

**ATLANTIC STATES MARINE FISHERIES COMMISSION**

**REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN**

**FOR ATLANTIC MENHADEN**  
*(Brevoortia tyrannus)*

**2013 FISHING YEAR**



Prepared by the Plan Review Team

Approved by the Atlantic Menhaden Management Board  
May 2014

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

**Management Summary**

<u>Date of FMP:</u>	Original FMP: August 1981
<u>Amendments:</u>	Plan Revision: September 1992 Amendment 1: July 2001 Amendment 2: December 2012
<u>Management Unit:</u>	Maine through Florida
<u>States With Declared Interest:</u>	Maine – Florida, excluding Pennsylvania
<u>Additional Jurisdictions:</u>	Potomac River Fisheries Commission, National Marine Fisheries Service, United States Fish and Wildlife Service
<u>Active Boards/Committees:</u>	Atlantic Menhaden Management Board, Advisory Panel, Technical Committee, Stock Assessment Subcommittee, and Plan Review Team
<u>Stock Status:</u>	Overfished status is unknown, but overfishing is occurring (update assessment; ASMFC 2012)

**I. Status of the Fishery Management Plan**

Amendment 1 to the Interstate Fisheries Management Plan (FMP) for Atlantic Menhaden was approved at the 2001 Spring Meeting of the Atlantic States Marine Fisheries Commission (Commission). Management authority is vested in the states because the vast majority of landings come from state waters. All Atlantic coast states and jurisdictions except Pennsylvania and the District of Columbia have declared an interest in the Atlantic menhaden management program. The goal of Amendment 1 is “to manage the Atlantic menhaden fishery in a manner that is biologically, economically, socially and ecologically sound while protecting the resource and those who benefit from it.”

Amendment 1, developed during 1999-2000, established new overfishing/overfished definitions based on fishing mortality and Spawning Stock Biomass (SSB). Addendum I to Amendment 1, approved in August 2004, revised the biological reference points, changed the frequency of stock assessments, and updated the habitat section. The biomass target and threshold are based on fecundity instead of SSB. A new fishing mortality target and threshold were also adopted. Stock assessments take place every third year, however the Technical Committee is required to meet annually to review the previous year’s landings and indices.

Addendum II, approved in October 2005, initiated a research program to examine the possibility of localized depletion of menhaden in Chesapeake Bay. Read more about the research in Section V of this report. Addendum III, approved in Fall 2006, established a harvest cap for the reduction fishery in the Chesapeake Bay. The annual total allowable harvest from the Chesapeake Bay by the reduction fishery is set at 109,020 metric tons. If harvest is greater than the cap in a given year, the cap will be reduced by the overage amount for the following year. Similarly, if harvest is less than the cap, the cap can be increased to a maximum of 122,740 metric tons for the following year. The cap established by Addendum III remains in effect through the 2010 fishing season. Addendum IV, approved in November 2009, extends the provisions of Addendum III and the Chesapeake bay reduction fishery harvest cap through 2013.

Addendum V, approved in November 2011 established a new F threshold and target rate based on maximum spawning potential (MSP) with the goal of increasing abundance, spawning stock biomass, and Atlantic menhaden availability as a forage species.

Amendment 2, approved in December 2012, establishes a 170,800 metric ton total allowable catch (TAC) for the commercial fishery beginning in 2013 and continuing until completion of, and Board action on, the next benchmark stock assessment, scheduled for 2014. The TAC is allocated by state based on landings history of each state's fishery from 2009-2011; allocation will be revisited three years after implementation. States are accountable for their respective quotas and must pay back any overages the following year. The amendment includes provisions to allow for the transfer of quota between states and a bycatch allowance of 6,000 pounds for non-directed fisheries that are operating after a state's quota has been landed. Further, it reduces the Chesapeake Bay reduction fishery harvest cap by 20% (this is an adjustment of the original cap which was in place since 2006); and establishes requirements for timely reporting and improved biological monitoring. Lastly, new SSB reference points were implemented that match the MSP based fishing mortality reference points approved through Addendum V.

