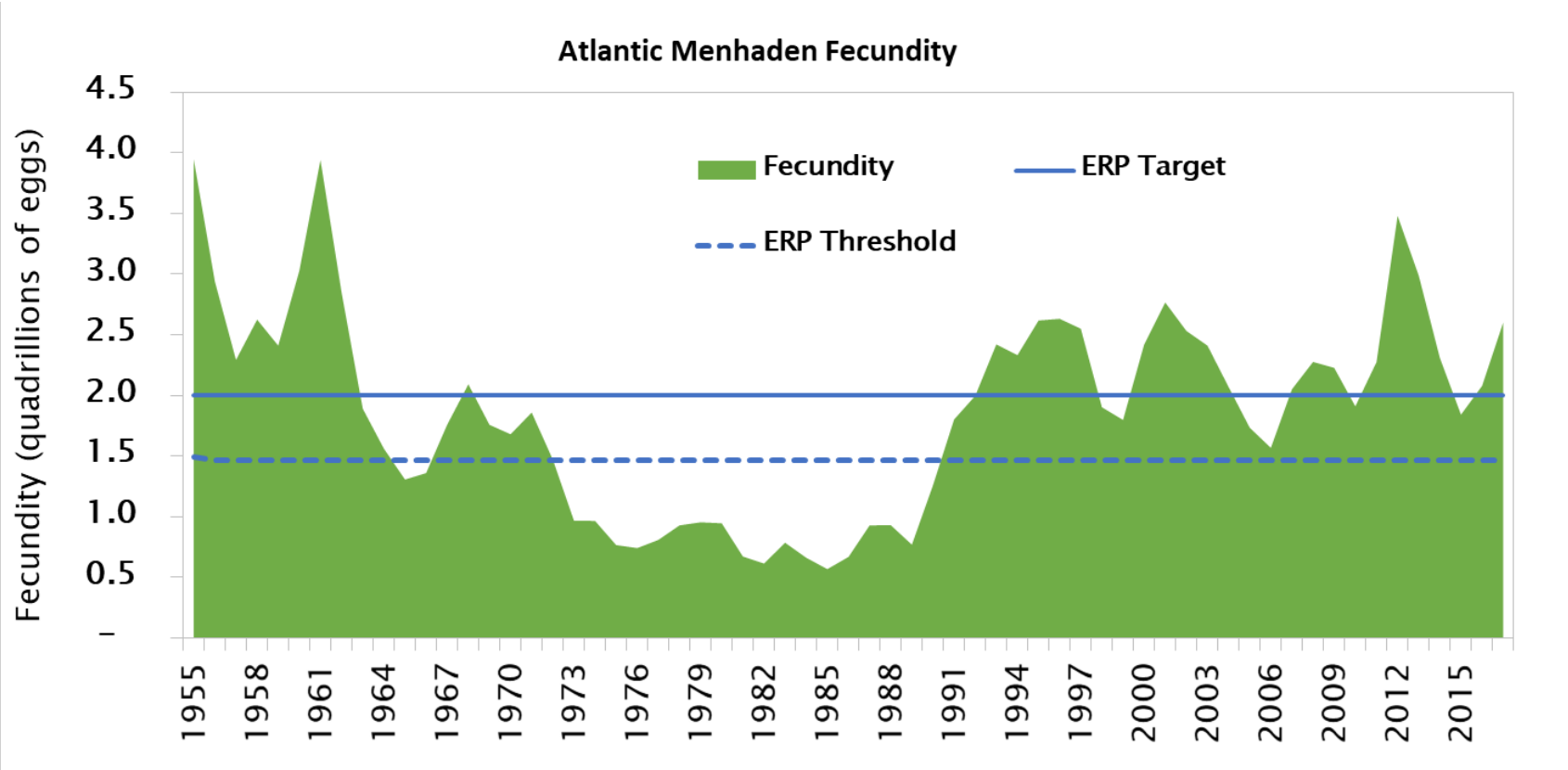

Figure 2. Atlantic menhaden fecundity, 1955-2017. The ERPs for population fecundity are FEC_{target} = 2,003,986 (billions of eggs), and $FEC_{threshold}$ = 1,492,854 (billions of eggs). FEC_{2017} = 2,601,550 billion eggs.

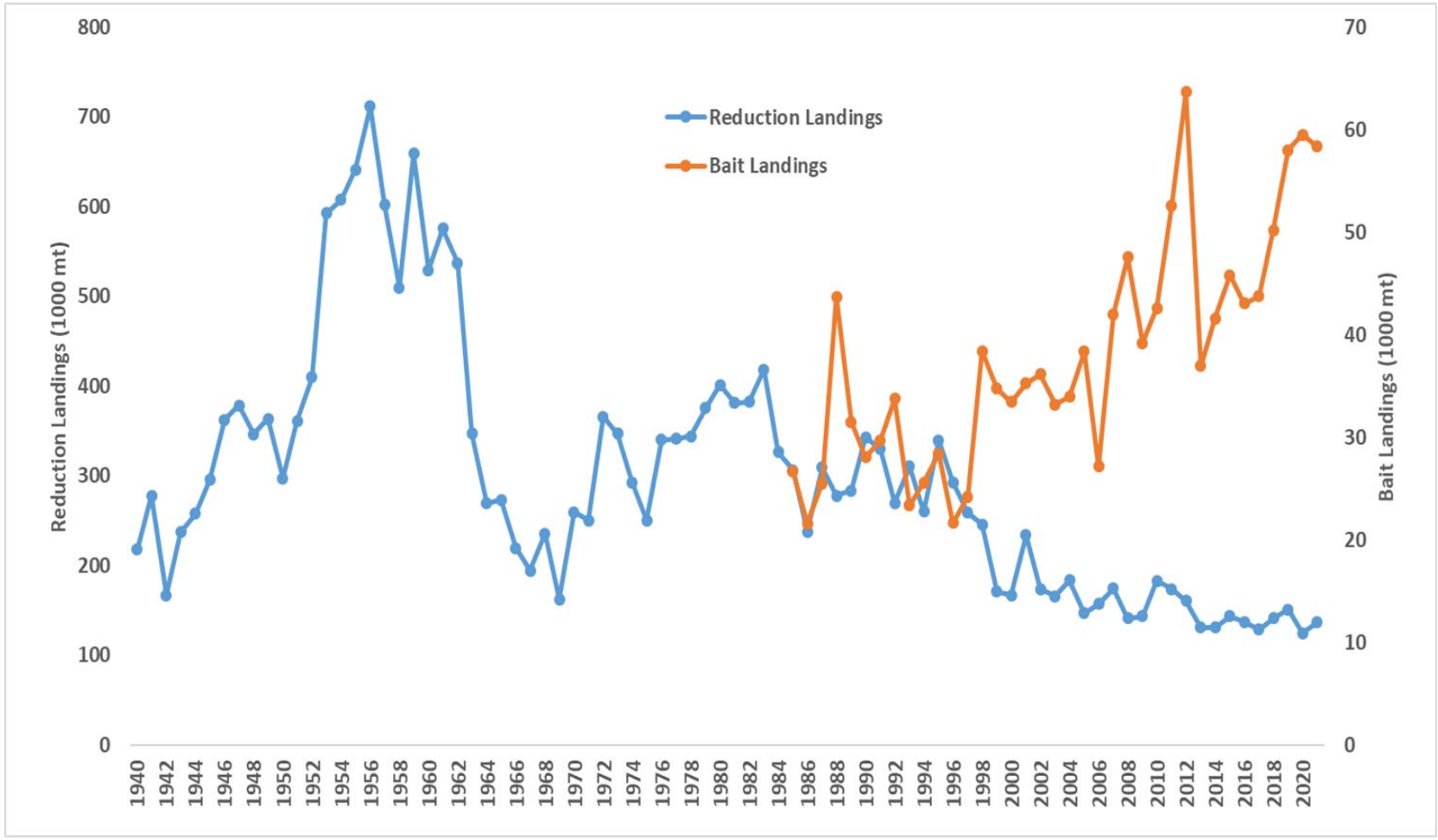

Figure 3. Landings from the reduction purse seine fishery (1940–2021) and bait fishery (1985–2021) for Atlantic menhaden. Note: there are two different scales on the y-axes.

Atlantic States Marine Fisheries Commission

DRAFT ADDENDUM I TO AMENDMENT 3 OF THE ATLANTIC MENHADEN INTERSTATE FISHERY MANAGEMENT PLAN FOR BOARD REVIEW

Commercial Allocations, Episodic Event Set Aside Program, and Incidental Catch/Small-Scale Fisheries

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

This draft document was developed for Board review and discussion at the August 2022 meeting week. This document is not intended to solicit public comment as part of the Commission/State formal public input process. However, comments on this draft document may be given at the appropriate time on the agenda during the scheduled meeting. Also, if approved, a public comment period will be established to solicit input on the issues contained in the document.

August 2022

Atlantic States Marine Fisheries Commission Seeks Your Input on Atlantic Menhaden Management

The public is encouraged to submit comments regarding this document during the public comment period. Comments will be accepted until 5:00 p.m. EST on **DAY, MONTH 2022**. Regardless of when they were sent, comments received after that time will not be included in the official record.

