

# ATLANTIC STATES MARINE FISHERIES COMMISSION

## REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN

FOR WEAKFISH  
*(Cynoscion regalis)*

2017 FISHING YEAR



Prepared by the Plan Review Team

Approved by the Weakfish Management  
Board October 2018

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

The Atlantic States Marine Fisheries Commission (Commission) adopted its first Fishery Management Plan (FMP) for Weakfish in 1985. Amendment 1 to the FMP (1992) unsuccessfully aimed to improve the status of Weakfish. Amendment 2 (1995) resulted in some improvement to the stock, but several signs indicated that further improvement was necessary. Thus, Amendment 3 (1996) was implemented to increase the sustainability of the fishery. Addendum I to Amendment 3 was approved in 2000 in order to extend the management program until the next amendment was implemented.

Amendment 4, approved in 2002, strives to establish two goals. One is the utilization of interstate management so that Atlantic coastal weakfish recover to healthy levels that will maintain commercial and recreational harvest consistent with a self-sustaining spawning stock. The second goal is to provide for restoration and maintenance of essential habitat (ASMFC 2002). The management objectives are to:

- 1) establish and maintain an overfishing definition which includes target and threshold fishing mortality rates and a threshold spawning stock biomass in order to prevent overfishing and to maintain a sustainable weakfish population;
- 2) restore the weakfish age and size structure to that necessary for the restoration of the fishery;
- 3) return weakfish to their previous geographic range;
- 4) achieve compatible and equitable management measures among jurisdictions throughout the fishery management unit, including states' waters and the federal EEZ;
- 5) promote cooperative interstate research, monitoring, and law enforcement necessary to support management of weakfish;
- 6) promote identification and conservation of habitat essential for the long term stability in the weakfish population; and
- 7) establish standards and procedures for both the implementation of Amendment 4 and for determination of states' compliance with provisions of the management plan.

Amendment 4 established target and threshold fishing mortality rates and a threshold spawning stock biomass level to determine overfishing and overfished stock status. The amendment requires states to implement recreational and commercial management measures to achieve annual fishing mortality targets. Some management measures are specified (e.g., minimum size limit, minimum mesh size, bycatch limit), while the Amendment provides the states flexibility in implementing other regulations (e.g., trip limits, area or season closures). States may request implementation of alternative management plans with conservationally equivalent measures. States deemed to have insignificant landings were exempt from the recreational and commercial requirements, with the exception of the bycatch reduction device requirements.

The Commission adopted Addendum I to Amendment 4 (2005) to replace the biological sampling program in Section 3.0 of Amendment 4. In response to a significant decline in stock abundance and increasing total mortality since 1999, the Commission approved Addendum II to Amendment 4 (2007) to reduce the recreational creel limit and commercial bycatch limit, and set landings levels that when met will trigger a re-evaluation of management measures. Addendum III to

Amendment 4 (2007) altered the bycatch reduction device certification requirements in Section 4.2.8 of Amendment 4 for consistency with the South Atlantic Fishery Management Council's Shrimp FMP. The Commission approved Addendum IV to Amendment 4 in 2009 to respond to the results of the 2009 benchmark stock assessment (additional information is provided in Section VI. Status of Management Measures and Issues).

Weakfish are managed under this plan as a single stock throughout their coastal range. All Atlantic coast states from Massachusetts through Florida and the Potomac River Fisheries Commission have a declared interest in weakfish, as do the US Fish and Wildlife Service (FWS) and National Marine Fisheries Service (NMFS). See Table 1 for a summary of state-by-state regulations in 2015.

## **II. Status of the Stock**

According to the last stock assessment, completed in 2016, the weakfish stock is depleted and overfishing is not occurring (ASMFC 2016). While overfishing has not occurred in recent years, harvest was reduced by an estimated 60% in Addendum IV to reduce additional mortality from fishing and poise the stock for a quicker recovery should natural mortality decline.

Between 1986 and 1993, spawning stock biomass (SSB) declined drastically from 48.5 million pounds (the time series maximum) to 16.0 million pounds (Figure 1). Overfishing was the main cause of this decline, with fishing mortality (F) accounting for about 90% of total mortality (fishing plus natural mortality) during the period (Figure 1). With the implementation of management measures in the early to mid-1990s, F declined to 0.60 in 1996 and biomass responded favorably by increasing to a peak of 38.1 million pounds in 1997 (Figure 1). Despite low and declining harvests since the early 2000s, SSB continued to decline, reaching a time-series low of 4.2 million pounds in 2009. However, the contribution of fishing mortality to total mortality was substantially reduced during this period; from 2001-2010, 60-75% of total mortality is attributed to fishing mortality. After the 2009 stock assessment (48<sup>th</sup> SAW), harvest quotas were reduced, further reducing the contribution of fishing mortality to less than 25% of total mortality from 2011-2014. SSB increased slightly at the end of the assessment time series, but further monitoring is necessary to determine whether this increase is sustainable. Conversely, natural mortality has risen substantially since the mid-1990s (Figure 1). Annual natural mortality estimates did not exceed 0.17 from 1982-1997 but had an average of 0.93 from 2007-2014. Factors such as predation, competition, and changes in the environment are believed to be having a stronger influence on recent weakfish stock dynamics than fishing mortality.

## **III. Status of the Fishery**

***This report includes updated recreational estimates from the Marine Recreational Information Program's transition to the mail-based Fishing Effort Survey (FES) on July 1, 2018. Therefore, recreational estimates will likely be different from those shown in past FMP Reviews and state compliance reports (due annually on September 1) through 2018. Figure 2 shows coastwide recreational landings including estimates using both the previous Coastal Household Telephone Survey (CHTS) and FES calibration for comparison, but other figures, tables, and text will only show data based on the FES calibration. Data based on either survey can be referenced at: <https://www.st.nmfs.noaa.gov/st1/recreational/queries/>.***

At 602,713 pounds in 2017, the total coastwide landings of weakfish have increased from 2016 (380,878 pounds) and are below the previous ten-year (2007-2016) average of 818,764 pounds. The commercial fishery (166,671 lbs) accounted for 28% of the total 2017 landings, and the recreational fishery (436,042 lbs) for 72% (Table 2).

### *Commercial Fishery*

Commercial data are cooperatively collected and compiled by the Atlantic Coastal Cooperative Statistics Program (ACCSP) and state fishery agencies from state mandated trip-tickets, landing weigh-out reports from seafood dealers, federal logbooks, shipboard and portside interviews, and biological sampling of catches. In this report, commercial landings from 2016 and earlier are from ACCSP and landings from 2017 are from state compliance reports, unless otherwise stated (see notes for Table 3).

Between 1982 and 2017, coastwide commercial weakfish landings have ranged from the high of 21.1 million pounds in 1986 to the low of 132,261 pounds in 2011 (Figure 3). Commercial landings have generally declined throughout the time series. Landings in 2017 were the third-lowest on record at 166,671 pounds, and decreased from 176,527 pounds in 2016. North Carolina (51%), New York (17%) and Virginia (16%) landed the largest shares of the 2017 coastwide commercial weakfish harvest (Table 3).