In 2013, the Board approved a provision to adjust the bycatch allowance to enable two permit holders aboard one vessel to harvest 12,000 pounds with one landing event per calendar day. That provision expired with the completion of the 2013 fishing season, meaning all states are now limited to a 6,000 pound per vessel bycatch trip limit regardless of the number of permit holders on the vessel, with only one landing event per calendar day.

An episodic events set aside program, approved in May 2013, establishes 1,708 MT (1% of the coastwide TAC) as a set aside quota for the New England States (ME, NH, MA, RI, CT) to harvest Atlantic menhaden when they occur in higher abundance than normal. The New England states must monitor their fisheries to determine if an episodic event has occurred within their state waters before harvesting from the set aside. To harvest from the set aside, New England states must demonstrate their state meets the mandatory provisions (i.e., daily reporting, 120,000 pound trip limit, restricting harvest to state waters). At its October 2013 meeting, the Board extended the episodic event set aside program through 2015 adding a re-allocation provision, meaning any unused set aside as of October 31 of each year will be re-allocated to the coastwide states based on the same allocation percentages included in Amendment 2.

At its February 2014 meeting, the Board passed a motion to manage cast net fisheries for Atlantic menhaden under the bycatch allowance for 2014 and 2015, with the states bearing responsibility for reporting.

## II. Status of the Stock

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

Based on the 2012 stock assessment update, overfishing is occurring because Full  $F/F_{15\%}$  for the terminal year was greater than 1, meaning the terminal year estimate of  $F(2011)$  is greater than the  $F$  threshold. Additionally, the sensitivity runs conducted in the 2012 update, excluding the retrospective analysis, all suggest overfishing is occurring in the terminal year (2011), and all of the bootstrap runs completed for the uncertainty analysis result in an overfishing stock status. Thus, the stock status in regards to overfishing seems stable for the model changes explored and the uncertainty specified during the update assessment.

The new biomass reference points, based on the 2012 stock assessment update, are  $SSB_{\text{target}} = SSB_{30\%} = 61,100$  and  $SSB_{\text{threshold}} = SSB_{15\%} = 30,551$  (units are billions of ova). The terminal year estimate of SSB from the 2012 stock assessment is approximately 44% of the SSB threshold. In addition, four sensitivity runs estimated terminal year SSB as 41 to 48% of the threshold value. However, one sensitivity run indicated that terminal year SSB was 120% of the threshold value. In other words, the base run and four sensitivity runs indicate the stock is overfished, while one sensitivity run indicates that the stock is not overfished. The Technical Committee concluded that there was not sufficient evidence to determine overfished status. There was discussion that five of six runs indicated the stock was overfished, which might provide support for this status determination. However, these five runs all employed a flat-top fishery selectivity curve, while the final run employed dome-shaped selectivity. There has been a great deal of attention surrounding the appropriate selectivity pattern recently, and without conclusive evidence regarding the shape of selectivity, the Technical Committee reached consensus that the number of runs in favor of a given status was not an indicator of its validity. The Technical Committee will investigate the effects of the selectivity curve shape during the 2014 benchmark stock assessment, but until then, the overfished status of the Atlantic menhaden stock remains uncertain. The Technical Committee previously determined that overfishing is occurring relative to the MSP-based fishing mortality reference points.

The next stock assessment is a benchmark planned for late 2014.

### III. Status of Assessment Advice

The peer review panel drafted a report including its conclusions of the assessment and recommendations for moving forward. Below is a summary of their applicable findings.

- The Panel was also concerned about the use of  $F_{med}$  and the fecundity associated with it as reference points. The concern is that there is no information on the relationship of the target and threshold fecundity in relation to virgin fecundity levels. Projections were run to examine this, and the estimated annual fecundity since 1998 was only 5 to 10% of the virgin fecundity.
  - Through Addendum V and Amendment 2, the Board implemented new fishing mortality and SSB reference points based on maximum spawning potential (MSP) in 2011 and 2012, respectively.
- The Panel recommends that a model specification similar to the Panel's reference run be considered for future assessments. This includes capped effective sample size at 200, allow the gaps in the pound net index and bait fishery age composition where data are not available, modification of the reduction and bait fleets to northern and southern fleets, and time-varying domed selectivity for the southern region.