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

1. Attend public hearings pertinent to your state or jurisdiction; given COVID-19, it is likely most hearings will occur via webinar.
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:

James Boyle
Senior Fishery Management Plan Coordinator
Atlantic States Marine Fisheries Commission
1050 North Highland St., Suite 200 A-N
Arlington, VA 22201
Fax: (703) 842-0741
comments@asmfc.org (subject line: Atlantic Menhaden Draft Addendum I to Amendment 3)

If you have any questions please call James Boyle at 703.842.0740.

Commission's Process and Timeline

August 2021	Atlantic Menhaden Board Tasks Staff to Develop Draft Addendum I
August 2021 – July 2022	Staff Develops Draft Addendum I for Board Review
August 2022	**Atlantic Menhaden Board Reviews Draft Addendum I and Considers Its Approval for Public Comment**
August – October 2022	Board Solicits Public Comment and States Conduct Public Hearings
October 2022	Board Reviews Public Comment, Selects Management Options and Considers Final Approval of Addendum I
TBD	Provisions of Addendum I are Implemented

1. INTRODUCTION

The Atlantic States Marine Fisheries Commission (ASMFC) is responsible for managing Atlantic menhaden (*Brevoortia tyrannus*) in state waters (0–3 miles from shore) under the authority of the Atlantic Coastal Fisheries Cooperative Management Act, and has done so through an interstate fishery management plan (FMP) since 1981. The states of Maine through Florida have a declared interest in the fishery and are responsible for implementing management measures consistent with the interstate FMP. Management authority in the Exclusive Economic Zone (3-200 miles from shore) lies with NOAA Fisheries. For the purposes of this Addendum, the term "state" or "states" also includes the Potomac River Fisheries Commission.

At its August 2021 meeting, the ASMFC's Atlantic Menhaden Management Board (Board) approved the following motion:

Move to initiate an addendum to consider changes to commercial allocation, the episodic events set aside, and the small-scale/incidental catch provision. The purpose of this action is to address the issues outlined in the Atlantic Menhaden work group memo and the PDT should use the strategies provided in the work group memo as a starting point.

The Addendum proposes options to adjust states' commercial allocation to better align with availability; adjust the percentage of the episodic event set aside (EESA) program; and reduce incidental catch and small-scale fisheries (IC/SSF) landings from recent levels.

2. OVERVIEW

2.1 Statement of the Problem

Since the implementation of Amendment 3 (2017), dynamics in the commercial menhaden fishery have changed, most notably the rise of landings in the Gulf of Maine and an increase in quota transfers to the New England region; an increase in landings under the IC/SSF provision; and an annual reliance by some states on the EESA program. To sufficiently address the issues posed by these changes, the addendum addresses three separate but related components of the management program: 1) commercial allocation, 2) the IC/SSF provision, and 3) EESA program.

2.1.1 Commercial Allocations

The current allocations have resulted in the Total Allowable Catch (TAC) not being fully used coastwide, while some states do not have enough quota to maintain current fisheries. Quota transfers alone are not enough to ameliorate this issue. Some states have become reliant on the EESA and IC/SSF provision to maintain their fishery while other states regularly do not land their allocation.

2.1.2 Episodic Event Set Aside (EESA) Program

Over 90% of the EESA has been used in all years since 2016. With the increase in Atlantic menhaden availability to the Northeast, the program has become a secondary regional quota for several states to continue fishery operations in state waters. The dependency on the EESA highlights the mismatch of Atlantic menhaden distribution and availability to current commercial allocations.

2.1.3 Incidental Catch and Small-Scale Fisheries (IC/SSF)

The IC/SSF provision was intended to provide continued access for low-volume landings of menhaden once a state's directed fisheries quota was met and reduce regulatory discards. In recent years, menhaden availability at the northern part of its range has resulted in directed fishery quotas being met earlier in the year. Additionally, the coastwide landings under this category have exceeded a number of states directed fishery quotas and ranged from 1-4% of the annual TAC. Landings under this provision have only caused the overall TAC to be exceeded in a single year, 2021 (by 0.36%), but without changes, landings could remain at high levels or increase, potentially leading to more frequent exceedance of the TAC. Finally, the language in Amendment 3 has led to different interpretations of when landings fall under this provision (*i.e.* once a state's sector allocation is met or only once the full state allocation is met) and should be clarified.

2.2 Background

2.2.1 Allocation

Under Amendment 3, each state is allocated a 0.5% minimum quota and the remainder of the TAC is allocated based on a three-year average of landings from 2009-2011. On an annual basis, states have the option to relinquish part of or all of their fixed minimum quota by December 1st of the preceding fishing year. Any quota relinquished by a state is redistributed to other states that have not relinquished their quota, based on landings data from 2009-2011. Any overage of quota allocation is determined based on final allocations (inclusive of transfers), and the overage amount is subtracted from that state's quota allocation in the subsequent year on a pound-for-pound basis.

Amendment 2 (2012) also based state allocations on the three-year average of landings from 2009-2011; however, there was no fixed minimum. Table 1 shows a comparison of state quotas under Amendments 2 and 3, and highlights the influence of the 0.5% fixed minimum on states' allocations.

Table 1. A comparison of state allocations under menhaden Amendment 2 and Amendment 3. Both Amendments used a 2009-2011 allocation timeframe; Amendment 3 included a 0.5% fixed minimum. While under Amendment 2, Pennsylvania was not a part of the Board and did not have an allocation, therefore is noted with a "-".

State	Amendment 2 Allocation (%)	Amendment 3 Allocation (%)
Maine	0.04%	0.52%
New Hampshire	0%	0.50%
Massachusetts	0.84%	1.27%
Rhode Island	0.02%	0.52%
Connecticut	0.02%	0.52%
New York	0.06%	0.69%
New Jersey	11.19%	10.87%
Pennsylvania	-	0.50%
Delaware	0.01%	0.51%
Maryland	1.37%	1.89%
PRFC	0.62%	1.07%
Virginia	85.32%	78.66%
North Carolina	0.49%	0.96%
South Carolina	0%	0.50%
Georgia	0%	0.50%
Florida	0.02%	0.52%

From 2018 to 2020, total landings (directed, IC/SSF, and EESA) increased among the New England states of Maine, New Hampshire, and Massachusetts (Table 2). Maine and Massachusetts have both increased their percentage of coastwide total landings in recent years, with Maine's percentage increasing every year from 2016-2020 and Massachusetts from 2016-2021. A number of states have maintained directed fisheries while their landings have represented less than 0.2% of coastwide total landings (Connecticut, Delaware, North Carolina, and Florida). In 2021, Massachusetts, Rhode Island, Connecticut, Maryland, and PRFC increased their percentage of coastwide total landings, relative to the previous year. Virginia's percentage of the coastwide landings decreased greatly in 2020 relative to 2019 because the state's largest fishery and processing plant was shut down for several weeks due to the COVID-19 pandemic.

Table 2. State total landings as a percentage of coastwide (CW) landings, 2016-2021. Total landings include directed bait, reduction, IC/SSF, and EESA landings. Amendment 3 allocations for directed bait and reduction landings were implemented beginning in 2018. To protect confidentiality, information for New Hampshire, Pennsylvania, South Carolina, and Georgia have been removed. **These are proportions of the coastwide landings; they do not represent allocations.**

State	% of 2016 CW Landings	% of 2017 CW Landings	% of 2018 CW Landings	% of 2019 CW Landings	% of 2020 CW Landings	% of 2021 CW Landings
Maine	1.50%	2.31%	3.48%	4.91%	6.33%	5.28%
New Hampshire				0.99%	1.02%	
Massachusetts	0.76%	0.96%	1.37%	1.51%	2.17%	2.30%
Rhode Island	0.00%	0.45%	0.17%	0.01%	0.05%	0.83%
Connecticut	0.02%	0.05%	0.20%	0.03%	0.03%	0.04%
New York	0.37%	0.40%	0.11%	0.21%	1.09%	0.77%
New Jersey	11.47%	12.15%	11.97%	10.96%	12.22%	10.60%
Pennsylvania						
Delaware	0.02%	0.02%	0.04%	0.02%	0.04%	0.01%
Maryland	1.40%	0.76%	0.74%	0.73%	0.64%	0.65%
PRFC	0.63%	0.55%	0.79%	0.51%	0.54%	0.59%
Virginia	83.66%	82.08%	80.85%	79.93%	75.66%	77.65%
North Carolina	0.10%	0.20%	0.17%	0.12%	0.15%	0.10%
South Carolina						
Georgia						
Florida	0.07%	0.07%	0.06%	0.05%	0.06%	0.03%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Since implementation of Amendment 3, the number of quota transfers has increased over time with 7, 17, 15, and 16 quota transfers occurring in 2018, 2019, 2020, and 2021, respectively. However, not every state transferred quota consistently; only Maine, Connecticut, Maryland, and Florida either gave or received quota every year from 2018-2021. Maine, New Hampshire, Massachusetts, and New Jersey had a net increase in quota through transfers in all four years. The net increase in quota by state over the four years ranged from 275,000 to 22.86 million pounds (Table 3). While the transfer of quota away from a state does not necessarily represent a decrease in abundance of menhaden, the transfer of quota to the New England states has coincided with increasing availability of menhaden regionally and the need for bait fish as the availability of Atlantic herring has decreased.

