# REVIEW OF THE
# ATLANTIC STATES MARINE FISHERIES COMMISSION
# FISHERY MANAGEMENT PLAN FOR
# TAUTOG
# *(Tautoga onitis)*

**2018 Fishing Year**
(January 1 – December 31)

**Prepared by**:
Kirby Rootes-Murdy (ASMFC)

**Tautog Plan Review Team**
Kirby Rootes-Murdy, ASMFC, Chair
Nichole Ares, RI DEM
Linda Barry, NJ DEP
Nichola Meserve, MA DMF
Sabrina Lovell, NOAA

**2019 REVIEW OF THE**
**ASMFC FISHERY MANAGEMENT PLAN FOR**
**TAUTOG (*Tautoga onitis*)**
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## Management Summary

| | |
|---|---|
| Management Documents: | Fishery Management Plan - March 1996<br>Addendum I to FMP (May 1997)<br>Addendum II to FMP (November 1999)<br>Addendum III to FMP (February 2002)<br>Addendum IV to FMP (January 2007)<br>Addendum V to FMP (August 2007)<br>Addendum VI to FMP (March 2011, revised March 2012)<br>Amendment 1 to FMP (October 2017) |
| Management Unit: | US state waters from Massachusetts through Virginia[1]. |
| Declared Interest: | Massachusetts<br>Rhode Island<br>Connecticut<br>New York<br>New Jersey<br>Delaware<br>Maryland<br>Virginia<br>National Marine Fisheries Service<br>U.S. Fish & Wildlife Service |
| Active Boards/Committees: | Tautog Management Board (Board)<br>Tautog Plan Development Team (PDT)<br>Tautog Plan Review Team (PRT)<br>Tautog Technical Committee (TC)<br>Tautog Stock Assessment Subcommittee (SAS)<br>Tautog Advisory Panel (AP) |
| Stock Assessments: | Benchmark: 1999, 2005, 2015<br>Update: 2011 (revised in 2012), 2016 |

[1] North Carolina was originally included in the management unit, but as of 2017 was removed due to insignificant landings. North Carolina's landings will continue to be monitored.

# I. Status of Fishery Management Plan

***Fishery Management Plan for Tautog***

The original FMP responded to concerns about the vulnerability of tautog to overfishing and increasing fishing pressure in the early 1990s. It established goals and objectives for tautog management, and adopted a fishing mortality rate (F) target of 0.15 to rebuild the stocks and prevent overfishing; however, an interim target of 0.24 was applied for two years (1997–1998). States were required to implement state-specific, Board-approved plans to reduce F from the coastwide average of 0.58 (i.e., a 55% reduction), or an alternative state-specific F, if it could be demonstrated as equivalent. Recreational and commercial minimum size limits of 13" in 1997 and 14" beginning in 1998 were required. Tautog pots and traps were also required to have degradable fasteners on one panel or door.

***Addendum I***

Addendum I modified the FMP's compliance schedule to allow all states until April 1, 1998 to implement management measures to reach the interim F target. Several states were having difficulty determining a state-specific F to meet the original compliance schedule due to data deficiencies. In addition, the compliance schedule implemented the interim F target one year earlier in the area north of Delaware Bay (April 1, 1997) than further to the south (April 1, 1998). The addendum also delayed the implementation of management measures to achieve the permanent F target from April 1, 1999 to April 1, 2000. Finally, the Addendum included *de minimis* requirements and corrected several typographical errors in the FMP.

***Addendum II***

Addendum II further extended the compliance schedule to achieve the permanent F target until April 1, 2002 because the effects of the regulations to achieve the interim F target were uncertain. It also listed four issues to be considered in subsequent revisions of the FMP: (1) development of alternative F targets that will allow states to quantify harvest reductions associated with a variety of management approaches, (2) clarification of the F targets to be met by sector or overall state program, (3) monitoring requirements to improve fisheries and biological data collection, and (4) data requirements to analyze management options by fishing modes within commercial and recreational fisheries.