This model specification combines information of the bait and reduction fisheries occurring together regionally because they are essentially using the same gear but fishing on different age components of the stock in the two areas. Removing the estimated age composition and indices for years where it is absent is desirable because the data from years where it is available is providing the correct amount of information, from a statistical perspective, to the assessment model. Allowing domed selectivity of the fisheries in the southern region allows for the lack of availability of older fish in that region when the fishery is occurring. The reduction of effective sample sizes is intended to better reflect the actual information content of the age composition data (the residuals in the base model were inconsistent with the large assumed effective sample sizes). Also, the time-varying selectivity in the southern region had the best AIC of comparable runs and reduced the undesirable pattern of residuals in the southern fishery.

### IV. Status of the Fishery

The 2013 coastwide harvest of Atlantic menhaden (reduction and bait [preliminary]) was 166,077 metric tons representing a 2.8% underage from the coastwide TAC of 170,800 metric tons, and a 26% decrease from the 224,621 metric tons landed in 2012. For reference, additional bycatch landings of 1,942 metric tons<sup>1</sup> accounted for approximately 1.2% of the coastwide harvest, but does not count towards the coastwide TAC. As a result, total Atlantic menhaden harvest in 2013 (reduction, bait, and bycatch [preliminary]) was 168,019 metric tons.

#### *Reduction Fishery*

The 2013 harvest for reduction purposes was 131,034 metric tons. This represents an 18% decrease from the 2012 landings of 160,627 metric tons, and an 18% decrease from the previous

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<sup>1</sup> Landed under the 6,000 pound bycatch allowance

5-year (2008-2012) average of 160,524 metric tons (Figure 1). Omega Protein’s plant at Reedville, Virginia, is the only active Atlantic menhaden reduction factory on the Atlantic coast. During 2013, nine purse seine vessels (seven regular steamers and two snapper boats) unloaded Atlantic menhaden for reduction at Reedville, Virginia.

*Bait Fishery*

The preliminary estimate of the coastwide bait harvest for 2013 is 35,043 metric tons; this is a 45% decrease from the 2012 bait harvest of 63,634 metric tons, and a 29% decrease from the average harvest of the previous five years (2008-2012) of 49,134 metric tons (Figure 1). New Jersey (57%), Virginia (27%), Maryland (9%), Potomac River Fisheries Commission (4%), and Massachusetts (2%) landed the five largest shares while all other states landed less than 2% of the 2013 commercial bait harvest.

*Bycatch Landings*

Bycatch landings in 2013, harvested under the 6,000 pound bycatch allowance, totaled 1,942 MT. For reference, bycatch landings accounted for approximately 1.2% of the coastwide landings, but do not count towards the coastwide TAC. The Chesapeake Bay jurisdictions of Maryland (65%), PRFC (25%), and Virginia (6%) comprised 96% of the total bycatch with the states of Delaware, Florida and Rhode Island accounting for the remaining 4% (see table below). The highest bycatch landings by gear came from pound nets in Maryland and PRFC which accounted for 91% of landings, while gill nets accounted for 7% and haul seines, cast nets and fish traps accounted for the remaining 2%.

<b>State</b>	<b>Bycatch (LBS)</b>	<b>% of total</b>	<b>Gears</b>
RI	15,200	0.4%	fish traps
DE	76,708	1.8%	gill nets
MD	2,786,083	65.1%	pound nets
PRFC	1,087,400	25.4%	pound nets
VA	251,191	5.9%	gill nets, haul seine
FL	64,790	1.5%	cast nets
<b>Total</b>	<b>4,281,372</b>		

A total of 2,472 trips landed bycatch of Atlantic menhaden in 2013. A majority of the bycatch trips (62%) landed less than 1,000 pounds (see table below). For 2013 only, the Board approved a provision to the bycatch allowance enabling two permit holders aboard one vessel to harvest 12,000 pounds with one landing event per calendar day. Trips that exercised this option accounted for 5% of the total number of trips taken in 2013 and were grouped into a 6000+ pound bin. Maryland and Virginia reported occurrences of trips that were over their bycatch allowance limit, but this only accounted for 1.25% of all trips and the states have notified the responsible parties to resolve those issues moving forward.