Table 3. Quota transfers in pounds by state for 2013-2021.

State	2013	2014	2015	2016	2017	2018	2019	2020	2021	2018-2021 Net Total	2018-2021 Average
ME				1,800,000	195,180	5,400,000	6,573,592	5,450,000	5,437,698	22,861,290	5,715,323
NH							3,373,592	2,300,000	2,686,318	8,359,910	2,786,637
MA	-500,000	-260,000	-508,685	-35,986			1,300,000	2,350,000	2,492,791	6,142,791	2,047,597
RI	15,000	50,000	33,685	35,986			-400,000	-1,800,000	1,240,675	-959,325	-319,775
CT						-500,000	-2,400,000	-2,000,000	-2,000,000	-6,900,000	-1,725,000
NY	1,000,000	210,000	475,000	492,823	300,000	-1,000,000	-1,900,000	500,000		-2,400,000	-800,000
NJ									275,000	275,000	275,000
PA								-500,000	-1,086,318	-1,586,318	-793,159
DE						-150,000		-100,000		-250,000	-125,000
MD						-1,500,000	-1,000,000	-1,350,000	-1,000,000	-4,850,000	-1,212,500
PRFC									-900,000	-900,000	-900,000
VA				-1,500,000		-1,000,000	-1,000,000			-2,000,000	-1,000,000
NC	-575,000			-877,823	-495,180		-600,000	-1,800,000	-2,000,000	-4,400,000	-1,466,667
SC							-2,347,184	-1,650,000	-1,775,000	-5,772,184	-1,924,061
GA									-1,971,164	-1,971,164	-1,971,164
FL	60,000			85,000		-1,250,000	-1,600,000	-1,400,000	-1,400,000	-5,650,000	-1,412,500

2.2.2 Episodic Event Set Aside Program (EESA)

The EESA Program was first implemented under Amendment 2 and clarified under Technical Addendum I later that year. Amendment 3 made no additional changes to the program. Annually, 1% of the TAC is set aside for episodic events, which are defined as any instance in which a qualified state has reached its quota allocation prior to September 1st and the state can prove the presence of unusually large amounts of menhaden in its state waters. To demonstrate a large amount of menhaden in state waters, a state can use surveys (e.g., aerial, seine) to indicate high biomass; landings information; or information highlighting the potential for fish kills, associated human health concerns, and that harvest would reduce or eliminate the fish kill. The goal of the program is to add flexibility in managing menhaden by allowing harvest during an episodic event, reduce discards, and prevent fish kills. States eligible to participate in the EESA program are limited to Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, and New York. When a state declares into the EESA, they are required to implement daily trip level harvester reporting and submit weekly reports to the ASMFC; restrict harvest and landings to state waters; and implement a maximum daily trip limit no greater than 120,000 pounds per vessel.

From 2013 through June 2022, the EESA has been used by Maine (6 years), Rhode Island (5 years), Massachusetts (2 years), and New York (2 years). Up to three states have participated at the same time. The starting date of states declaring into the program has ranged from mid-May to mid-August, with New York and Rhode Island opting in earlier than Maine and Massachusetts. Over 90% of the set-aside has been used in all years since 2016. In 2018 and 2019, Maine was the only state to declare into the EESA program and landed approximately 4.6 and 4.4 million pounds, respectively. In 2021, Maine, Massachusetts, and Rhode Island declared into the EESA program and combined the three states landed approximately 4.9 million pounds. Multiple states have implemented harvest control measures beyond the FMP's 120,000-pound

trip limit, including: lower daily landings limits, weekly limits, limited landing days, and biomass thresholds for when the commercial fishery can operate.

The increasing reliance on the EESA program by some states has coincided with the decline in Atlantic herring and the increased availability of Atlantic menhaden in the Gulf of Maine. For more than a hundred years, there is evidence that periodic abundance of menhaden in the Gulf of Maine may last from 1 to 20 years then disappear for 1 to 20 years (Figure 1). In order to use the EESA and minimize disruptions to fishing activities, some states have sought creative ways at keeping their directed fishery open. In 2021, a number of states requested quota transfers as a group while fishing in the EESA, allowing for multiple quota transfers to be processed while the states continued to participate in the EESA program, in an effort to enable their directed fishery to resume after exiting the EESA with minimal interruption.

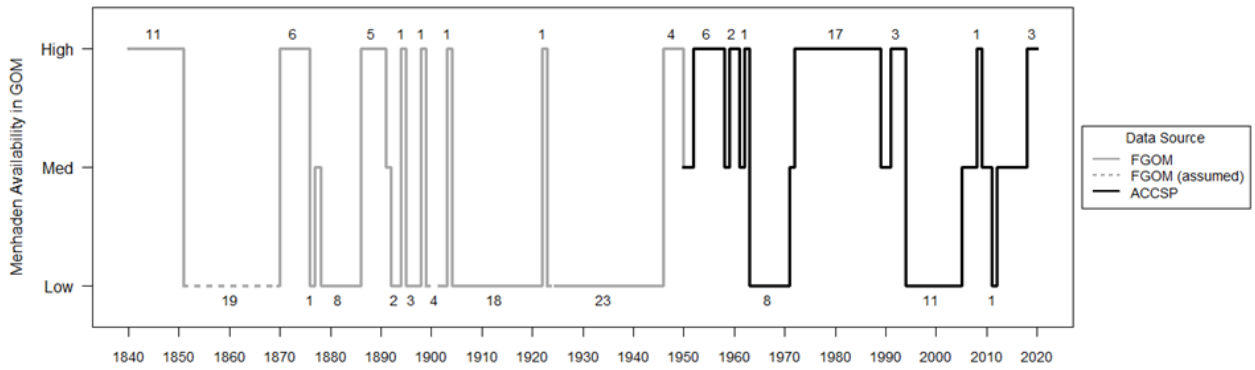

Figure 1. Reconstructed history of availability of Atlantic menhaden to the Gulf of Maine. The number of consecutive years in either a "High" or "Low" availability state are labeled. Data sources: *Fishes of the Gulf of Maine* (Bigelow and Schroeder 2002) and the Atlantic Coastal Cooperative Statistics Program (ACCSP).

2.2.3 Incidental Catch and Small-Scale Fisheries (IC/SSF)

A bycatch allowance was first implemented under Amendment 2, modified under Addendum I to Amendment 2 (2016), and modified again under Amendment 3. As outlined in Amendment 3, under the IC/SSF provision, after a state's allocation is met, small-scale directed and non-directed gear types may continue to land up to 6,000 pounds of menhaden per trip per day. The following gear types are identified in Amendment 3 as eligible to participate:

Small-scale gears: cast nets, traps (excluding floating fish traps), pots, haul seines, fyke nets, hook and line, bag nets, hoop nets, hand lines, trammel nets, bait nets, and purse seines which are smaller than 150 fathoms long and 8 fathoms deep.

Non-directed gears: pound nets, anchored/stake gillnets, drift gill net, trawls, fishing weirs, fyke nets, and floating fish traps.

Since Amendment 2, not all states transition from a directed fishery to an incidental catch or small-scale fishery under the same conditions. Both New Jersey and Virginia subdivide their

quotas among sectors and have done so since state quotas were implemented in 2013. Virginia allocates its annual quota to three sectors: the reduction sector, the purse seine bait sector, and the non-purse seine bait sector. New Jersey allocates the majority of its annual quota to the purse-seine fishery, and the remaining quota is allocated to all other gear types. Once the non-purse seine bait sector or "other gears" fishery has harvested its portion of the state's allocation, that fishery moves into an IC/SSF regardless of whether the entire state's quota has been harvested. This has resulted in Virginia and New Jersey reporting IC/SSF landings when they have not harvested their overall quota allocation for a given year. Since the inception of the IC/SSF provision, both states have reported landings following the closure of Virginia's non-purse seine bait fishery and New Jersey's "other gears" fishery as IC/SSF.

Prior to 2016, several states' IC/SSF landings are considered confidential, therefore only information from 2016-2021 is included in Table 4. From 2016-2021, 11 different states have had IC/SSF landings, with the most number of states (8) reporting IC/SSF in a year occurring in 2016 and the fewest (1) occurring in 2019. The annual coastwide total IC/SSF landings ranged from approximately 2.1 million pounds to 13.9 million pounds. The highest amount occurred in 2020, when Maine landed the majority at 13.6 million pounds, representing 53% of Maine's total landings that year. From 2016-2017 and 2018-2019, landings in this category increased by over 200%, with Maine being the only state with IC/SSF landings in 2019. From 2018-2020, the TAC remained constant at 216,000 mt while IC/SSF landings as a percentage of the annual TAC rose from less than 1% (2018) to nearly 3% (2020).