***Addendum III and Technical Addendum I***

Addendum III addressed the four issues listed in Addendum II. It adopted a new F target based on achieving 40% of the spawning stock biomass ($F_{40\% SSB}$), which was estimated at 0.29 (compared to the coastwide average F estimate of 0.41). The addendum required states to maintain current or more restrictive measures for 2002 and implement measures to achieve the new F target—a 48% reduction through restrictions in the recreational fishery only—by April 1, 2003. It also updated information on tautog habitat and established monitoring requirements to support stock assessments. Technical Addendum 1 corrected a typographical error in Addendum III.

***Addendum IV***

Addendum IV established SSB target and threshold reference points based on a benchmark stock assessment completed in 2005. The target was set as the average SSB over 1982–1991, and the threshold at 75% of this value. It also set a new F target of 0.20 to initiate rebuilding. States were required to implement recreational management programs to achieve a 28.6% reduction in F relative to 2005 (and maintain existing commercial management programs) by January 1, 2008.

***Addendum V***

As individual states developed management proposals to comply with Addendum IV's mandated reduction in fishing mortality, it became apparent that commercial harvest of tautog had grown in proportion to the recreational fishery in some states. The Board approved Addendum V to give states flexibility for implementing reductions in their recreational *and/or* commercial fisheries to reach the fishing mortality target rate of F = 0.20 established in Addendum IV by January 1, 2008.

***Addendum VI***

Based on the 2011 stock assessment update indicating that tautog were still overfished and experiencing overfishing, Addendum VI reduced the F target to 0.15 to rebuild the stock. States were required to implement Board-approved regulations in their commercial and/or recreational fisheries to reduce harvest by 39%. The addendum also allowed for regional considerations if a state or group of states could demonstrate that the local F is below the rates indicated in the stock assessment update.

***Amendment 1***

Amendment 1 replaced the original FMP, with an implementation date of April 1, 2018 for most measures. Major revisions to the FMP include: new goals and objectives, establishment of four tautog stocks for regional recreational and commercial management, and creation of a commercial harvest tagging program (implementation in 2020).

*Goals:*

- To sustainably manage tautog over the long-term using regional differences in biology and fishery characteristics as the basis for management.
- To promote the conservation and enhancement of structured habitat to meet the needs of all stages of tautog's life cycle.

*Objectives:*

- To develop and implement management strategies to rebuild tautog stocks to sustainable levels (reduce fishing mortality to the target and restore spawning stock biomass to the target), while considering ecological and socio-economic impacts.
- To adopt compatible management measures among states within a regional management unit.
- To encourage compatible regulations between the states and the EEZ, which includes enacting management recommendations that apply to fish landed in each state (i.e., regulations apply to fish caught both inside and outside of state waters).

- To identify important habitat and environmental quality factors that support the long-term maintenance and productivity of sustainable tautog populations throughout their range.
- To promote cooperative interstate biological, social, and economic research, monitoring and law enforcement.
- To encourage sufficient monitoring of the resource and collection of additional data, particularly in the southern portion of the species range, that are necessary for development of effective long-term management strategies and evaluation of the management program.
- To work with law enforcement to minimize factors contributing to illegal harvest.

*Regional Management:* Based on the 2016 regional stock assessment, Amendment 1 delineates the stock into four regions due to differences in biology and fishery characteristics: Massachusetts - Rhode Island (MARI); Long Island Sound (LIS); New Jersey - New York Bight (NJ-NYB); and Delaware - Maryland - Virginia (DelMarVa). The four regions are required to implement measures to achieve the regional fishing mortality target with at least a 50% probability.

The 2016 assessment found that all regions except MARI were overfished, and overfishing was occurring in the LIS and NJ-NYB regions in 2015. As such, Amendment 1 requires the LIS region to reduce harvest by at least 20.3%, and the NJ-NYB region to reduce harvest by at least 2%. The MARI and DelMarVa regions were not required to reduce harvest, but established regional measures.

*Commercial Harvest Tagging Program:* Amendment 1 also establishes a commercial harvest tagging program to address an illegal, unreported and undocumented fishery. Implementation of the program is scheduled for 2020.