<b>Bins (LBS)</b>	<b># of trips</b>	<b>% of total trips</b>
1-1000	1,526	62%
1001-2000	264	11%
2001-3000	157	6%
3001-4000	108	4%
4001-5000	129	5%
5001-6000	157	6%
6000+	131	5%
<b>Total</b>	<b>2,472</b>	

As a note, the 12,000 bycatch allowance provision expired with the completion of the 2013 fishing season, meaning all states are now limited to a 6,000 pound per vessel bycatch trip limit regardless of the number of permit holders on the vessel, with only one landing event per calendar day.

#### *Episodic Events Set Aside Program*

The states of Maine, Massachusetts and Rhode Island all qualified for the set aside program because they implemented mandatory fishery management provisions of the set aside (i.e., daily reporting, 120,000 pound trip limit, restricting harvest to state waters). Of those states, Rhode Island was the only state that declared participation in the set aside in 2013 because spotter pilot data estimated large biomass levels in Narragansett Bay beginning in May 2013 and continuing through July 2013, peaking at approximately 5 million pounds. However, the high levels of biomass did not return to Rhode Island state waters in the fall as expected and therefore, no directed harvest from the set aside occurred in 2013. As a result, the unused set aside (1,708 MT) was re-allocated to all the coastal states on November 1, 2013 using the allocation percentages from Amendment 2.

## **V. 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 and process landings and biosamples data collected on 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 - The SAFIS daily electronic dealer reporting system allows near real time data acquisition for federally permitted bait dealers in the Mid-Atlantic and Northeast. However through 2012, landings by Virginia's purse-seine for-bait vessels (snapper rigs) in Chesapeake Bay have been 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 (of mostly the purse-seine catch) has been conducted since 1994. In New Jersey and New England, state fisheries personnel collect and process the bait samples and forward the data to the NMFS Beaufort Laboratory. Maryland has been collecting age and length samples since 2005. In 2010, the Potomac River Fisheries Commission began collecting samples for size and age composition

from their pound net fishery; Beaufort Laboratory personnel process the fish. The Beaufort Laboratory ages all bait samples collected.

### **Atlantic menhaden research**

The following research projects relevant to menhaden assessment and management have been recently completed:

- Publication: Lynch, P. , Brush, Mark J., and Latour, Robert J. 2011. *Simulated short-term impacts of the Atlantic Menhaden reduction fishery on Chesapeake Bay water quality*. *North American Journal of Fisheries Management* 31(1): 70-78.
  - A simulation study was performed to estimate the monthly and annual water quality impacts caused by the reduction fishery harvesting its current total allowable catch in Chesapeake Bay of Atlantic menhaden, a filter-feeding fish that consume phytoplankton. The study concluded that average feeding rates are relatively low and that the probable impact of the fishery on water quality is negligible.
- Publication: Lozano, C. & Houde, E. D. 2013. *Factors contributing to variability in larval ingress of Atlantic menhaden, Brevoortia tyrannus*. *Estuarine, Coastal and Shelf Science* 118:1-10.
  - A larval ingress study was conducted at the Chesapeake Bay mouth during 2005-2008. Two peaks in larval menhaden spawning activity were identified – one in November/December and a second in January/February – with stronger recruitment resulting from the later pulse. Environmental variables were not correlated consistently with temporal and spatial variability in abundance of larvae at ingress. Larval abundance was not correlated with juvenile survey abundance in the three study years.
- Report (Not peer-reviewed, funded by Omega Protein): Sulikowski, J., Morgan, A., Carlson, A., and Butterworth, D. 2012. *Inferences from aerial surveys on the abundance of Atlantic menhaden from outside the normal fishery range: implications for improved management of this resource*.
  - A pilot study was initiated to test the feasibility of an aerial survey for menhaden in New England to estimate the abundance of ages 3+ that may reside outside the area fished. The ratio of estimated biomass for the northern vs. southern region was estimated through the use of commercial spotter plane data from the fishery. Results suggest that biomass estimates of menhaden in absolute terms for the New England survey was negatively biased, possibly due to deep-swimming schools not observed. The relative biomass ratio suggested that New England biomass may be more than twice that of southern region biomass.