Table 4. IC/SSF landings in pounds from 2016-2021. Only states with these landings in this time period are included in the table. C = confidential (Some states are listed as confidential to protect the confidentiality of other states). Source: state compliance reports

State	2016	2017	2018	2019	2020	2021
Maine		5,373,940	2,995,145	10,750,929	13,605,497	12,508,195
Massachusetts					49,350	172,335
Rhode Island	39,540	135,748				C
Connecticut		126,986				C
New York	281,017	807,392			282,169	425,212
New Jersey	195,523		204,240		20,190	C
Delaware	20,823	29,285				
Maryland	995,698					
PRFC	105,669	670,447				
Virginia	325,692		110,281			
Florida	111,165	263,643				
Total	2,075,127	7,407,441	3,309,666	10,750,929	13,957,206	13,186,879
Percent Change		257%	-55%	225%	30%	-6%

Since 2013, a majority of landings under this provision occur on trips that land either 1,000 pounds or less (52%), or greater than 5,000 pounds but less than 6,000 pounds (20%). However, landings per trip has increased in recent years (in 2021, 21% of trips < 1,000 pounds; 50% of trips >5,000 pounds; Figure 2). From 2017 to 2021, the majority of these landings have been caught by purse seine (83%, average for the time series). The share of IC/SSF landings using purse seine gear has increased from 57% in 2017 to approximately 88% from 2019 to 2021 (Table 5).

Figure 2. Percent of incidental trips by size in pounds, 2013-2021. Source: state compliance reports

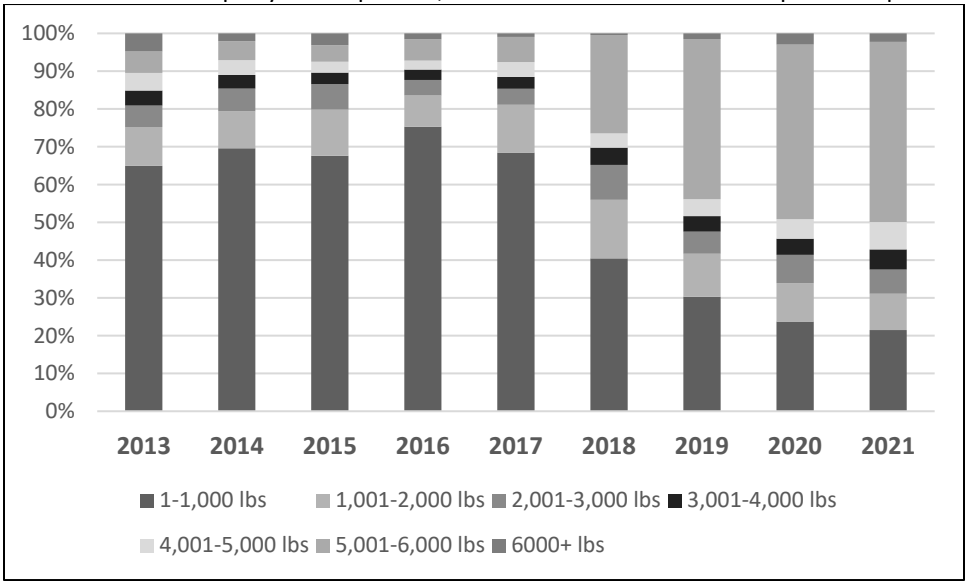

Table 5. Annual summary of total IC/SSF landings in pounds as a fraction of coastwide TAC; and the fraction of total IC/SSF landings coming from small-scale directed purse seine fishing. *2021 Total landings include adjustments from validation but purse seine landings and percentage are based on the compliance report figures. Source: ACCSP; state compliance reports

Year	Total landings	% of TAC	landings from purse seine	% from purse seine
2013	4,376,741	1.20%	0	0%
2014	6,831,462	1.90%	0	0%
2015	5,991,612	1.50%	0	0%
2016	2,075,127	0.50%	0	0%
2017	7,407,441	1.80%	4,291,347	58%
2018	3,290,066	0.70%	2,419,194	74%
2019	10,750,929	2.40%	9,545,747	89%
2020	13,957,206	3.10%	12,332,677	88%
2021*	13,186,879	3.08%	10,850,372	88%

2.3.0 Social and Economic Impacts

Atlantic menhaden provide social and economic value to a diverse group of stakeholders both directly, to commercial and recreational menhaden fishing communities, and indirectly, to those who derive value from finfish, coastal birds, or marine mammals that predate upon menhaden. Menhaden-specific ERPs were developed and implemented to account for these diverse needs. The ERPs aim to provide sufficient menhaden to support sustainable menhaden fisheries, as well as menhaden's important role as a forage fish. Ensuring a stable forage base could increase the abundance of species that predate upon menhaden, such as other finfish, coastal birds, or marine mammals. An increase in abundance of these species could, in turn, lead to positive social and economic impacts for individuals, groups, or communities which rely on these resources for consumptive (e.g., commercial or recreational harvest) or non-consumptive purposes (e.g., bird or whale watching). Individuals who hold non-use values associated with affected species may also benefit from increased abundances (e.g., existence value from knowing a particular environmental resource exists or bequest value from preserving a natural resource or cultural heritage for future generations). Estimating potential economic or social impacts to these stakeholders as a result of menhaden-specific ERPs is challenging given complex and dynamic ecological relationships as well as the lack of socioeconomic data, especially for nonmarket goods and services.

This Addendum includes several measures which could carry social and economic impacts, notably potential changes to commercial allocations, the episodic event set aside program, and the incidental catch/small-scale fisheries provisions. The impacts of these changes on an individual stakeholder group will depend not only on the direction of these changes (e.g., whether the allocation is increasing or decreasing), but also a number of other social and economic factors. The extent and distribution of positive or negative socioeconomic effects arising from changes to allocations, or other provisions, is dependent on price elasticities (responsiveness of demand to a change in price), substitute products, fishing costs, alternative employment opportunities, fishing community structure, and possibly other factors.

Identifying quota allocation methods which are fair and equitable among fishery sectors, gear types, and regions will enhance socioeconomic net benefits if changes in allocation result in higher value or more efficient use of the menhaden resource. Efficiency improving shifts in allocation, while potentially beneficial overall, could disadvantage individual stakeholders through reductions in harvests, revenues, and profits.

A 2017 socioeconomic study of the commercial bait and reduction fisheries, funded by the ASMFC, contains several findings which elucidate possible social and economic impacts resulting from changes in menhaden management. While this study was conducted to inform Amendment 3, its findings may still be informative to the measures included in this Addendum. However, it is important to note that the study was focused on potential changes to the coastwide TAC, not the measures being considered in this Addendum. A study focused on, for

example, allocation changes might have different results based on the different spatial scales and tradeoffs considered.

In the 2017 study, researchers interviewed and surveyed industry members to uncover salient themes, analyzed historic landings data to resolve market relationships, performed economic impact analyses to consider the effects of various TAC changes, and conducted a public opinion survey to assess attitudes toward menhaden management (see Whitehead and Harrison, 2017 for the full report). Interviews and surveys of commercial fishers and other industry members found mixed opinions on several subjects; however, many agreed that the demand for menhaden bait, oil, and meal had increased in recent years. Exogenous demand increases, if leading to increases in ex-vessel prices, could benefit menhaden bait and reduction industry members.

Analysis of historic landings data revealed that prices for menhaden were negatively related to landings levels, but that this relationship was small and insignificant in some instances. In particular, state-level analysis showed ex-vessel price was insensitive to landings. This finding suggested that reductions in the TAC might reduce commercial fishery revenues as decreases in landings are not fully compensated by higher prices. The effects of a change in the allocation of TAC among states is not clear. However, it was found that ex-vessel prices of menhaden were not uniform along the coast, with some states having higher prices than others, suggesting a change in allocation could influence fleet revenues.

Economic impact analyses of changes to the TAC found income and employment decreases (increases) corresponding to TAC decreases (increases), with the largest impacts concentrated in New Jersey and Virginia. For example, the analysis suggests that when totaling direct, indirect, and induced economic changes in the bait fishery, a 5% increase in the TAC from the 2017 baseline would result in 18 more jobs, a $476,000 increase in total earnings, and a $1.7 million increase in total economic output. Looking at the reduction sector, a 5% increase in the TAC from the 2017 baseline is estimated to increase total economic output (includes direct, indirect, and induced economic effects) by $3.6 million in Northumberland county and add 77 full and part-time jobs The difference in economic impacts between the bait and reduction sector is largely due to the difference in scale between the sectors, i.e., a 5% increase to reduction landings would be much higher in metric tons than a 5% increase to bait landings. In addition, it is important to note that economic impact analyses such as the one conducted in this study are a coarse assessment of potential economic impact, and they often do not take into account specific fishery and market dynamics.