The dominant commercial gears were gill nets (about 59% of commercial landings). There has been a shift in the dominant source of landings from trawls in the 1950s-1980s to gill nets in the 1990s-present. The majority of commercial landings tend to occur in the fall and winter months, presumably as the fish congregate to migrate to over-wintering grounds in the South Atlantic (Hogarth et al. 1995).

### *Recreational Fishery*

Recreational catch statistics are collected by the NMFS. Effort data are collected through telephone interviews. Catch expansions are based on angler interviews and biological sampling conducted by trained interviewers stationed at fishing access sites. Recreational data from 2016 and earlier in this report are from the NMFS Fisheries Statistics Division queried from the Marine Recreational Information Program (MRIP; 2018), except as noted in Section VI of this report for Florida's estimates. Some states also monitor and report recreational landings through their own sampling and estimation efforts. Recreational landings for 2017 are calculated from landings reported in state compliance reports.

Since 1982, coastwide recreational landings have ranged from the high of 20 million pounds in 1987 to the low of 102,754 pounds in 2011 (Figure 3). Landings averaged 13.7 million pounds from 1982-1988, before falling to between one and nine million pounds from 1989-2008. In 2009, recreational landings dropped below one million pounds. Landings have averaged 360 thousand pounds from 2013-2017, and are estimated at 436,042 pounds (276,140 fish) in 2017 (Tables 4 and 5). The number of fish released alive by anglers has remained above 1 million fish from 1991 through the present, except for 2013 (Figure 4). In 2017, 1.5 million fish were released (Table 6).

In 2010, all states implemented a one fish bag limit, which impacted landings and discards from that point on.

New Jersey anglers regularly harvested the most recreational weakfish by pounds along the coast until 2009. In the 1980s and 1990s, anglers in Delaware, Maryland, and Virginia often took the next largest shares of the recreational total amount. In the 2000s, New Jersey anglers led in the harvest, whereas anglers in Virginia and North Carolina tended to take the second and third largest amounts (Tables 4 and 5). However, since 2009, New Jersey and North Carolina have switched off in harvesting the largest recreational proportions, with the next greatest proportions coming from Virginia or South Carolina. New Jersey harvested the greatest proportion in 2017, with 225,225 pounds (52% of recreational harvest).

The size of fish sampled to provide the MRIP weight estimates has historically varied in a latitudinal fashion, with larger fish caught in the north and smaller fish caught in the south. The mean weight per fish sampled throughout the recreational time series (1982-2016) is less than 1.5 pounds for all states from Florida through Maryland and over 1.5 pounds for all states north of Maryland. In 2017, the mean weights for fish caught in New Jersey, Delaware, North Carolina, and South Carolina (2.86, 1.75, 1.08, and 1.28 lbs, respectively) were greater than each state's time series mean, and the mean weights for fish caught in Massachusetts, New York, Maryland, Virginia, and the east coast of Florida (1.65, 1.27, 0.65, 1.09, and 0.66 lbs, respectively) were less than each state's time series mean.

The recreational fishery catches weakfish using live or cut bait, jigging, trolling, and chumming. The majority of recreationally harvested weakfish are caught in state waters (95% in 2017 by pounds).

#### **IV. Status of Assessment Advice**

The 2016 assessment was completed by the ASMFC Weakfish Stock Assessment Subcommittee (SAS) (ASMFC 2016) and peer reviewed by the ASMFC Weakfish Stock Assessment Review Panel (ASMFC 2016). The assessment includes fishery data and survey indices through 2014.

As a result of this assessment, the Weakfish TC recommends new Z and SSB reference points along with a two-stage control rule for evaluating weakfish stock status and management response.

Under conditions of time-varying natural mortality, there is no long-term stable equilibrium population size, so an SSB target is not informative for management. The Weakfish TC recommends an SSB threshold of  $SSB_{30\%} = 6,880$  MT that is equivalent to 30% of the projected SSB under average natural mortality and no fishing. When SSB is below that threshold, the stock is considered depleted.

SSB in 2014 was 2,548 MT, below the SSB threshold, indicating the stock is depleted (Table 9.2.1, Figure 9.2.1). SSB has been below the threshold for the last 13 years.

The TC recommends the use of total mortality benchmarks to prevent an increase in fishing pressure when F is low but M is high. When Z is below the Z target, F reference points can be used to assess overfishing status.

Z in 2014 was 1.11, above the Z target, but below the Z threshold, indicating total mortality is still high but within acceptable limits (Table 9.2.1, Figure 9.2.2). Z was above the threshold from 2002-2013.

## **V. Status of Research and Monitoring**

### *Fishery-Independent Data*

Young-of-year indices of relative abundance are provided by Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, and Florida. Massachusetts, Connecticut, New Jersey, Delaware, North Carolina, Georgia, and Florida provide age- 0+ or 1+ indices of relative abundance. The Northeast Fisheries Science Center Groundfish Trawl Survey also produces an age-structured index for the Mid-Atlantic coast, while the Southeast Area Monitoring and Assessment Program (SEAMAP) survey produces another index for the South Atlantic Coast. The Northeast Area Monitoring and Assessment Program (NEAMAP) began spring and fall surveys between Martha's Vineyard and Cape Hatteras in the fall of 2007, and provided an Age 1+ index which is included in the 2016 assessment. Stomach content analysis was also done to assess food habit changes and investigate the possible decrease in preferred food availability as a driver of natural mortality, however results were inconclusive. The Chesapeake Bay Multispecies Monitoring and Assessment Program (ChesMMAP), which began in 2002, collects data on relative abundance, length, weight, age, sex, and trophic interactions in the Bay. See Table 7 for the indices provided in the 2018 compliance reports. While only the most recent years of data are shown, full data sets for each survey are available upon request to the state or Commission.

### *Fishery-Dependent Data*

The coastal states and the NMFS collect data on commercial and recreational landings. Addendum I to Amendment 4 requires the collection of otoliths and lengths to characterize the catch; the number of samples required is based on the magnitude of each state's fisheries. Each spring, the states are required to submit biological sampling plans, and each fall, through the compliance reports, the states are required to provide the actual sampling levels completed. See Section VII for more information.

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

### *Fishery Management Plan*

Addendum IV to Amendment 4 was approved in November 2009, and was implemented in May 2010. In response to the 2009 stock assessment results, the addendum implements more appropriate biological reference points in response to recent stock dynamics and reduces harvest while attempting to minimize unnecessary bycatch waste. Addendum IV requires all states in the management unit (including those that are *de minimis*) to implement a recreational creel limit no greater than 1 fish, commercial trip and bycatch limits no greater than 100 pounds, and a

finfish trawl fishery allowance for up to 100 undersized fish. The addendum adopted percentage based biological reference points with an overfished/depleted threshold of 20% SSB and a target of 30% SSB. Results of the 2016 assessment support continued use of these reference points. The biological sampling requirements under Addendum I are unchanged, and all regulations previously enacted to protect weakfish and reduce bycatch are to remain effective.

No additional amendments or addenda are under development.