The following research projects relevant to menhaden assessment and management are ongoing:

- Dr. Robert Latour of the Virginia Institute of Marine Science is developing a statistical design for an aerial survey of adult Atlantic menhaden along the Eastern Seaboard of the United States. An aerial survey could be used to develop a coastwide adult index of abundance which is currently lacking in the stock assessment. Funding for implementation of the aerial survey has not been identified.



- Dr. Cynthia Jones and Mr. Jason Schaffler of Old Dominion University are using stable isotope and trace element analyses to assess Atlantic menhaden population structure and connectivity, and to identify essential areas. Signatures of juvenile menhaden from Massachusetts to Florida are being determined and adults collected from the fishery are being assigned back to region of origin. To date, age-1 trace element analysis is complete, and juvenile signature analysis from 2009-2011 is nearly complete.
- Drs. Edward Houde and David Secor at the University of Maryland Center for Environmental Science Chesapeake Biological Laboratory are comparing the precision of relative abundance estimates of YOY menhaden sampled by seining and mid-water trawling gears in principal sub-estuaries of the Chesapeake Bay. Hydrographic and environmental correlates associated with YOY menhaden catches will be investigated. Size, age, and spatial variability of YOY caught will be compared with Maryland DNR juvenile index surveys. The first field season was completed in 2012; however, funding for future research is uncertain.

## **VI. Status of Management Measures and Issues**

Amendment 2 was adopted in December of 2012, and was implemented on July 1, 2013 (see Section I for FMP details).

The Board placed a high priority on continuing work on developing ecosystem reference points using a multispecies modeling approach (MSVPA). Ecosystem reference points would explicitly address the forage needs of menhaden's predator species such as striped bass, weakfish, and bluefish. This work is anticipated to take some time because of its complexity.

## **VII. Implementation of FMP Compliance Requirements for 2013**

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

### *Quota Results*

Total state quotas in 2013 included an adjustment from the reallocation of unused episodic event set aside that occurred on November 1 (Table 1). A transfer of quota from Massachusetts to New York occurred in season to cover an expected quota overage. Additionally, a post season transfer from North Carolina covered realized overages from the states of New York, Florida and Rhode Island. As a result, the 2014 TAC is 170,800 metric tons with 1,708 metric tons (1%) set aside for episodic events. Table 1 contains state specific quotas for 2014.

### *Quota Monitoring*

All menhaden purse seine and bait seine vessels (or snapper rigs) are required to submit the Captain's Daily Fishing Reports (CDFRs). States that have a purse seine and bait seine fisheries met the CDFR requirements in 2013.

Through Amendment 2, the Board approved timely quota monitoring programs for each state that were intended to minimize the potential for quota overages. Table 3 contains a summary of each state's approved quota monitoring system. The PRT recommends the Board consider requiring more timely reporting for the states of New York and Florida because of their quota

overages in 2013. Rhode Island also had a quota overage in 2013, but this was attributed to a rounding error that occurred when calculating its quota using the truncated percentages in Amendment 2.

#### *Biological Monitoring Requirements*

Amendment 2 implemented monitoring requirement for non *de minimis* states is as follows,

- One 10-fish sample (age and length) per 300 metric tons landed for bait purposes for ME, NH, MA, RI, CT, NY, NJ, DE
- One 10-fish sample (age and length) per 200 metric tons landed for bait purposes for MD, PRFC, VA, NC

Table 4 provides the number of 10-fish samples required for 2013. These are based on the best available 2013 landings data (including bycatch) provided to the Commission by the states. Table 4 also provides the number of ages and lengths collected by the states in 2013, and an indication of the gear type sampled during collections. Two states/jurisdictions did not fulfill the requirements of Amendment 2: New Jersey and the Potomac River Fisheries Commission were short on 10 fish samples. The jurisdictions report that they made efforts to collect the samples, but there was a miscommunication that each sample needed to contain 10 fish. Both jurisdictions indicated they were communicating with the industry and port samplers to enhance their collection program for 2014.