Interestingly, subsequent analysis of coastal county income and employment changes in response to changes in bait landings (not reduction landings) showed little effect, casting some doubt on the conclusion that adjustments in menhaden TAC consistently lead to changes in fishery income and employment in the bait fishery. It may also be that the magnitude of impact is dependent on the size of the fishery in each state and the ability of fishermen to harvest other species. Nonetheless, it is reasonable to expect that if the TAC were to remain fixed but be allocated to states differently, those states receiving increased allocation would have

positive economic impacts if the increase in allocation would lead to an increase in harvest. For those that received decreased quota, the expected impacts would depend on the expected impacts on harvest: if the reduced allocation would reduce harvest, negative economic impacts would be expected; however, if the reduced allocation was less than or equal to the state's latent quota, i.e., would not have any expected impacts on harvest, no economic impacts would be expected.

3. PROPOSED MANAGEMENT PROGRAM

This addendum considers modifying the following components of the management program: 1) commercial allocations, 2) IC/SSF provision, and the 3) EESA program. An objective is listed for each component to guide evaluation of proposed options for addressing the issues identified in the statement of the problem. **When the Board takes final action on the addendum, there is the opportunity to select any measure within the range of options that went out for public comment, including combining options across issues.**

In response to concerns that 2020 landings were atypical due to impacts from the COVID-19 pandemic, the full extent of which are unknown and possibly variable between states, the Board elected to exclude 2020 landings data in the commercial allocation options of this draft addendum, thereby minimizing the effects of COVID-19 on allocation.

The Plan Development Team (PDT) has highlighted the management options that they recommend the Board remove in order to focus on key solutions and reduce the complexity of the document. Taking these steps will ensure the public will be able to understand and comment on proposed changes to the management program more effectively. Recommendations can be found in an accompanying memo (M22-78). As the document is drafted there are 35 total options in the Draft Addendum (16 combinations of allocation options; 3 options for the EESA program; and 16 options for the IC/SSF provision).

3.1 Commercial Allocation

Objective: Allocations should be adjusted to 1) align with the availability of the resource 2) enable states to maintain current directed fisheries with minimal interruptions during the season; 3) reduce the need for quota transfers and; 4) fully use the annual TAC without overage.

To account for the various combinations of allocation methods and timeframes the following management options have been divided into two steps. The first step outlines the method for setting the minimum allocation, and the second step outlines the approach used to allocate the remaining TAC. An option must be chosen in each step to complete an allocation package. Options under each of the following steps were developed using total landings information including quota transfers, and landings under the IC/SSF provision and EESA program.

Step 1:

3.1.1 Allocation options for addressing the minimum allocation.

The current fixed minimum allocation of 0.5% has been consistently underutilized by several states, with some states transferring or relinquishing some or all of their quota, and others keeping their unused quota. The Amendment 3 provisions of EESA, IC/SSF, and quota transfers have been utilized every year since the Amendment was implemented, indicating the latent quota created by the fixed minimum could be adjusted to reduce reliance on these provisions. Some states have highly variable landings, which will likely lead to them rarely exceeding their allocation under some allocation option below. It is important to keep in mind nearly all states have the potential to reach their quota prior to the end of the year under any allocation strategy under the current TAC. Any latent quota reduction produced by selecting the tiered option below will automatically be reallocated to the states based on the allocation method selected in step 2 (section 3.1.2).

Option A. Status Quo: Each state is allocated a 0.5% fixed minimum quota. Total TAC assigned under this option is 8.0% (i.e. 16 states x 0.50%= 8%).

Option B. Three-tiered fixed minimum approach: This option would assign states into three tiers (0.01%, 0.25%, or 0.50%) based on total landings. The states of Pennsylvania, South Carolina, and Georgia would be included in tier one and receive 0.01%. Tier two includes Connecticut, Delaware, North Carolina, and Florida, with each state receiving 0.25%. The remaining states would be in tier three and receive 0.5% of the TAC. The three states in tier one have consistent small-scale, bycatch fisheries, or have harvested no Atlantic menhaden from 2009-2020. The 0.01% coupled with the timeframe allocation assigned in Step 2 below would have covered their limited landings from 2009-2020 under all combinations. Depending on the selection made in Step 2 below, the tier two states would have had sufficient quota to cover their landings every year from 2009-2020, except North Carolina, which could have had up to two years that would have not been covered depending on the timeframe selected, but in nearly all other years they would have used less than half of their allocation. Total TAC assigned under this option is 5.53% (i.e., 3 states x 0.01% + 4 states * 0.25% + 9 states * 0.50% = 5.53%).

Step 2:

3.1.2 Timeframes to base allocating the remaining TAC.

Option 1. Status Quo: Three-year average of landings from 2009-2011. This option only incorporates landings from a short unregulated time period and does not reflect current Atlantic menhaden distribution or fishery performance.

Option 2. 2018, 2019 & 2021
The quota allocation timeframe is based on the most recent average landings from 2018, 2019, and 2021. This timeframe reflects the most recent landings history and is more likely to align with current stock distribution, but does not reflect previous stock distribution or fishery performance.

Option 3. Weighted Time Frames
These options consider both recent and historical timeframes with sub-options of different weighting values. These options are similar to a long term average but focus on a shorter overall timeframe, and can emphasize either more recent or historical fishery performance.

- 3A. Weighted Allocation Timeframe #1 (2009-2011 and 2018, 2019 & 2021) includes the three most recent years, excluding 2020, and the first three years of quality bait fishery data during the unregulated time period.
  - Sub-Option 1. 25% 2009-2011 / 75% 2018, 2019 & 2021 – This weighting strategy emphasizes the more recent timeframe.
  - Sub-Option 2. 50% 2009-2011 / 50% 2018, 2019 & 2021 – This strategy weights both timeframes evenly.
- 3B. Weighted Allocation Timeframe #2* (2009-2012 and 2017-2019 & 2021) includes the four most recent years, excluding 2020, and the first four years of quality bait fishery data during the unregulated time period.
  - Sub-Option 1. 25% 2009-2012 / 75% 2017-2021– This weighting strategy emphasizes the more recent timeframe.
  - Sub-Option 2. 50% 2009-2012 / 50% 2017-2021 – This strategy weights both timeframes evenly.

Option 4. Moving Average
This option uses a three-year moving average to annually adjust allocations as the stock and fishery dynamics change. The three-year average is lagged to allow for finalizing data and time to inform states of their quota (i.e. 2018, 2019 & 2021 average used to set 2023 allocation). This option continually adjusts allocations to recent stock distribution and fishery performance, potentially reducing the need for reallocating in the future. Landings used to calculate the three-year moving average differ under each of the options and may include a state's base quota, any quota transferred to a state, catch under the EESA, and catch under the incidental catch set aside. Any state with harvest overage within the three-year time frame that is not covered by the provisions of the FMP will not have the overage portion of their landings count in calculating the moving average, and will still be required to pay any overage back pound for pound the year following the overage occurrence.

4A. No alterations to the Option. There will be no alterations to the option as described above and total landings will be used in the calculations under this option.

4B. Provision to limit states' moving average landings if total landings exceed the TAC.

State landings less than or equal to the coastwide TAC would be used in the calculation of the moving average, regardless of the source. If total landings (directed plus IC/SSF plus EESA) are below the TAC, then all landings would be included. If directed landings are below the TAC but IC/SSF and/or EESA landings bring total landings over the TAC, then only the portion of IC/SSF and EESA landings that achieve the TAC would count toward the moving average calculation.

Calculation Procedure: (This procedure is only for moving average calculation when the IC/SSF landings added to directed landings exceed the TAC) EESA participation requires opting in and out of the program by providing dated notice to ASMFC and weekly landings reporting at a minimum. Any overage of the EESA that is not reconciled through a transfer will be subtracted from a states total landings prior to calculation. If more than one state is participating at the time of the overage the percentage of each state landings in the week (or weeks) the overage occurred will be used to produce the state by state landings reduction required by the EESA overage. A week is defined as Sunday through Saturday.

The following will be calculated to determine the IC/SSF landings that are over the TAC to be removed from state landings prior to moving average calculation. The Landings termed Excess IC/SSF landings in the calculations below do not include IC/SSF landings for a state that total landings, combined directed and IC/SSF landings, would not have exceeded a state's quota (i.e. a state closes its directed fishery early and operates under the IC/SSF restrictions, but never exceeds its quota). EESA landings included below will be after any adjustment made above (allowable EESA only).

IC/SSF Landings over the TAC = ((Total Landings) – TAC)) – (Overages that are not associated with the IC/SSF).

States Adjusted final Quota (AFQ) = (((State's Base Quota) + or – (Transfers)) + (EESA landings))) – (Overages that are not associated with the IC/SSF).

State Excess IC/SSF Landings = (State's Total Landings) > State's AFQ.

Total Excess IC/SSF Landings = The Sum of all states Excess IC/SSF Landings.

State's % of Excess IC/SSF= (State Excess IC/SSF Landings) / (Total Excess IC/SSF Landings).

Reduction of a states IC/SSF Landings = (IC/SSF landings over the TAC) * (State's % of Excess IC/SSF).