#### *Florida Management Area and Landings Data*

In November 2009, the Management Board approved a proposal from Florida to reduce the state's weakfish management area to a small area in northeast Florida where pure weakfish are known to occur based on genetics data. The revision is intended to address the misidentification of weakfish, sand seatrout, silver seatrout, and their hybrids, and the consequential law enforcement issue. Inside the newly established weakfish management area (St. Mary's River only), any fish that resembles weakfish will be considered weakfish for enforcement purposes, both for commercial and recreational limits. Outside the weakfish management area, all fish that resemble weakfish will be considered sand seatrout.

As a result of the approved proposal, the commercial and recreational landings data provided in Florida's 2018 compliance report represent the best estimate of pure weakfish landings in the state. Commercial landings data from Florida's trip ticket program and recreational landings from the NMFS's Marine Recreational Fisheries Statistics Survey include only weakfish landed in Nassau and Duval counties, as revised on the basis of the genome proportions within the *Cynoscion*-complex found in the counties (48% weakfish in Nassau County and 17% in Duval County). The landings, tables, and figures in this report use the landings as reported by Florida.

#### *De Minimis Status*

Amendment 4 permits states to request *de minimis* status if, for the last two years, their combined average commercial and recreational landings (by weight) constitute less than 1% of the coastwide commercial and recreational landings for the same two year period. The *de minimis* threshold for the 2017 fishing year, calculated with 2016 and 2017 harvest data, is 5,096 pounds.

Three states requested *de minimis* status in their 2016 compliance reports: Massachusetts, Connecticut, and Florida. Massachusetts and Florida qualify for *de minimis* status (Massachusetts 0.66% and Florida 0.34%). Connecticut's 2016-2017 average landings are 1.07% of the coastwide total, exceeding the *de minimis* threshold by 0.07%.

#### *Addendum II Management Triggers*

In 2010, the recreational and commercial management measures in Addendum IV replaced those in Addendum II. However, the Plan Review Team (PRT) will continue to include an evaluation of the two management triggers as they provide perspective on the magnitude of fishery landings (but hitting a trigger will not require Board reconsideration of the management measures).



Addendum II established two management triggers that would require the Board to consider modifying management measures if reached. First, commercial management measures are to be re-evaluated if coastwide commercial landings exceed 80% of the mean commercial landings from 2000-2004, or 2.99 million pounds. Second, commercial and recreational management measures are to be re-evaluated if any single state's landings exceed its five-year mean by more than 25% in any single year.

The 2016 coastwide commercial landings are 166,671 pounds, thus the first trigger has not been exceeded. The second trigger was met in Massachusetts, New Jersey, Georgia, and Florida because their total estimated landings in 2017 were 129%, 81%, 282%, and 46% greater than their average total landings from 2013-2017 (Table 8). Massachusetts and Florida landings, while relatively high, each constitute less than 1% of total coastwide landings. Thus, the PRT does not find the 2017 harvests for these states to be a cause for concern.

New Jersey's increase in landings follows three of their five lowest harvests on record, and is their third-highest harvest since 2010. The recent trend of landings to shift north or south between New Jersey and North Carolina may be indicative of environmental components impacting annual availability by location.

Georgia's 2017 harvest also follows one of their lowest periods of harvest, with a 2013-2016 average of 3,675 pounds. Sporadic increases above 10 thousand pounds have occurred in the past for Georgia, but have never lasted more than three years and have been interspersed among harvests typically less than 7 thousand pounds. The most recent harvest above 10 thousand pounds was in 2009 (14,449 pounds).

The PRT does not recommend management action for these New Jersey and Georgia at this time, but does recommend monitoring harvests in these states next year to see if high levels are sustained. Preliminary 2018 data for both states indicate more typical harvests.

## **VII. Implementation of FMP Compliance Requirements for 2017**

Mandatory compliance elements for 2017 were provided by Amendment 4 and its four addenda.

### *Regulatory Requirements*

The management program includes regulatory requirements for non *de minimis* states as follows:

- Recreational management measures including minimum size limits and a maximum creel limit of one fish (see Addenda II and IV to Amendment 4)
- Commercial management measures including minimum size limits, minimum mesh size limits, landings limits, trip limits, bycatch limits, closed seasons and areas, and bycatch reduction device requirements (see Section 4.2 of Amendment 4, and Addendum IV)

The PRT finds all states to have implemented the plan's compliance requirements.

See Table 1 for a summary of state commercial and recreational regulations in 2015.

### *Monitoring Requirements*

Addendum I implemented monitoring requirements for non *de minimis* states as follows:

- Maintenance of at least the 2005 level of recreational sampling of individual lengths through the Marine Recreational Fisheries Statistics Survey;
- Collection of six individual fish lengths for each metric ton of weakfish landed commercially;
- Collection of three individual fish ages for each metric ton of total weakfish landed, with a maximum of 1000 ages annually per state [Samples may come from commercial and/or recreational fishery as long as they come from the same general area (inshore versus offshore) that those fisheries are prosecuted in.].

Table 9 provides the otolith and length collection requirements for 2017. These are based on the best available 2016 landings data provided to the Commission by the ACCSP, NMFS, and the states. To accommodate the MRIP transition to the FES, requirements listed in Table 9 are based on recreational estimates made with the previously used Coastal Household Telephone Survey (CHTS). Future sampling efforts (2019 and beyond) should be based on recreational harvests estimated using the FES. Table 9 also provides the number of otoliths and lengths collected by the states in 2017. All states except New York met the biological sampling requirements in 2017, as reported in state compliance reports. New York collected an adequate number of ages but collected 36 lengths less than their required 84 lengths. This is the second consecutive year that New York has not fulfilled sampling requirements for commercial lengths. Although New York did not meet their sampling requirements, the PRT recognizes the difficulty in acquiring weakfish samples and has no reason to believe that this state did not make a good faith effort to fulfill the requirements of the FMP.

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

### **Management Recommendations**

- That the Board approve the *de minimis* requests from Massachusetts, Connecticut, and Florida.
- That the Board consider for management the use of biological reference points from the 2016 stock assessment.
- That the Board consider updating management triggers established in Addendum II to Amendment 4.
- That the Board clarify the use of fishery-independent samples in fulfilling biological sampling requirements as set forth in Addendum I to Amendment 4.

### **Research Recommendations**

#### **Fishery-Dependent Priorities**

##### ***High***

- Increase observer coverage to identify the magnitude of discards for all commercial gear types from both directed and non-directed fisheries.<sup>1</sup>

##### ***Moderate***

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<sup>1</sup> Some Mid-Atlantic trawl fleet observer coverage has been implemented under ACCSP funding.

- Continue studies on temperature, size, and depth specific recreational hook and release mortality rates, particularly catches from warm, deep waters. Investigate methods to increase survival of released fish.
- Continue studies on mesh size selectivity, particularly trawl fisheries.<sup>2</sup>
- Improve methods to estimate commercial bycatch. Refine estimates of discard mortality based on factors such as distance from shore and other geographical differences for all sizes including below minimum size.

#### **Low**

- Determine the onshore versus offshore components of the weakfish fishery.
- Collect catch and effort data including size and age composition of the catch, determine stock mortality throughout the range, and define gear characteristics. In particular, increase length frequency sampling in fisheries from Maryland and further north.
- Develop latitudinal, seasonal, and gear-specific age-length keys coast wide. Increase sample sizes for gear specific keys.