#### *Adult CPUE Index Requirement*

Amendment 2 required 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.

All states with a pound net fishery met this requirement except North Carolina. At its May 2013 meeting, the Board approved North Carolina's implementation plan for Amendment 2 that identified it did not have the current reporting structure to require a quantity of gear field by harvesters or dealers.

#### *Chesapeake Bay Reduction Fishery Cap*

Amendment 2 implemented a change to the Chesapeake Bay Cap by the reduction fishery, starting in 2013 and continuing indefinitely. More specifically, the new cap is 87,216 metric tons (a 20% reduction from 109,020 which was the average landings from 2001-2005). Harvest for reduction purposes shall be prohibited within the Chesapeake Bay when 100% of the 87,216 cap is harvested from the Chesapeake Bay.

Reported reduction landings from the Chesapeake Bay for 2013 was less than 40,000 metric tons. The maximum rollover of unlanded fish is 10,976 metric tons (a 20% reduction from the prior maximum rollover amount of 13,720 metric tons). As a result, the 2014 Chesapeake Bay Cap for the reduction fishery is 98,192 metric tons. The rollover only applies to the following year only, and will not be carried for multiple years.

### *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 implementation of biological sampling and pound net catch and effort data reporting. The Board also approved a *de minimis* exemption for New Hampshire, South Carolina and Georgia from implementation of timely reporting

The states of New Hampshire, New York, South Carolina, Georgia, and Florida requested *de minimis* status for the 2014 fishing season. All states qualify except for New York because their bait landings in 2013 exceeded 1% of the total coastwide bait landings. As a result, the PRT recommends that New Hampshire, South Carolina, Georgia, and Florida be granted *de minimis* status.

## **VIII. Plan Review Team Recommendations**

### **Management Recommendations**

- That the Board consider the reporting timeframes of New York and Florida to minimize future quota overages.
- That the Board consider the compliance of Potomac River Fisheries Commission and New Jersey with the monitoring requirements in 2013.
- That the Board consider the compliance of North Carolina with the Adult CPUE Index Requirement.
- That the Board consider the *de minimis* requests from New Hampshire, South Carolina, Georgia, and Florida.

## **IX. Literature Cited**

Atlantic States Marine Fisheries Commission (ASMFC). 2012. Atlantic menhaden stock assessment update report. ASMFC, Arlington, VA, 228 p.

Atlantic States Marine Fisheries Commission. 2012. Amendment 2 to the Interstate Fishery Management Plan for Atlantic Menhaden. 114 pp.

Table 1. Results of 2013 harvest and resulting 2014 state specific quotas. All weights are in pounds. Note that 2013 landings do not include bycatch landings.

State	Am 2 Quota (LBS)	Set Aside (LBS)	Transfer 1	Total 2013 Quota	2013 Landings	Overage	Transfer 2	2014 Quota
ME	146,787	1,483		148,270	-			146,787
NH	112	1		113	-			112
MA	3,126,024	31,576	(500,000)	2,657,600	2,310,488			3,126,024
RI	66,779	675		67,453	80,499	13,046	15,000	66,779
CT	65,034	657		65,691	6,703			65,034
NY	206,695	2,088	500,000	708,783	1,177,993	469,210	500,000	206,695
NJ	41,721,164	421,426		42,142,590	39,819,342			41,721,164
DE	49,230	497		49,727	49,201			49,230
MD	5,116,874	51,686		5,168,559	4,122,830			5,116,874
PRFC	2,314,174	23,375		2,337,550	2,207,885			2,314,174
VA	318,066,790	3,212,796		321,279,585	315,830,045			318,066,790
NC	1,836,948	18,555		1,855,503	406,448		(575,000)	1,836,948
SC	-	-		-	-			-
GA	-	-		-	-			-
FL	66,995	677		67,672	124,975	57,303	60,000	66,995
<b>Total</b>	<b>372,783,605</b>	<b>3,765,491</b>		<b>376,549,096</b>	<b>366,136,409</b>	<b>539,559</b>		<b>372,783,605</b>

Table 2. Bait and reduction landings by state in 2013, including bycatch landings and quota landings.