State landings to be used in Moving average Calculation = ((States total Landings) – (Reduction of IC/SSF landings))-Overages

Table 6. A1-3. Percent annual allocation by state using the 0.5% fixed minimum (Step 1, Option A) allocation and the 2009-2011; 2018, 2019 & 2021; and weighted timeframe allocations (Step 2, Options 1-3). Each of the two weighted timeframe combinations of 2009-2011/2018, 2019 & 2021 (Step 2, Option 3A), and 2009-2012/2017-2019 & 2021 (Step 2, Option 3B) are weighted 25% earlier /75% recent (Sub-Option 1) and 50% recent /50% earlier (Sub-Option 2).

State	Time Frame		2009-2011/2018,2019 & 2021		2009-2012/2017-2019 & 2021	
	A1 Status Quo 2009-2011	A2 2018, 2019 and 2021	A3: A-1 25%/75%	A3: A-2 50%/50%	A3: B-1 25%/75%	A3: B-2 50%/50%
ME	0.52%	4.71%	3.66%	2.61%	3.30%	2.37%
NH	0.50%	1.17%	1.00%	0.84%	0.89%	0.76%
MA	1.27%	2.09%	1.88%	1.68%	1.73%	1.54%
RI	0.52%	0.81%	0.73%	0.66%	0.75%	0.67%
CT	0.52%	0.58%	0.56%	0.55%	0.56%	0.54%
NY	0.69%	0.85%	0.81%	0.77%	0.81%	0.77%
NJ	10.87%	10.77%	10.81%	10.85%	11.32%	11.66%
PA	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
DE	0.51%	0.52%	0.52%	0.52%	0.52%	0.52%
MD	1.89%	1.15%	1.34%	1.53%	1.42%	1.68%
PRFC	1.07%	1.07%	1.07%	1.07%	1.10%	1.13%
VA	78.66%	73.62%	74.86%	76.11%	74.86%	75.56%
NC	0.96%	0.62%	0.70%	0.79%	0.69%	0.75%
SC	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
GA	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
FL	0.52%	0.54%	0.54%	0.53%	0.54%	0.53%

Table 7. A4A. Percent annual allocation by state using the 0.5% fixed minimum allocation (Step 1, Option A) and the three year moving average allocation (Step 2, Option 4A) as it would have changed through time, and the year the timeframe would have been used to set allocations.

State	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019	2018, 2019 & 2021
ME	0.52%	0.51%	0.51%	0.51%	0.51%	0.97%	1.64%	2.76%	3.85%	4.71%
NH	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.52%	0.85%	1.17%
MA	1.27%	0.91%	0.77%	0.95%	1.09%	1.13%	1.24%	1.46%	1.69%	2.09%
RI	0.52%	0.52%	0.52%	0.55%	0.71%	0.72%	0.82%	0.71%	0.69%	0.81%
CT	0.52%	0.51%	0.51%	0.51%	0.51%	0.51%	0.53%	0.59%	0.59%	0.58%
NY	0.69%	0.67%	0.68%	0.70%	0.77%	0.79%	0.85%	0.77%	0.72%	0.85%
NJ	10.93%	13.45%	13.94%	12.81%	10.67%	10.89%	11.25%	11.41%	11.23%	10.77%
PA	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
DE	0.51%	0.52%	0.52%	0.53%	0.53%	0.53%	0.52%	0.52%	0.52%	0.52%
MD	1.90%	2.18%	2.33%	2.52%	2.16%	2.02%	1.71%	1.38%	1.18%	1.15%
PRFC	1.07%	1.20%	1.30%	1.41%	1.23%	1.15%	1.06%	1.11%	1.06%	1.07%
VA	78.60%	76.18%	75.57%	76.30%	78.57%	78.04%	77.15%	76.08%	74.92%	73.62%
NC	0.96%	0.83%	0.80%	0.64%	0.68%	0.67%	0.66%	0.64%	0.65%	0.62%
SC	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
GA	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
FL	0.52%	0.52%	0.54%	0.55%	0.57%	0.57%	0.57%	0.56%	0.55%	0.54%
Year in Use	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021/2022**	**2023**

Table 8. A4B. Percent annual allocation by state using the 0.5% fixed minimum allocation (Step 1, Option A) and the three year moving average allocation (Step 2, Option 4B), as it would have changed through time, and the year the timeframe would have been used to set allocations. Note: 2021 values only include landings under the TAC according to the calculation outlined in Option 4B.

State	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019	2018, 2019 & 2021
ME	0.52%	0.51%	0.51%	0.51%	0.51%	0.97%	1.64%	2.76%	3.85%	4.56%
NH	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.52%	0.85%	1.17%
MA	1.27%	0.91%	0.77%	0.95%	1.09%	1.13%	1.24%	1.46%	1.69%	2.09%
RI	0.52%	0.52%	0.52%	0.55%	0.71%	0.72%	0.82%	0.71%	0.69%	0.81%
CT	0.52%	0.51%	0.51%	0.51%	0.51%	0.51%	0.53%	0.59%	0.59%	0.58%
NY	0.69%	0.67%	0.68%	0.70%	0.77%	0.79%	0.85%	0.77%	0.72%	0.83%
NJ	10.93%	13.45%	13.94%	12.81%	10.67%	10.89%	11.25%	11.41%	11.23%	10.79%
PA	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
DE	0.51%	0.52%	0.52%	0.53%	0.53%	0.53%	0.52%	0.52%	0.52%	0.52%
MD	1.90%	2.18%	2.33%	2.52%	2.16%	2.02%	1.71%	1.38%	1.18%	1.15%
PRFC	1.07%	1.20%	1.30%	1.41%	1.23%	1.15%	1.06%	1.11%	1.06%	1.08%
VA	78.60%	76.18%	75.57%	76.30%	78.57%	78.04%	77.15%	76.08%	74.92%	73.76%
NC	0.96%	0.83%	0.80%	0.64%	0.68%	0.67%	0.66%	0.64%	0.65%	0.62%
SC	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
GA	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%
FL	0.52%	0.52%	0.54%	0.55%	0.57%	0.57%	0.57%	0.56%	0.55%	0.54%
Year in Use	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021/2022**	**2023**

Table 9. B1-3. Percent annual allocation by state using the three tier minimum (Step 1, Option B) allocation the 2009-2011; 2018, 2019 & 2021 and weighted timeframe allocations (Step 2, Options 1-3). Each of the two weighted timeframe combinations of 2009-2011/2018, 2019 & 2021 (Step 2, Option 3A), and 2009-2012/2017-2019 & 2021 (Step 2, Option 3B) are weighted 25% earlier /75% recent (Sub-Option 1) and 50% recent /50% earlier (Sub-Option 2).

State	Time Frame		2009-2011/2018,2019 & 2021		2009-2012/2017-2019 & 2021	
	B1 2009-2011	B2 2018, 2019 and 2021	B3: A-1 25%/75%	B3: A-2 50%/50%	B3: B-1 25%/75%	B3: B-2 50%/50%
ME	0.52%	4.82%	3.74%	2.67%	3.38%	2.42%
NH	0.50%	1.19%	1.02%	0.84%	0.90%	0.77%
MA	1.29%	2.13%	1.92%	1.71%	1.77%	1.57%
RI	0.52%	0.81%	0.74%	0.67%	0.76%	0.68%
CT	0.27%	0.33%	0.32%	0.30%	0.31%	0.29%
NY	0.70%	0.86%	0.82%	0.78%	0.82%	0.77%
NJ	11.21%	11.05%	11.09%	11.13%	11.61%	11.96%
PA	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
DE	0.26%	0.27%	0.27%	0.27%	0.27%	0.27%
MD	1.94%	1.17%	1.36%	1.55%	1.45%	1.71%
PRFC	1.09%	1.09%	1.09%	1.09%	1.11%	1.15%
VA	80.70%	75.58%	76.86%	78.14%	76.86%	77.58%
NC	0.72%	0.37%	0.46%	0.54%	0.45%	0.50%
SC	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
GA	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
FL	0.27%	0.29%	0.29%	0.28%	0.29%	0.28%

Table 10. B4A. Percent annual allocation by State using the three tier minimum allocation (Step 1, Option B) and the three year moving average allocation (Step 2, Option 4A), as it would have changed through time, and the year the timeframe would have been used to set allocations.