### **Modeling / Quantitative Priorities**

#### **High**

- Evaluate predation of weakfish with a more advanced multispecies model (e.g., the ASMFC MSVPA or Ecopath with Ecosim); consider an expanded suite of predators (e.g., marine mammals) and include weakfish as predator and prey.
- Develop a bioenergetics model that encompasses a broader range of ages than Hartman and Brandt (1995) and use it to evaluate diet and growth data.

### **Life History, Biological, and Habitat Priorities**

#### **High**

- Develop a coastwide tagging program to identify stocks and determine migration, stock mixing, and characteristics of stocks in over wintering grounds. Determine the relationship between migratory aspects and the observed trend in weight at age.<sup>3</sup>
- Estimate weakfish mortality through independent approaches (e.g., alternative models, tagging) to corroborate trends in mortality from the assessment model.
- Determine the impact of scientific monitoring surveys on juvenile weakfish mortality. Calculate the resulting impact on adult stock size.
- Monitor weakfish diets over a broad regional and spatial scale, with emphasis on new studies within estuaries.
- Continue to investigate the geographical extent of weakfish hybridization.

#### **Moderate**

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<sup>2</sup> Gillnet selectivity has been investigated by Swihart et al (2000). Some gear selectivity information in Amendment 3 to the ASMFC Weakfish FMP. Information can also be obtained from the North Carolina Pamlico Sound Independent Gill Net Survey.

<sup>3</sup> A university led weakfish tagging study has been ongoing in North Carolina and Delaware since 2014. The objective of the study is to evaluate movement and stock mixing of weakfish along the U.S. east coast and to estimate seasonal and annual rates of fishing and natural mortality. The study is slated to be completed in late 2017 with results available to the weakfish TC in early 2018.

- Identify and delineate weakfish spawning habitat locations and environmental preferences to quantify spawning habitat.
- Compile data on larval and juvenile distribution from existing databases to obtain indications of spawning and nursery habitat location and extent.
- Examine geographical and temporal differences in growth rate (length and weight at age).
- Determine the impact of power plants and other water intakes on larval, post larval, and juvenile weakfish mortality in spawning and nursery areas. Calculate the resulting impact on adult stock size.<sup>4</sup>
- Monitor predation on weakfish from bird, fish, and marine mammal species.

### **Management, Law Enforcement, and Socioeconomic Priorities**

#### ***Moderate***

- Assemble socioeconomic data as it becomes available from ACCSP.

#### ***Low***

- Define restrictions necessary for implementation of projects in spawning and over wintering areas and develop policies on limiting development projects seasonally or spatially.

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<sup>4</sup> Data are available for power plants in the Delaware Bay area and North Carolina. Also see Heimbuch et al. 2007. Assessing coastwide effects of power plant entrainment and impingement on fish populations: Atlantic menhaden example. *North American Journal of Fisheries Management*. 27: 569-577.

## IX. References

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**X. Tables**

**Table 1. Summary of state regulations for weakfish in 2017.**

<b>State</b>	<b>Commercial</b>	<b>Recreational</b>	<b>Implementation Date</b>
MA	16", open 1/1-12/31, 100 lb possession limit.	16", 1 fish	June 2010
RI	16"; open 6/1-6/30 & 8/7-11/8, 100 lb possession limit. Other times of year: 100 pound bycatch limit with at least an equal poundage of other species as weakfish. Trawl codend mesh size $\geq 4.5$ " diamond or 4.0" square.	16", 1 fish	April 28, 2010
CT	16"; open 1/1-12/31, 100 lb possession limit.	16", 1 fish	April 25, 2010
NY	16" (12" dressed & 10" filleted); Hook and line open 4/1-6/24 & 8/28-11/15; 0 lb bycatch limit. All other gears open 4/1-6/24 and 8/28-11/15; 100 lb bycatch limit.	16" (12" dressed, 10" fillet), 1 fish	By May 1, 2010
NJ	Gill net: 13"; open 1/1-5/20 & 9/3-10/19 & 10/27-12/31, 100 lb possession limit; mesh $\geq 3.25$ " stretched except 2.75 - 3.25" allowed within 2nm for permitted fishermen doing monthly reporting. Otter trawl: 13"; open 1/1-7/31 & 10/13-12/31, 100 lb possession limit; mesh $\geq 3.75$ " diamond or 3.375 square. Pound net: 13"; open 1/1-6/6 & 7/1-12/31, 100 lb possession limit. 100 lb bycatch limit & 50% rule. Hook & line: 13", 1 fish, open 1/1-12/31.	13", 1 fish	March 25, 2010
DE	Gill net: 12"; only nets with stretch mesh $\geq 3.125$ " allowed in water 4/1-6/30, none permitted weekends and legal holidays 5/10-9/30, 100 lb possession limit. Drift gill net: open 1/1-12/31 except 34 specified days of gear out of water in May and June. Anchor gill net: open 1/1-5/9 and 10/1-12/31, otherwise gear out of water. Hook & line: 13"; 100 lb possession limit 4 days/week during 5/1-10/31, 1 fish creel limit all other times.	13", 1 fish	April 11, 2010
MD	12". Ocean all gears: 100 lb bycatch limit & 50% rule. Chesapeake Bay hook & line: open 8/1-9/30, 50 lb possession limit, 0 lb bycatch. Chesapeake Bay all other gears: 50 lb bycatch limit & 50% rule. Gillnet: mesh $\geq 3.0$ " stretched. Trawl: mesh $\geq 3.375$ " square or 3.75" diamond.	13", 1 fish	June 28, 2010
PRFC	12"; open 7/28-12/31, 50 lb possession limit; 50 lb bycatch limit & 50% rule for certified pound nets with approved cull panels, and 0 lb bycatch for all other gears. Pound net: limited entry.	12", 1 fish	January 1, 2010

VA	Gill net: 12"; open 3/16-5/13 & 10/21-12/30, 100 lb possession limit. Pound net: no minimum size; limited entry; open 4/1-4/30 & 5/23-9/12 unless exempted by license forfeit, 100 lb possession limit. Haul seine: no minimum size; open 4/16-6/10 & 8/21-9/24, 100 lb possession limit. Out of state trawl: 12" except 100 undersized fish allowed; open 4/1-9/25, 100 lb possession limit; codend mesh $\geq 3.0$ ". Hook & line: 12"; open 1/1-12/31, 100 lb possession limit. 100 lb bycatch limit (per vessel), 50% rule for all gears during closed seasons.	12", 1 fish	May 1, 2010
NC	12", except 10" for long haul seines & pound nets in internal waters 4/1-11/15; open 1/1-12/31, 100 lbs trip limit. Gill net: mesh $\geq 2.875$ " stretch. Gill nets and flynets that do not meet mesh requirements can only take weakfish as bycatch provided the weight of weakfish doesn't exceed 50% of catch up to 100lbs, 100lb limit in shrimp or crab trawl. BRDs in shrimp trawls.	12", 1 fish	August 20, 2010
SC	12", 1 fish. BRDs in shrimp trawls.	12", 1 fish	July 1, 2010
GA	13", 1 fish. BRDs in shrimp trawls.	13", 1 fish	June 3, 2010
FL	12", 100 lb possession limit. BRDs in shrimp trawls.	12", 1 fish	July 27, 2010

**Table 2. Commercial and recreational Atlantic coast weakfish landings from 2000 to 2017** (see Tables 3 and 4 for source information and state-specific landings).