## II. Status of the Stocks

Current stock status is based on the 2016 stock assessment update. The assessment evaluates each of the four regions—MARI, LIS, NJ–NYB, and DelMarVa–separately using the ASAP statistical catch-at-age model with landings and index data through 2015. The assessment update indicated that all regions except MARI were overfished in 2015. It also found overfishing was occurring in the LIS and NJ-NYB regions in 2015. Overfishing was not occurring in the MARI nor DelMarVa regions. F was at the target in the DelMarVa region. The current overfishing and overfished definitions for management use are shown in Table 1, and spawning stock biomass (SSB) for each region relative to the respective targets and thresholds are shown in Figures 1-4. It is important to note that the status determinations were made using spawning potential ratio (SPR) reference points for the MARI, NJ-NYB and DelMarVa regions, and maximum sustainable yield (MSY) reference points for the LIS region.

## III. Status of Assessment Advice

The current reference points for this fishery are based on a regional stock assessment update that includes data through 2015. The peer review panel in the 2005 and 2015 benchmark stock assessments advised a regional approach for tautog because of the potential for sub-stock structure; this species does not appear to make north-south migrations. The 2015 benchmark stock assessment peer review panel also endorsed the use of estimates from the ASAP regional model and supported use of the new reference points in conjunction with a regional management approach. A regional approach with new reference points has been adopted for management use through Amendment 1.

Since the last assessment, NOAA Fisheries has implemented improvements to the Marine Recreational Information Program's survey methodology for estimating recreational catch. A multi-year transition of the methods was completed in 2018, requiring the catch estimates for 1981–2017 to be calibrated for comparison to all subsequent years' estimates. Changes to the original 1981–2017 catch estimates are significant; for example, annual coastwide harvest (by weight) increased in all years—by 27% to 323%—after calibration. The next tautog stock assessment, tentatively scheduled as an update in 2021, will include the revised time series of recreational catch estimates. ***All recreational catch estimates included in this report reflect the current MRIP survey methodology.***

## IV. Status of the Fishery

Total Harvest

Between 1981 and 2018[2], total coastwide tautog harvest (recreational + commercial) peaked at 22.5 million pounds in 1986. Harvest has since significantly declined, even before state regulations were implemented to restrict them. Total harvest during the ASMFC managed period (1997–2018) has averaged 7.5 million pounds per year (Figure 5, Table 2).

Recreational Harvest

Tautog is predominantly taken by the recreational fishery: 95% on average, by weight (Table 2). Coastwide, anglers harvested historic highs of over 21 million pounds of tautog in 1986 and 1992 (Figure 5). Since then, harvest has declined, fluctuating between 3.4 million pounds (in 2018) and 11.8 million pounds (in 2014). Most recreational harvest occurs in September–December (Figure 6). At the state level, Rhode Island and New Jersey anglers harvested the most tautog in 2018 (Tables 4 and 5) though high harvesting states have varied significantly in recent years (Figure 7).

Recreational live discards have generally increased relative to harvest over the time series. Prior to the FMP's implementation in 1996, discards were usually less than harvest, but since then the estimated number of fish discarded annually has been several times greater than the harvested number (Table 4). In 2018, live discards were nine times the estimated harvest. A

[2] Systematic recreational data collection for tautog began in 1981, while commercial data exists back to 1950.

discard mortality rate of 2.5% is assumed for the recreational tautog fishery, resulting in an estimated 239,252 recreational dead discards in 2018. This equates to 18% of recreational removals.

Commercial Landings

Historically, tautog was considered a "trash fish" until the late 1970s, when demand increased, and a directed commercial fishery developed. Landings quickly rose, peaking in 1987 at nearly 1.2 million pounds, then rapidly began to decline. In 1992, states began to implement commercial regulations, which contributed to a decline in landings (Figure 8, Table 2). The price (dollars per pound) for tautog has steadily increased since the late 1970s. In 2018, the coastwide average price reached $3.98 per pound (Figure 8).

Commercial landings accounted for 5% of total coastwide harvest in 2018. In some states commercial landings were more significant, e.g., 25% of New York's total 2018 harvest (Table 3). New York also had the most commercial landings of tautog in 2018, with Massachusetts landing the second greatest amount (Table 6). Data on commercial discards are not available.