State	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019	2018, 2019 & 2021
ME	0.52%	0.51%	0.51%	0.51%	0.51%	0.98%	1.67%	2.82%	3.94%	4.82%
NH	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.52%	0.86%	1.19%
MA	1.29%	0.92%	0.78%	0.97%	1.10%	1.15%	1.26%	1.48%	1.73%	2.13%
RI	0.52%	0.52%	0.52%	0.55%	0.72%	0.73%	0.82%	0.72%	0.69%	0.81%
CT	0.27%	0.26%	0.26%	0.26%	0.26%	0.26%	0.28%	0.34%	0.34%	0.33%
NY	0.70%	0.67%	0.69%	0.71%	0.78%	0.80%	0.85%	0.77%	0.72%	0.86%
NJ	11.21%	13.80%	14.30%	13.14%	10.94%	11.17%	11.54%	11.71%	11.52%	11.05%
PA	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
DE	0.26%	0.27%	0.27%	0.28%	0.29%	0.28%	0.27%	0.28%	0.27%	0.27%
MD	1.94%	2.23%	2.38%	2.58%	2.20%	2.06%	1.74%	1.41%	1.20%	1.17%
PRFC	1.09%	1.22%	1.33%	1.44%	1.25%	1.17%	1.08%	1.12%	1.08%	1.09%
VA	80.70%	78.22%	77.59%	78.34%	80.67%	80.12%	79.21%	78.11%	76.91%	75.58%
NC	0.72%	0.59%	0.56%	0.40%	0.43%	0.42%	0.41%	0.40%	0.40%	0.37%
SC	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
GA	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
FL	0.27%	0.27%	0.29%	0.30%	0.32%	0.32%	0.32%	0.31%	0.31%	0.29%
Year in Use	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021/2022**	**2023**

Table 11. B4B. Percent annual allocation by State using the three tier minimum allocation (Step 1, Option B) and the three year moving average allocation (Step 2, Option 4B), as it would have changed through time, and the year the timeframe would have been used to set allocations. Note: 2021 values only include landings under the TAC according to the calculation outlined in Option 4B.

State	2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	2014-2016	2015-2017	2016-2018	2017-2019	2018, 2019 & 2021
ME	0.52%	0.51%	0.51%	0.51%	0.51%	0.98%	1.67%	2.82%	3.94%	4.67%
NH	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.50%	0.52%	0.86%	1.19%
MA	1.29%	0.92%	0.78%	0.97%	1.10%	1.15%	1.26%	1.48%	1.73%	2.13%
RI	0.52%	0.52%	0.52%	0.55%	0.72%	0.73%	0.82%	0.72%	0.69%	0.82%
CT	0.27%	0.26%	0.26%	0.26%	0.26%	0.26%	0.28%	0.34%	0.34%	0.33%
NY	0.70%	0.67%	0.69%	0.71%	0.78%	0.80%	0.85%	0.77%	0.72%	0.83%
NJ	11.21%	13.80%	14.30%	13.14%	10.94%	11.17%	11.54%	11.71%	11.52%	11.07%
PA	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
DE	0.26%	0.27%	0.27%	0.28%	0.29%	0.28%	0.27%	0.28%	0.27%	0.27%
MD	1.94%	2.23%	2.38%	2.58%	2.20%	2.06%	1.74%	1.41%	1.20%	1.17%
PRFC	1.09%	1.22%	1.33%	1.44%	1.25%	1.17%	1.08%	1.12%	1.08%	1.09%
VA	80.70%	78.22%	77.59%	78.34%	80.67%	80.12%	79.21%	78.11%	76.91%	75.73%
NC	0.72%	0.59%	0.56%	0.40%	0.43%	0.42%	0.41%	0.40%	0.40%	0.37%
SC	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
GA	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%	0.01%
FL	0.27%	0.27%	0.29%	0.30%	0.32%	0.32%	0.32%	0.31%	0.31%	0.29%
Year in Use	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021/2022**	**2023**

3.2 EESA Program

Objective: Ensure sufficient access to episodic changes in regional availability in order to minimize in-season disruptions and reduce the need for quota transfers and IC/SSF landings.

3.2.1 Increase the Set-Aside

Goal: In combination with reallocation or separately, ensure the states of Maine to New York have increased bait quota for this program to reduce the need for in-season quota transfers or reliance on the IC/SSF provision in response to the increased presence of Atlantic menhaden biomass in the Northeast.

For both Options 1 and 2, the mandatory provisions, declaring participation, procedure for unused set aside, and procedure for set aside overages (Sections 4.3.6.1- 4.3.6.4) as outlined in Amendment 3 (Section 4.3.6.3) will remain in effect.

For Option 2 only, there are two sub-options for the Board's consideration. To allow for additional flexibility in managing the EESA depending on states' allocations and the need to reduce quota transfers, the following sub-options allow for the EESA to be set during the TAC setting process, rather than through adaptive management as outlined in Amendment 3.

Option 1. Status Quo (1%) – The EESA would remain at 1% of the total coastwide TAC. Should any quota remain unused after October 31st, annually, it would revert back into the common pool.

Option 2. Increase up to 5% - This option would allow the Board to increase the EESA to a specific percentage greater than or equal to 1% and less than or equal to 5%. The designated percentage of EESA would be subtracted from the total coastwide TAC prior to the distribution of allocation to states. Depending upon the option(s) chosen under Section 3.1, re-adjusting the fixed minimum quota could offset the possible increase in the EESA (see note below).

Sub-option 1. EESA is set as a static amount of 1-5%: The Board may choose an EESA between 1 and 5% and the chosen option is static until a subsequent Amendment or Addendum.

Sub-option 2. Set the EESA during Specifications at an amount between 1-5%: Under this option the Board will set the EESA at an amount between 1 to 5% during the Specification process as part of approving the TAC. The TAC and EESA may be set annually or on a multi-year basis depending on Board action.

Note (only applies if a tiered minimum approach is selected): The 0.5% fixed minimum from Amendment 3 allocated 8.0% of the TAC prior to timeframe based allocation of state quotas. If the fixed minimum was replaced by the three-tiered minimum allocation strategy, the 8.0% would be reduced to 5.53%. The amount of quota left by selecting the tiered option (2.47%),

will be reallocated to the states, but increasing the EESA to 2.47% or less will result in a similar value in pounds being removed from the TAC prior to time frame based allocation. In Amendment 3, nine percent of the TAC either went to the EESA or the fixed minimum allocation.

3.3 IC/SSF Provision

Objective: Sufficiently constrain landings to achieve overall management goals of: 1) meeting the needs of existing fisheries, 2) reducing discards, and 3) indicating when landings can occur and if those landings are a part of the directed fishery.

In this section, there are four sub-topics to address IC/SSF landings. They include proposed changes to the timing of when states can begin landing under this provision (3.3.1); permitted gear types (3.3.2); changes to the IC/SSF trip limit (3.3.3); and considering a new accountability system for IC/SSF landings (3.3.4).

3.3.1 Timing of IC/SSF Provision

Goal: Address the timing of when a state begins fishing under the provision since it impacts the duration that landings occur.

> Option 1. No change (Status quo): Once a quota allocation is reached for a given state, the fishery moves to an incidental catch fishery. Currently, individual states interpret "*after a quota allocation is met for a given state*" differently (i.e., whether this refers to the entire allocation or a sector, fishery, or gear allocation).
>
> Option 2. Sector/fishery/gear type allocation within a state is met: Currently, states such as New Jersey and Virginia further divide their state allocation into sector and gear type specific allocations. The provision would confirm that once a sector/fishery/gear type specific allocation is reached for a state, that state's sector/fishery/gear type fishery can begin landing catch under the provision.
>
> Option 3. Entire states allocation met: Once the entire quota allocation for a given state is reached, regardless of sector/fishery/gear type fishery allocations, the menhaden fishery moves to landing under the IC/SSF provision.

3.3.2 Permitted Gear Types of the of IC/SSF Provision

Goal: Address the volume of landings under the provision by removing specific gear types

> **Note:** Under Amendment 3, fyke nets were listed under both gear types which may lead to two different possession limits for the same gear type under 3.3.3 below, should the possession limit for directed gear types be modified. Therefore, under Options 2 and 3, fyke nets have been removed from the small-scale directed gear type category and

maintained only in the non-directed gear type category. Additionally, trammel nets are defined as a directed gear under Amendment 3, but at the request of the Board was moved into the non-directed gear type category for Options 2 and 3 below. Option 1 Sub-Options 2 and 3 provide a mechanism for the classifications to be changed without changing permitted gear types.

Option 1. No changes to permitted gear types (Status quo): The provision would apply to both small-scale directed gears and non-directed gears. Small scale directed gears shall include cast nets, traps (excluding floating fish traps), pots, haul seines, fyke nets, hook and line, bag nets, hoop nets, hand lines,trammel nets bait nets, and purse seines which are smaller than 150 fathoms long and eight fathoms deep. Non-directed gears include pound nets, anchored/stake gillnets, drift gill net, trawls, fishing weirs, fyke nets, and floating fish traps.

> Sub-Option 1 (Status quo). All gear types will retain the classifications as defined in Amendment 3.
>
> Sub-Option 2. Fyke nets will be removed from the small-scale directed gear type category, thereby becoming listed only as a non-directed gear.
>
> Sub-Option 3. Fyke nets will be removed from the small-scale directed gear type category, thereby becoming listed only as a non-directed gear, and trammel nets will be reclassified as a non-directed gear type.

Option 2. No purse seines, all other small-scale and non-directed gears maintained: The provision would apply to both small-scale directed gears and non-directed gears, but exclude purse seine gears. This option is included due to the growth of directed landings from small-scale purse seine gears in recent years (Table 6). Landings from purse seine gears would count against a state's directed fishery quota. Small-scale directed gears shall include cast nets, traps (excluding floating fish traps), pots, haul seines, hook and line, bag nets, hoop nets, hand lines, and bait nets. Non-directed gears include pound nets, anchored/stake gillnets, trammel nets, drift gill net, trawls, fishing weirs, fyke nets, and floating fish traps.