<b>State</b>	<b>Quota Landings</b>	<b>Bycatch Landings</b>	<b>Total Landings</b>
ME	0	0	0
NH	0	0	0
MA	2,310,488	0	2,310,488
RI	80,499	15,200	95,699
CT	6,703	0	6,703
NY	1,177,993	463,382	1,641,375
NJ	39,819,342	0	39,819,342
DE	49,201	76,708	125,909
MD	4,122,830	2,786,083	6,908,913
PRFC	2,207,885	1,087,400	3,295,285
VA	315,830,045	251,191	318,834,195
NC	406,448	0	406,448
SC	0	0	0
GA	0	0	0
FL	124,975	64,790	189,765

Table 3: State quota reporting timeframes in 2013. The **bold** text indicates which reporting program (dealer or harvesters) the states used in 2013 to monitor its quotas.

State	Dealer Reporting	Harvester Reporting	Notes
ME	<b>monthly</b>	monthly/daily	Harvesters landing greater than 6,000 lbs will report daily
NH	<b>weekly</b>	monthly	Exempt from timely reporting. Implementing weekly reporting for state dealers.
MA	<b>weekly</b>	monthly/daily	Harvesters landing greater than 6,000 lbs will report daily
RI	<b>twice weekly</b>	quarterly/daily	Harvesters using purse seines will report daily
CT	<b>monthly</b>	monthly	No directed fisheries for Atlantic menhaden
NY	<b>monthly</b>	monthly/weekly	Capability to require weekly harvester reporting if needed
NJ	<b>weekly</b>	monthly	All menhaden sold or bartered must be done through a licensed dealer
DE	—	<b>monthly/daily</b>	Harvesters landing menhaden will daily using IVR
MD	monthly	<b>monthly/daily</b>	Currently monthly harvester reporting, but implementing weekly in 2013
PRFC	—	<b>weekly</b>	Trip level harvester reports submitted weekly
VA	—	<b>monthly/weekly/daily</b>	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	<b>monthly (combined reports)</b>		Single trip ticket with dealer and harvester information submitted monthly
SC	<b>monthly (combined reports)</b>		Exempt from timely reporting. Single trip ticket with dealer and harvester information
GA	<b>monthly (combined reports)</b>		Exempt from timely reporting. Single trip ticket with dealer and harvester information
FL	<b>monthly/weekly (combined reports)</b>		Monthly until implementation of weekly expected in September 2013. For 2013 at 50% of quota FL will call dealers weekly and close the fishery when at 70% of quota.

Table 4. Biological monitoring results in 2013. Note that total bait landings includes bycatch landings.

State	Total Bait Landings (pounds)	#10-fish samples required	#10-fish samples collected	Age samples collected	Length samples collected	Gear/Comments
ME	0	0	0	0	0	N/A
NH	0	0	0	0	0	N/A
MA	2310488	3	3	30	30	cast nets
RI	95699	0	10	74	100	fish traps and purse seine
CT	6703	0	0	0	0	N/A
NY	1177993	2	2	75	150	pound nets
NJ	39819342	60	59	590	590	purse seine, pound nets and gill nets
DE	125909	0	1	34	40	sampled one gill net set
MD	6908913	16	22	326	762	pound nets (15 from CB, 7 from Potomac River)
PRFC	3295285	7	4	85	85	Pound net (7 of 11 collections had less than 10 fish)
VA	27,200,686	62	63	691	1281	gill nets, pound nets, haul seines
NC	406448	1	17	185	185	pound nets, gill nets, beach seine, and cast nets
	<b>Total</b>	<b>152</b>	<b>181</b>	<b>2090</b>	<b>3223</b>	