<b>Year</b>	<b>Recreational Landings (lbs)</b>	<b>Commercial Landings (lbs)</b>	<b>Total Landings (lbs)</b>	<b>% Com</b>
<b>2000</b>	8,393,984	5,062,705	13,456,689	38%
<b>2001</b>	4,687,016	4,802,221	9,489,237	51%
<b>2002</b>	4,316,228	4,594,956	8,911,184	52%
<b>2003</b>	1,946,795	1,999,040	3,945,835	51%
<b>2004</b>	2,223,528	1,538,517	3,762,045	41%
<b>2005</b>	2,580,901	1,264,102	3,845,003	33%
<b>2006</b>	1,814,676	1,081,396	2,896,072	37%
<b>2007</b>	1,202,671	900,958	2,103,629	43%
<b>2008</b>	1,074,487	456,793	1,531,280	30%
<b>2009</b>	429,684	372,985	802,669	46%
<b>2010</b>	173,352	202,626	375,978	54%
<b>2011</b>	102,754	132,261	235,015	56%
<b>2012</b>	671,631	246,765	918,396	27%
<b>2013</b>	466,930	343,899	810,829	42%
<b>2014</b>	218,581	192,009	410,590	47%
<b>2015</b>	451,266	142,609	593,875	24%
<b>2016</b>	228,857	176,527	405,384	44%
<b>2017</b>	436,042	166,671	602,713	28%



**Table 3. Commercial landings (pounds) of weakfish by state, 2000-2017** (Source: ACCSP for 2016 and earlier and state compliance reports for 2017, except as noted below). Starred values are confidential.

Year	MA	RI	CT	NY	NJ	DE	MD	PRFC	VA	NC	SC	GA	FL	Total
2000	527	189,362	7,920	352,832	1,071,428	*	200,299	68,574	1,302,271	1,869,044			448	5,062,705
2001	231	109,568	6,774	578,797	837,550	*	181,188	44,219	1,082,369	1,960,324		*	1,201	4,802,221
2002	842	122,781	10,223	513,977	863,088	*	108,318	57,818	1,089,323	1,828,150	42		394	4,594,956
2003	519	63,337	*	144,416	340,269	*	46,427	5,273	455,094	848,822		*	288	1,999,040
2004	59	34,209	6,206	150,046	204,585	51,276	55,100	1,986	349,395	685,463	*	*	192	1,538,517
2005	2,840	41,558	6,118	90,238	208,232	70,669	35,527	1,004	385,584	421,779		*	553	1,264,102
2006	*	47,474	7,012	152,922	236,521	34,434	51,081	689	187,849	363,078		*	337	1,081,396
2007	*	20,586	1,910	86,723	164,506	24,579	22,284	20	403,873	175,589			888	900,958
2008	73	9,703	1,024	42,621	57,013	11,186	6,364	74	165,223	162,516		*	996	456,793
2009	*	6,286	506	101,561	30,196	*	5,230	17	65,589	163,146			453	372,985
2010	58	5,400	960	13,102	12,053	*	2,930	80	61,651	106,319			73	202,626
2011	615	5,766	2,105	17,136	13,324	*	646	45	26,119	65,897		*	608	132,261
2012	616	17,908	4,723	63,119	19,291	*	2,078	98	45,551	91,383			1,999	246,765
2013	3,400	31,826	5,960	108,656	14,829	*	3,344	24	54,607	120,188		*	1,065	343,899
2014	918	15,583	3,343	33,303	8,415	*	2,126	10	22,508	105,246			557	192,009
2015	473	6,327	1,666	24,238	9,655	*	1,394	3	17,882	80,230			741	142,609
2016	882	12,022	2,731	30,703	6,596	*	914		42,419	79,640	0	0	621	176,527
2017	2,175	17,243	3,956	27,731	*	1,334	760	5	26,347	85,440	0	0	1,680	166,671

**Notes:** FL: state-reported landings (NMFS-reported landings limited to Nassau and Duval Counties and adjusted on the basis of the genome proportions of weakfish within the Cynoscion-complex in those counties' waters). VA: ACCSP-reported landings minus the PRFC-reported harvest landed in VA for 2016 and earlier; state-reported landings minus the PRFC-reported harvest landed in VA for 2017. PRFC: agency-reported landings (fish caught in Potomac River and landed in MD and VA). MD: ACCSP-reported landings minus the PRFC-reported harvest landed in MD for 2016 and earlier; state-reported landings minus the PRFC-reported harvest landed in MD for 2017.

**Table 4. Recreational landings (pounds) of weakfish by state, 2000-2017** (Source: MRIP FES-calibrated estimates, except as noted below).

Year	MA	RI	CT	NY	NJ	DE	MD	VA	NC	SC	GA	FL	Total
2000		5,532	66,881	287,367	4,783,294	1,116,710	1,193,891	732,768	179,599	12,931	12,068	2,943	8,393,984
2001		28,607	5,227	226,328	2,253,931	269,108	925,019	645,708	325,447		6,319	1,322	4,687,016
2002		20,066	33,399	145,900	2,499,634	437,650	393,128	515,434	215,402	51,424	2,614	1,577	4,316,228
2003	2,444	4,716	6,755	83,971	940,448	154,933	180,700	250,558	309,412	9,937	2,341	580	1,946,795
2004		0	0	116,570	509,032	11,164	53,937	791,329	428,627	295,781	16,151	937	2,223,528
2005		81,034		408	1,859,330	58,485	50,713	47,412	281,710	187,324	12,920	1,565	2,580,901
2006		55,665		109,822	1,220,494	46,096	768	69,978	302,775	3,959	3,599	1,520	1,814,676
2007		0		7,790	635,442	4,761	26,953	259,522	202,583	49,541	7,633	8,446	1,202,671
2008				100,594	658,574	11,123	3,543	46,378	209,470	33,200	10,408	1,197	1,074,487
2009				0	51,251	16,812	5,611	71,511	245,358	22,740	14,449	1,952	429,684
2010	0			6,526	8,435	121	6,476	11,416	103,903	29,554	6,466	455	173,352
2011				164	6,845	27	241	14,185	62,543	17,028	1,191	530	102,754
2012				43,385	373,328	11,621	42,885	51,999	95,952	45,528	6,265	668	671,631
2013		4,063		85,934	226,756	21,522	7,539	4,657	66,720	45,031	3,771	937	466,930
2014			0	14,916	61,426	7,118	2,808	26,220	70,988	28,773	5,570	762	218,581
2015				5,852	53,485	2,293	68,225	66,528	157,269	96,416	1,096	102	451,266
2016	571		4,240	29,573	26,616	3,601	1,947	44,242	83,702	29,448	4,264	653	228,857
2017	3,108	0	0	20,962	225,225	2,385	5,926	15,649	55,944	58,510	47,776	557	436,042

**Notes:** FL: state-reported landings 1983-present (NMFS-reported, FES-calibrated estimates limited to Nassau and Duval Counties and adjusted on the basis of the genome proportions of weakfish within the Cynoscion-complex found in those counties' waters.