## V. Status of Research and Monitoring

Addendum III requires all states to collect the following data to continue support of a coast-wide stock assessment: commercial and recreational catch estimates, and 200 age and length samples per state, within the range of lengths commonly caught by the fisheries[3]. Table 9 lists the number and source of samples collected by states in 2018.

Ongoing fishery-independent and fishery-dependent monitoring programs performed by each state are summarized in Tables 10 and 11, respectively. Details of monitoring results are found in the state compliance reports.

## VI. Status of Management Measures and Issues

Amendment 1 to the Tautog Fishery Management Plan was approved by the Board in October 2017. All measures within the plan, including regional management programs, have been implemented as of January 2018 with the exception of the commercial tagging program. The commercial tagging program is currently being developed by state and ASMFC staff and has a tentative implementation date of January 1, 2020.

## VII. Implementation of FMP Compliance Requirements

### A. Submission of Compliance Report

[3] Addendum III also required a suitable time series of fisheries independent indices of abundance as determined by the Tautog Technical Committee; however, the TC has not defined this and as such there are no fishery independent monitoring requirements.

All states in the tautog management unit submitted state compliance reports for the 2018 fishing year.

**B. De Minimis Status Requests**

A state may apply for *de minimis* status with regards to its commercial fishery. To qualify for *de minimis* status a state must prove that its commercial landings in the most recent year for which data are available did not exceed 10,000 pounds or 1% of the regional commercial landings, whichever is greater. States must request *de minimis* status each year, and requests for *de minimis* status will be reviewed by the PRT as part of the annual FMP review process.

If *de minimis* status is granted, the *de minimis* state is required to implement the commercial minimum size provisions, the pot and trap degradable fastener provisions, and regulations consistent with those in the recreational fishery (including possession limits and seasonal closures). The state must monitor its landings on at least an annual basis. If granted *de minimis* status, a state must continue to collect the required 200 age/length samples. *De minimis* status does not impact a state's compliance requirements in the recreational fishery.

The commercial landings threshold for *de minimis* status for 2018 in each region is 10,000 pounds. The states of Delaware and Maryland have requested and qualify for continued *de minimis status* for the commercial sector. The PRT recommends that the Board approve the states of Delaware and Maryland's requests.

**C. Regulatory Requirements: 14" minimum size limit for recreational and commercial fisheries; degradable fasteners on one panel or door in fish pots and traps; and regional management programs to achieve the required regional target F.**

State regulations are summarized in Tables 7 and 8. Nearly every state adjusted their commercial and recreational measures to comply with the provisions of Amendment 1.The PRT finds that each state has met the regulatory requirements and recommends the Board find all states in compliance with the regulatory requirements.

**D. Biological Sampling Requirements: commercial and recreational catch estimates; and 200 age/length samples (Addendum III)**

Nearly all states collected 200 or more age/length samples in 2018 as required by Addendum III (Table 9). New York, Delaware and Virginia fell short of the required number of samples, with 148, 134, and 26 samples, respectively. New York noted difficulty in obtaining samples from fish markets at times because the racks were being sold. In past years, NYSDEC had been able to obtain samples via contractor; however, the agreement ended in June 2017 and has not been renewed. In Virginia, much of samples are collected through a donation freezer as part of the Marine Sportfish Collection program. In 2018, the marina where the donation freezer was located closed and freezer was removed, significantly reducing the number of samples

collected. Delaware indicated they have been challenged to collect 200 samples from the recreational fishery due to less cooperation in receiving donated fish from recreational for-hire trips.

The PRT finds that all states met (or tried to meet) the intent of the sampling requirements and recommends the Board find all states in compliance with the sampling requirements of the FMP. Additionally, the PRT noted the need to maintain the 200 sample requirement as the Technical Committee has indicated this is the minimum number of samples needed.

## VIII. Prioritized Research Needs

The Technical Committee identified the following research recommendations to improve the stock assessment and our understanding of tautog population and fishery dynamics. Research recommendations are organized by topic and level of priority. Research recommendations that should be completed before the next benchmark assessment are underlined. The Technical Committee will update these recommendations as part of the next benchmark stock assessment.