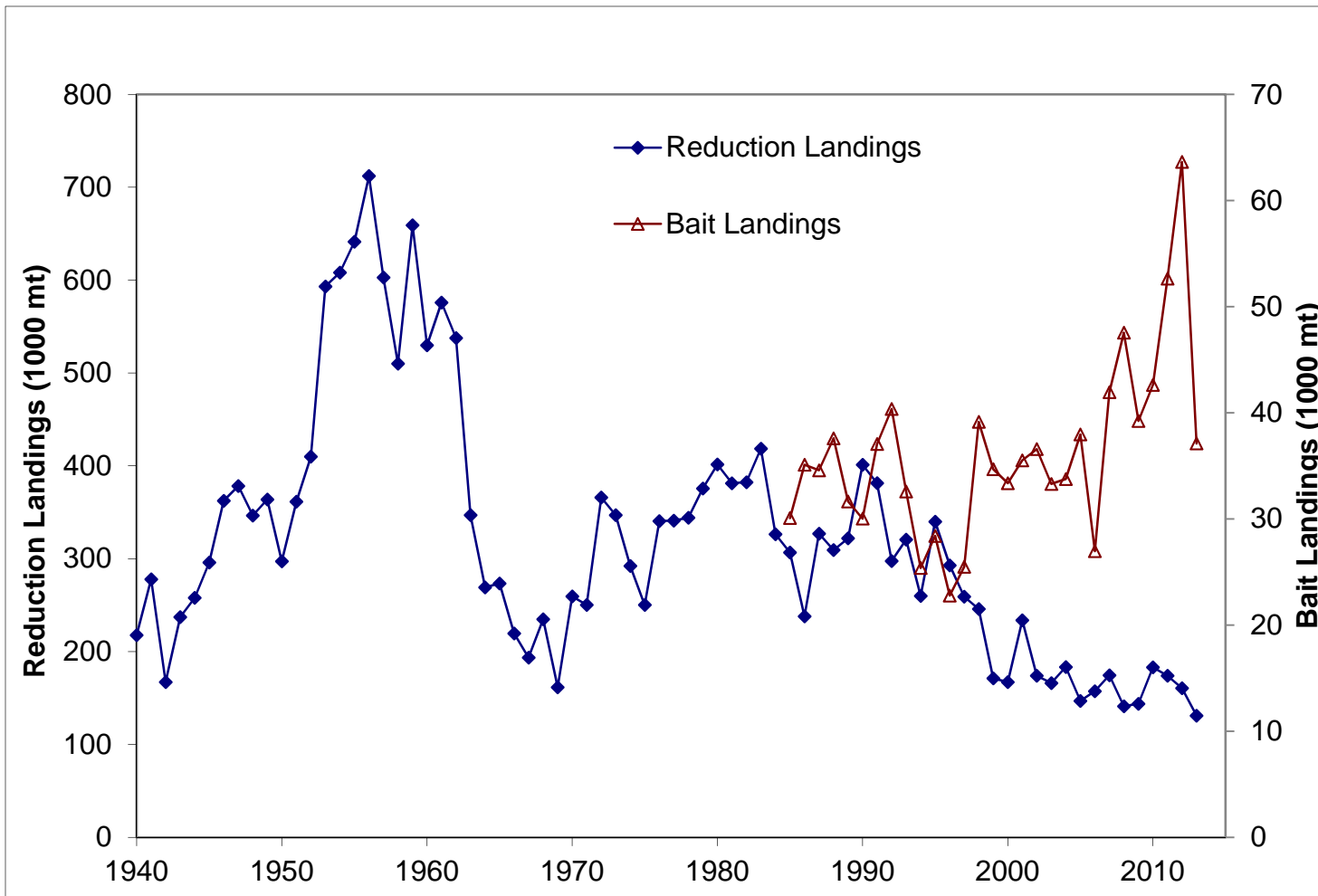


Figure 1. Landings from the reduction purse seine fishery (1940–2013) and bait fishery (1985–2013) for Atlantic menhaden.