**Table 5. Recreational landings (numbers) of weakfish by state, 2000-2017** (Source: MRIP FES-calibrated estimates, except as noted below).

Year	MA	RI	CT	NY	NJ	DE	MD	VA	NC	SC	GA	FL	Total
2000		3,086	14,699	82,577	1,597,735	477,368	743,823	348,774	147,397	11,335	14,201	3,276	3,444,271
2001		5,393	765	46,457	1,271,032	112,581	496,617	299,300	317,974		6,619	1,542	2,558,280
2002		4,134	4,312	46,635	1,012,299	201,345	219,223	297,768	214,040	85,133	2,598	1,842	2,089,329
2003	318	540	774	17,012	305,550	44,322	175,974	112,349	291,168	12,760	2,923	774	964,464
2004		0	0	31,764	320,078	10,496	39,093	462,198	395,268	539,811	13,178	1,114	1,813,000
2005		9,673		242	1,657,442	36,263	59,293	68,103	297,605	273,231	11,505	1,539	2,414,896
2006		4,764		13,620	1,036,819	18,683	763	55,368	343,092	5,936	5,137	1,578	1,485,760
2007		0		4,880	394,338	4,895	13,183	174,463	191,192	77,822	8,294	961	870,028
2008				59,151	536,830	10,086	3,220	49,829	203,779	46,853	11,187	1,470	922,405
2009				0	23,217	9,417	9,655	59,169	204,814	28,583	27,325	2,028	364,208
2010	0			7,894	3,943	144	12,532	12,745	110,770	33,968	6,752	589	189,337
2011				106	8,393	34	284	18,999	48,727	17,834	1,796	471	96,644
2012				12,895	276,856	11,077	38,598	46,275	96,947	51,947	7,436	988	543,019
2013		737		20,659	89,805	16,325	3,736	4,336	63,090	28,117	4,407	2,086	233,298
2014			0	1,838	16,146	6,624	1,542	32,380	71,912	24,733	7,896	905	163,976
2015				2,123	73,062	1,511	12,567	10,286	143,543	74,085	1,673	143	318,993
2016	327		1,601	4,626	12,344	1,440	2,100	37,664	77,341	22,843	5,328	1,251	166,865
2017	1,880	0	0	16,534	78,831	1,365	9,175	14,405	51,795	45,836	55,471	848	276,140

**Notes:** FL: state-reported landings 1983-present (NMFS-reported, FES-calibrated estimates limited to Nassau and Duval Counties and adjusted on the basis of the genome proportions of weakfish within the Cynoscion-complex found in those counties' waters).

**Table 6. Recreational releases (numbers) of weakfish by state, 2000-2016** (Source: MRIP FES-calibrated estimates, except as noted below).

Year	MA	RI	CT	NY	NJ	DE	MD	VA	NC	SC	GA	FL	Total
2000		2,347	3,475	156,756	2,179,903	752,695	1,869,740	1,426,215	751,197	41,740	41,705	5,551	7,231,324
2001		721	0	172,938	1,819,337	355,303	1,040,416	1,156,622	2,363,650		28,483	2,541	6,940,011
2002		3,865	0	284,942	872,703	174,843	563,215	2,027,187	793,989	9,082	23,782	2,113	4,755,721
2003	0	0	5,022	11,624	1,746,615	77,404	698,889	815,442	313,626	2,110	29,588	2,556	3,702,876
2004		355	17,591	114,926	752,199	123,960	498,052	1,487,334	443,048	198,217	20,562	3,395	3,659,639
2005		0		136,640	2,204,518	203,543	121,069	617,330	416,023	112,246	82,671	2,007	3,896,047
2006		0		42,308	2,733,503	202,726	100,299	824,155	855,488	35,082	13,727	5,132	4,812,420
2007		2,185		372,675	1,085,227	46,461	123,815	366,773	355,375	105,524	46,784	949	2,505,768
2008				59,763	3,708,364	152,662	86,259	634,046	236,165	370,319	31,492	711	5,279,781
2009				6,702	205,284	10,106	29,705	168,214	494,626	112,183	29,232	285	1,056,337
2010	1,853			6,799	240,108	42,070	417,219	532,657	739,955	123,236	18,048	38	2,121,983
2011				118,616	288,439	13,584	50,974	743,528	374,910	19,138	21,044	520	1,630,753
2012				29,613	1,383,894	212,573	72,092	273,507	381,441	332,241	85,553	0	2,770,914
2013		32,344		18,652	330,665	51,611	19,847	205,203	252,362	23,534	21,012	561	955,791
2014			724	794	193,962	55,077	27,392	374,944	1,067,230	568,787	7,640	614	2,297,164
2015				14,459	598,126	33,522	340,850	232,363	1,608,036	215,117	48,052	0	3,090,525
2016	4,130		1,932	8,767	278,043	62,864	161,159	1,467,470	1,091,422	118,374	16,152	0	3,210,313
2017	557	0	791	138,156	146,036	38,219	41,674	454,456	351,433	186,547	95,061	0	1,452,930

**Notes:** FL: state-reported landings 1983-present (NMFS-reported, FES-calibrated estimates limited to Nassau and Duval Counties and adjusted on the basis of the genome proportions of weakfish within the Cynoscion-complex found in those counties' waters).

**Table 7. Indices of relative weakfish abundance from 2000 to 2017. (Source: State compliance reports)**

Year	MA Tr BB & VS YOY	MA Tr BB & VS 1+	RI Tr Coast YOY	CT Tr LIS YOY	CT Tr LIS 1+	NY Tr Coast YOY	NJ Tr DE Bay YOY	NJ Tr Ocean 1+	DE Tr DE Bay YOY	DE Tr Inland YOY	DE Tr DE Bay 1+
	mean#/ tow	mean#/ tow	mean #/ tow	GM#/ tow	GM#/ tow	AM#/ tow	GM#/ tow	GM#/ tow	GM#/ tow	GM#/ tow	#/ nm
2000			9.38	63.31	0.30	167.10	0.59	2.36	14.14	1.64	179.12
2001			19.33	40.09	0.52	113.70	15.03	0.68	7.56	1.53	80.70
2002			8.40	41.35	0.16	145.20	19.70	1.59	5.96	1.31	144.98
2003			198.00	49.41	0.07	69.80	3.11	0.08	10.44	2.44	65.78
2004			1.88	58.98	0.21	43.90	8.48	1.79	8.39	3.32	48.88
2005			128.93	25.86	0.12	226.50	20.60	0.46	16.82	3.84	29.00
2006			0.36	1.05	0.29	55.10	12.24	0.19	5.35	1.60	106.31
2007			36.10	63.93	0.06	92.12	25.53	0.83	13.70	2.98	43.16
2008			0.55	9.07	0.08	51.50	7.86	0.35	6.74	1.02	45.94
2009			7.29	6.48	0.30	13.30	7.29	0.33	8.56	5.91	35.83
2010			7.95	-	-	15.30	10.51	0.69	11.98	3.49	43.57
2011			70.63	11.64	0.68	34.50	15.80	22.32	7.89	3.30	89.22
2012			122.30	21.96	0.73	9.40	1.26	0.23	7.55	3.44	106.43
2013			13.20	7.01	0.52	22.60	15.55	0.39	13.49	4.47	71.78
2014			1.27	41.53	0.08	97.70	4.87	0.98	13.67	4.71	38.01
2015	0.21		46.47	30.91	0.46	56.00	2.27	1.44	10.22	3.88	76.46
2016	23.00	0.29	4.14	5.87	0.81	57.60	2.34	1.34	7.47	3.00	154.40
2017	0.30	0.00	32.25	8.20	0.43	59.20	4.13	3.74	5.18	1.44	101.98