Option 3. Non-directed gears only: The provision shall apply to non-directed gears only. This includes pound nets, anchored/stake gillnets, trammel nets, drift gill net, trawls, fishing weirs, fyke nets, and floating fish traps.

3.3.3 Trip Limit for Directed Small-Scale Fisheries of IC/SSF Provision

Goal: Limit the annual volume of IC/SSF landings by reducing the trip limit.

The options below modify the trip limits for directed small-scale fisheries. Stationary multi-species gears are defined as pound nets, anchored/stake gill nets, fishing weirs, floating fish

traps, and fyke nets. A trip is based on a calendar day such that no vessel may land menhaden more than once in a single calendar day. The use of multiple carrier vessels per trip to offload any bycatch exceeding the daily trip limit of Atlantic menhaden is prohibited. If Option 3 was selected in section 3.3.2 above, this section is no longer needed.

> Option 1. No change to trip limit (Status quo): small-scale gears and non-directed gear types may land up to 6,000 pounds of menhaden per trip per day. Two authorized individuals, working from the same vessel fishing stationary multi-species gear, are permitted to work together and land up to 12,000 pounds from a single vessel – limited to one vessel trip per day.

For both Options 2 and 3 below, the proposed change in the trip limit would only apply to small-scale directed gears which include cast nets, traps (excluding floating fish traps), pots, haul seines, hook and line, bag nets, hoop nets, hand lines, bait nets, and purse seines which are smaller than 150 fathoms long and 8 fathoms deep. Non-directed gears and stationary multi-species gears would still be able to land up to 6,000 pounds of menhaden per trip per day, with two individuals working from the same vessel fishing stationary multi-species gear, permitted to work together can land up to 12,000 pounds.

> Option 2. 4,500 pound trip limit for directed gear types: The trip limit for the directed small-scale fishery shall be 4,500 pounds of menhaden per trip per day.

> Option 3. 3,000 pound trip limit for directed gear types: The trip limit for the directed small-scale fishery shall be 3,000 pounds of menhaden per trip per day.

3.3.4 Catch Accounting of IC/SSF Provision

Goal: Create a system where annual IC/SSF landings are limited and there is accountability for overages.

Note: Under Option 2, the Board is not limited to one option. They can choose a combination of Option 2A and 2B or the sub-options.

> Option 1. IC/SSF landings do not count against a state allocation nor the annual TAC (status quo): Landings under this provision will be reported as a part of the annual FMP Review (Amendment 3, Section 5.3: Compliance Report). Landings are reported by states as a part of Annual Compliance Reports. Should a specific gear type show a continued and significant increase in landings under the provision, or it becomes clear that a non-directed gear type is directing on menhaden under this provision, the Board has the authority, through adaptive management (Amendment 3, Section 4.6), to alter the trip limit or remove that gear from the IC/SSF provision.

> Option 2. IC/SSF landings are evaluated against the annual TAC: Total landings under this provision would be evaluated against the annual TAC and will be reported as a part

of the annual FMP Review (Amendment 3, Section 5.3: Compliance Report). Landings are reported by states as a part of Annual Compliance Reports. If IC/SSF landings cause the TAC to be exceeded, meaning the TAC is exceeded after adding total IC/SSF landings to total landings that occur under state quotas and EESA, the trigger is tripped, and the Board must take action as specified in Options 2A-2B below.

Option 2A. Modify the Trip Limit for Permitted Gear Types in the IC/SSF Provision: The Board will evaluate the current IC/SSF trip limit and permitted gear types and take action to reduce the trip limit for one or more permitted gear types in the IC/SSF provision.

Sub-Option 1. The trip limit will be adjusted for one or more permitted gear types in the IC/SSF provision via Board action.

Option 2B. Modify Permitted Gear Types in the IC/SSF Provision: The Board will evaluate the permitted gear types in the IC/SSF provision and take action to eliminate one or more gear types from the IC/SSF provision.

Sub-Option 1. Permitted gear types in the IC/SSF provision will be adjusted via Board action.

4. COMPLIANCE SCHEDULE

If the existing Atlantic menhaden management plan is revised by approval of this draft addendum, the measures would be effective January 1, 2023. Unless otherwise directed by the Board, allocations will be revisited no more than 3 years (2025) following implementation of this addendum, as outlined in Amendment 3.

5. LITERATURE CITED

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Bigelow, H.B., and Schroeder, W.C. 2002. Fishes of the Gulf of Maine. 3rd ed. Edited by B.B. Collette and G. Klein-MacPhee. Smithsonian Institution Press, Washington, D.C.

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MEMORANDUM

TO: **Atlantic Menhaden Management Board**

FROM: **Atlantic Menhaden Plan Development Team**

DATE: **July 26, 2022**

SUBJECT: **Recommendations on Draft Addendum I to Amendment 3**

At the 2022 Spring Meeting, the Atlantic Menhaden Management Board provided further guidance to the Plan Development Team (PDT) to continue developing draft Addendum I to Amendment 3. The addendum considers changes to commercial allocations, the episodic event set aside (EESA) program, and the incidental catch and small-scale fisheries (IC/SSF) provision. This memo summarizes the PDT recommendations for the Board's consideration in approving the document for public comment.

Each section below includes justification for modifying and/or eliminating specific options. A decision tree for selecting state allocations is included in the Appendix. The topics are interconnected such that decisions made for one topic will impact alternatives under other topics. Because of this interconnectedness, the Board should carefully consider removal of some options to reduce complexity of the document. This will allow the public to effectively provide feedback to the Board before final action. Currently there are 35 total options in the Draft Addendum (16 combinations of allocation options; 3 options for the EESA program; and 16 options for the IC/SSF provision). **While the number of options has been significantly reduced, the PDT reiterates its recommendation that the Board continue to simplify the document as much as possible before approving for public comment.**

Commercial Allocations

3.1.2 Timeframe for Allocating Remaining Available TAC

Option 3B. Weighted Allocation Timeframe #2 (2009-2012 and 2017-2019 & 2021): **The PDT recommends removal of timeframe #2.** The Board requested two versions of the weighted allocation timeframe be developed in October 2021. While the state allocations vary slightly between the two versions, they are conceptually the same. By having two options, it increases the possible state allocation options by four options for a total of 16 options. **The PDT reiterates its recommendation that Timeframe #2 be removed because the same objective is achieved with Timeframe #1, which utilizes the original time series plus the most recent three years.**

Incidental Catch and Small-Scale Fisheries Provisions

3.3.2 Permitted Gear Types of the IC/SSF Provision

The PDT found two gear types that they felt should be reclassified. First, the PDT discovered that fyke nets were mistakenly listed as both a small-scale directed gear type and a non-directed gear type in Amendment 3, thereby creating a situation where fyke nets could be applied to two different sets of regulations. Additionally, in response to a Board request, the PDT reviewed the classification of trammel nets and decided that moving them to non-directed gear would be more consistent with their operation. **Therefore, in Options 2 and 3, the PDT chose to list both fyke and trammel nets as non-directed gear only. The PDT created Option 1 Sub-options 2 and 3 to provide a mechanism for the Board to still modify the gear type classifications in the event that the Board chooses to maintain the status quo of permitted gear types in the IC/SSF provision.**

At the Spring Meeting, the PDT was requested to review Option 3 and consider creating an exception for beach seines to continue operating if this option is selected. However, given that Options 1 and 2 both allow for beach seines to continue under the IC/SSF provision and that the intent of Option 3 is to create an IC/SSF provision where there is no menhaden directed fishery, such an exception would be contrary to the spirit of the option and the range that Options 1-3 present. Furthermore, the PDT is concerned that such an exception would be exploited to develop new directed fisheries under the IC/SSF provision. **Therefore, the PDT chose not to modify the option.**

3.3.4 Catch Accounting of the IC/SSF Provision

Following Board modifications to 3.3.4 and requests for further management responses to an overage of the TAC caused by IC/SSF landings, the PDT developed Options 2A and 2B, which present the Board with mechanisms to impose trip limits or gear restrictions to reduce IC/SSF landings. However, the PDT feels that the process through which the Board should take action is strictly a management decision for the Board and will likely vary depending on the chosen action. Therefore, to complement the Board's authority to utilize adaptive management to draft a new management document, the PDT drafted a sub-option for both Option 2A and Option 2B that would give the Board the ability to enact a response through board action. The Board must weigh the advantages and disadvantages of both strategies. Selecting the option of modifying trip limits or gear types through Board action will allow the Board to be more responsive to TAC overages caused by the IC/SSF provision, while adaptive management will allow for more time to collect public input on the impacts of modifications on trip limits or gear types. Ultimately, if the Board chooses to pursue either Option 2A or 2B through Board action, they may still elect to use adaptive management if they believe that the action suggested under these options warrants further public input and the development of a management document.

Appendix A. Decision Tree

The following provides a Decision Tree for selecting state allocations.

*The PDT recommends removing these options