**Table 7 (continued). Indices of relative weakfish abundance from 2000 to 2017. (Source: State compliance reports)**

Year	MD Tr ChesBay YOY	MD Tr Coast YOY	VA Tr ChesBay YOY	NC Tr Pamlico YOY	NC Tr Pamlico YOY	NC Gn Pamlico 1+	SC Tr Inshore YOY	SC SEAMAP Summer 0+/1+	SC SEAMAP Fall 0+/1+	GA Tr Coast 0+	FL Tr Jax YOY	FL Tr IR & Jax 1+
	GM#/ tow	GM#/ ha	GM#/ tow	#/ tow	#/ tow	#/ set	#/ tow	#/ tow	#/ tow	#/ obs hr	med/ tow	med/ tow
<b>2000</b>	6.54	2.34	8.35	62.99				20.30	5.10			
<b>2001</b>	8.10	2.56	5.09	30.30		1.42		19.20	5.40		0.79	0.23
<b>2002</b>	3.92	0.61	6.93	22.00		1.40		16.20	2.80		1.45	0.52
<b>2003</b>	4.89	5.64	9.23	23.93		1.22		14.20	3.90	105.44	4.35	0.34
<b>2004</b>	1.62	3.39	6.66	28.75		1.32		3.10	3.40	94.42	4.04	0.19
<b>2005</b>	3.55	4.98	5.69	28.76		1.24		1.80	9.40	32.08	1.83	0.73
<b>2006</b>	2.41	1.50	6.34	39.09		0.92		4.10	3.10	79.96	1.78	0.44
<b>2007</b>	1.60	2.32	5.35	56.80		0.43		11.40	18.40	159.64	1.68	0.46
<b>2008</b>	0.79	0.23	5.77	50.30		0.49		11.30	17.70	75.55	1.66	0.39
<b>2009</b>	1.42	1.33	6.18	58.89		0.31		15.30	11.90	104.76	2.12	1.17
<b>2010</b>	1.68	2.16	14.11	32.45		0.48		14.80	14.60	128.48	0.74	0.70
<b>2011</b>	2.04	1.90	5.23	33.69		0.36		74.10	13.90	104.20	0.74	0.52
<b>2012</b>	0.46	0.46	3.02	40.66		0.92		18.80	9.80	91.64	1.79	0.65
<b>2013</b>	2.15	1.02	9.41	58.53		0.69		25.50	0.20	131.52	0.69	0.12
<b>2014</b>	2.95	1.28	3.77	32.83		0.50		12.00	7.60	64.16	0.62	0.19
<b>2015</b>	2.23	0.88	3.77	43.30		0.30	19.30	18.20	257.80	89.84	1.08	0.03
<b>2016</b>	0.71	1.69	1.44	43.00	34.50	0.30	22.60	14.50	24.30	62.40	0.69	0.21
<b>2017</b>	0.65	0.54		41.90	19.10	0.31	26.60	1.46	5.73	44.30	0.49	0.27

**Table 8. Evaluation of the Coastwide Management Trigger** (Section 3.3.1 of Addendum II to Amendment 4): percent change of each state’s 2017 total landings (lbs) to its five-year (2013-2017) mean total landings.

	MA	RI	CT	NY	NJ	DE	MD	PRFC	VA	NC	SC	GA	FL
<b>2013-2017</b>	2,305	17,413	4,379	76,373	127,776	11,774	19,009	11	64,212	181,073	51,636	12,503	1,535
<b>2017</b>	5,283	17,243	3,956	48,693	231,100	3,719	6,686	5	41,996	141,384	58,510	47,776	2,237
<b>% change</b>	129%	-1%	-10%	-36%	81%	-68%	-65%	-52%	-35%	-22%	13%	282%	46%

**Table 9. Biological sampling of weakfish in 2017, Massachusetts-Florida** (Sampling requirements are based on Addendum I to Amendment 4 and 2017 landings data and are reported in state compliance reports. Requirements are based on recreational harvest estimates using the CHTS. Values highlighted with red bold font do not meet sampling requirements).

	Samples Required		Samples Completed		Fisheries Sampled
	Ages	Lengths	Ages	Lengths	
<b>MA*</b>	0	0	0	0	NA
<b>RI</b>	16	33	68	248	commercial, RIDFW Trawl Survey (legal/non-legal size reported)
<b>CT*</b>	0	0	0	0	NA
<b>NY</b>	42	84	48	<b>48</b>	commercial
<b>NJ</b>	27	18	57	116	NJ Ocean Trawl Survey/ research surveys
<b>DE</b>	8	14	15	16	commercial (GN)
<b>MD</b>	2	2	27	27	commercial (PN)
<b>PRFC</b>	0	0	0	0	NA
<b>VA</b>	74	115	253	2,813	commercial (GN, H&L, PN, HS)
<b>NC</b>	156	217	359	1,248	commercial (SN, GN, PN, HS, others), recreational
<b>SC</b>	12	0	107	727	fishery independent, recreational
<b>GA*</b>	0	0	0	0	NA
<b>FL*</b>	0	0	0	0	NA

\* *de minimis* in 2017; not required to conduct sampling; sample numbers provided to show from what states were exempt  
 NA=not applicable, GN= gill net, PN=pound net, H&L=hook and line, HS=haul seine, SN=sink net



XI. Figures

Figure 1. Estimated weakfish age 1+ biomass, fishing mortality, and natural mortality from 1982 to 2014 (ASMFC 2016).

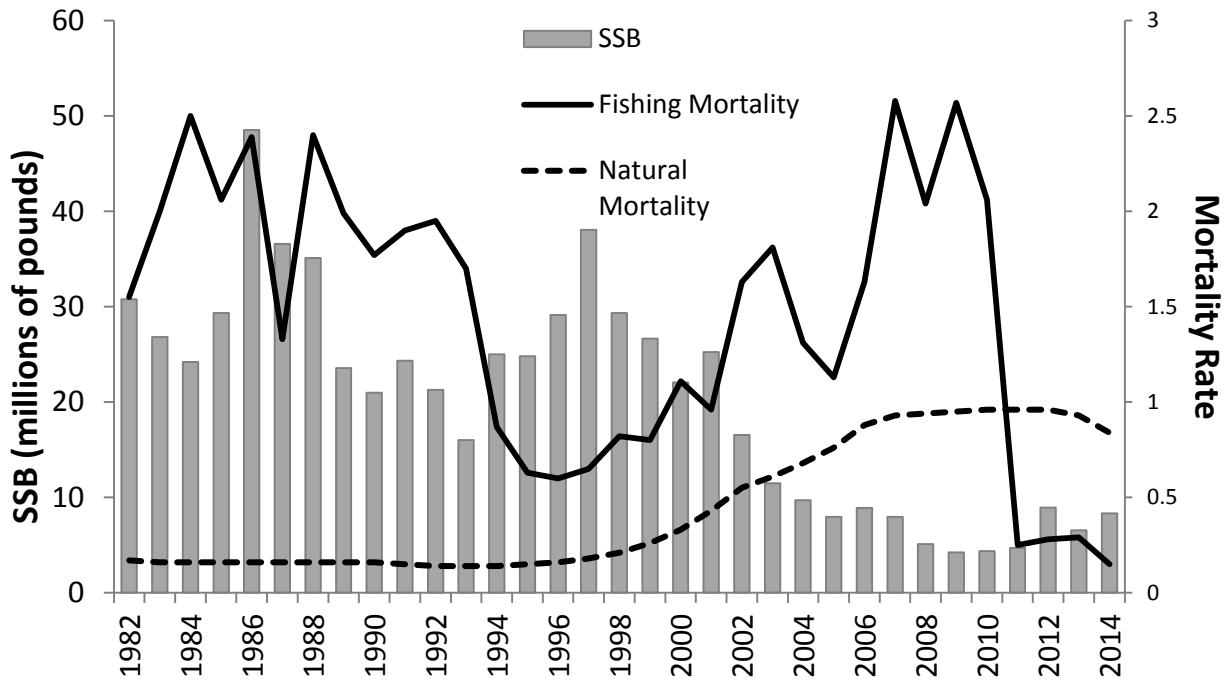
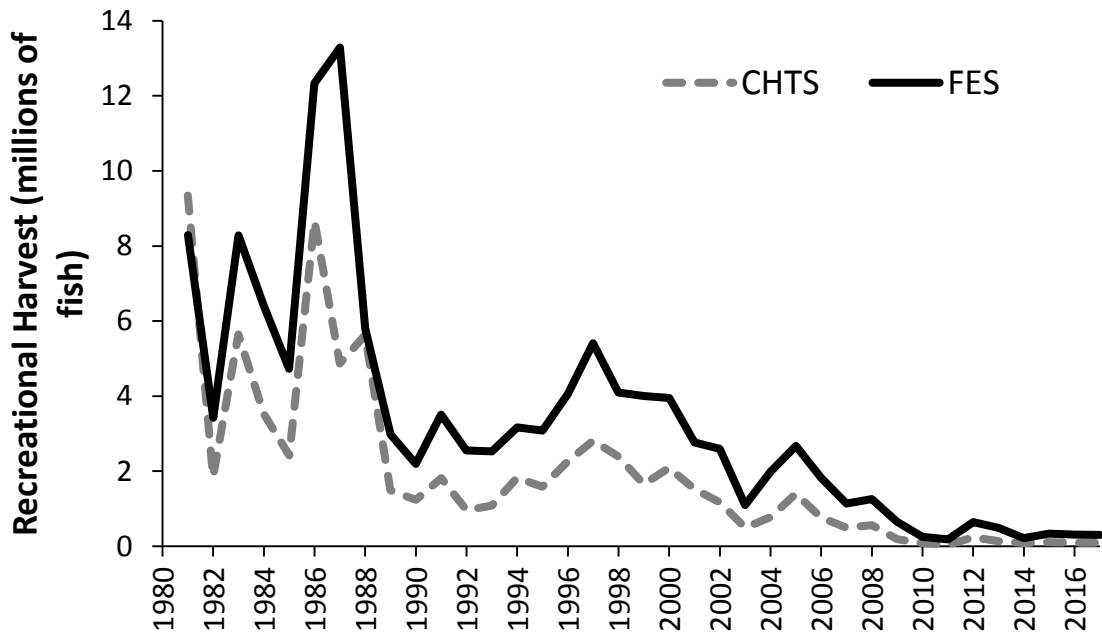
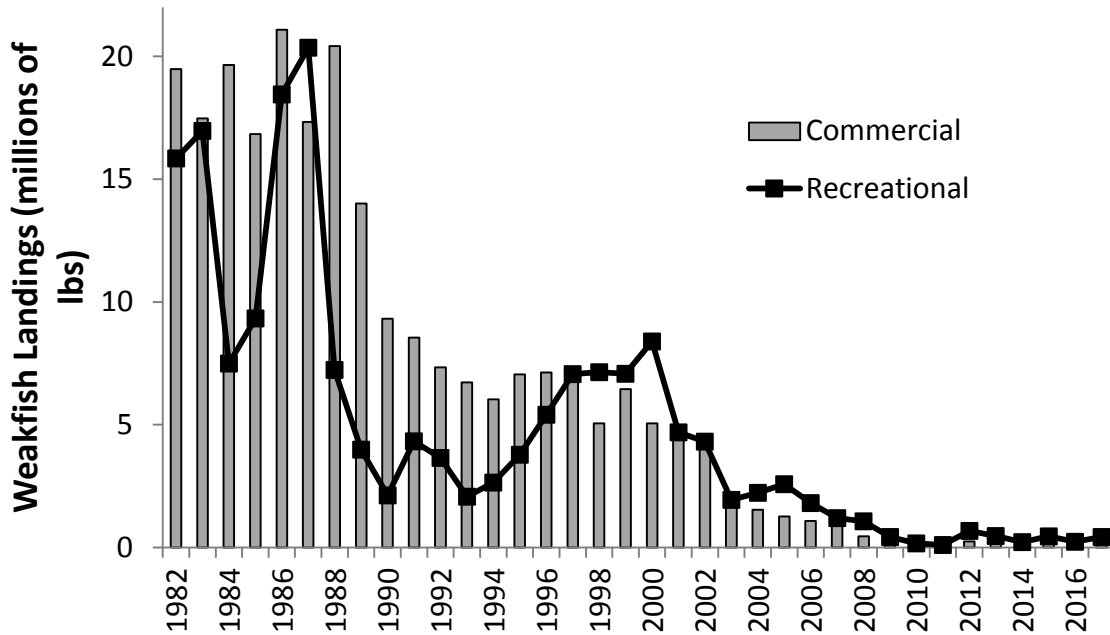


Figure 2. Recreational harvest estimated using the Coastal Household Telephone Survey (CHTS) and the mail-based Fishing Effort Survey (FES). (Source: personal communication with NOAA Fisheries, Fisheries Statistics Division. [10/06/2018])



**Figure 3. Commercial and recreational weakfish harvest (pounds), from 1982 to 2017 (see Tables 3 and 4 for source information and values).**



**Figure 4. Recreational weakfish harvest and releases (number of fish), from 1982 to 2017 (see Tables 5 and 6 for source information and values).**