### 8.1 Fishery-Dependent Priorities

***High***

- Expand biological sampling of the commercial catch for each gear type over the entire range of the stock (including weight, lengths, age, sex, and discards).
- Continue collecting opercula from the tautog catch as the standard for biological sampling in addition to collecting paired sub-samples of otoliths and opercula.
- Increase catch and discard length sampling from the commercial and recreational fishery for all states from Massachusetts through Virginia.
- Increase collection of effort data for determining commercial and recreational CPUE.
- Increase MRIP sampling levels to improve recreational catch estimates by state and mode. Current sampling levels are high during times of the year when more abundant and popular species are abundant in catches, but much lower in early spring and late fall when tautog catches are more likely.

### 8.2 Fishery-Independent Priorities

***High***

- Conduct workshop and pilot studies to design a standardized, multi-state fishery independent survey for tautog along the lines of MARMAP and the lobster ventless trap survey.

- Establish standardized multi-state long-term fisheries-independent surveys to monitor tautog abundance and length-frequency distributions, and to develop YOY indices.
- Enhance collection of age information for smaller fish (<20 cm) to better fill in age-length keys

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

***Moderate***

- Define local and regional movement patterns and site fidelity in the southern part of the species range. This information may provide insight into questions of aggregation versus recruitment to artificial reef locations, and to clarify the need for local and regional assessment.
- Assemble regional reference collections of paired operculum and otolith samples and schedule regular exchanges to maintain and improve the precision of age readings between states that will be pooled in the regional age-length keys.
- Calibrate age readings every year by re-reading a subset of samples from previous years before ageing new samples. States that do not currently assess the precision of their age readings over time should do so by re-ageing a subset of their historical samples.

***Low***

- Evaluate the potential impacts of climate change on tautog range, life history, and productivity.
- Conduct a tag retention study to improve return rates, particularly in the northern region.
- Define the status (condition and extent) of optimum or suitable juvenile habitats and trends in specific areas important to the species. It is critical to protect these habitats or to stimulate restoration or enhancement, if required.
- Define the specific spawning and pre-spawning aggregating areas and wintering areas of juveniles and adults used by all major local populations, as well as the migration routes used by tautog to get to and from spawning and wintering areas and the criteria or times of use. This information is required to protect these areas from damage and overuse or excessive exploitation.
- Define larval diets and prey availability requirements. This information can be used as determinants of recruitment success and habitat function status. Information can also be used to support aquaculture ventures with this species.
- Define the role of prey type and availability in local juvenile/adult population dynamics over the species range. This information can explain differences in local abundance, movements, growth, fecundity, etc. Conduct studies in areas where the availability of primary prey, such as blue mussels or crabs, is dependent on annual recruitment, the effect of prey recruitment variability as a factor in tautog movements (to find better

prey fields), mortality (greater predation exposure when leaving shelter to forage open bottom), and relationship between reef prey availability/quality on tautog condition/fecundity.

- Define the susceptibility of juveniles to coastal/anthropogenic contamination and resulting effects. This information can explain differences in local abundance, movements, growth, fecundity, and serve to support continued or increased regulation of the inputs of these contaminants and to assess potential damage. Since oil spills seem to be a too frequent coastal impact problem where juvenile tautog live, it may be helpful to conduct specific studies on effects of various fuel oils and typical exposure concentrations, at various seasonal temperatures and salinities. Studies should also be conducted to evaluate the effect of common piling treatment leachates and common antifouling paints on YOY tautog. The synergistic effects of leaked fuel, bilge water, treated pilings, and antifouling paints on tautog health should also be studied.
- Define the source of offshore eggs and larvae (in situ or washed out coastal spawning).
- Confirm that tautog, like cunner, hibernate in the winter, and in what areas and temperature thresholds, for how long, and if there are special habitat requirements during these times that should be protected or conserved from damage or disturbance. This information will aid in understanding behavior variability and harvest availability.

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

***Moderate***

- Collect data to assess the magnitude of illegal harvest of tautog and the efficacy of the tagging program.

***Low***

- Collect basic sociocultural data on tautog user groups including demographics, location, and aspects of fishing practices such as seasonality.

## Figures & Tables

**Figure 1. Estimated spawning stock biomass, with target and threshold levels, for MARI region.**
Source: 2016 ASMFC Tautog Stock Assessment Update.

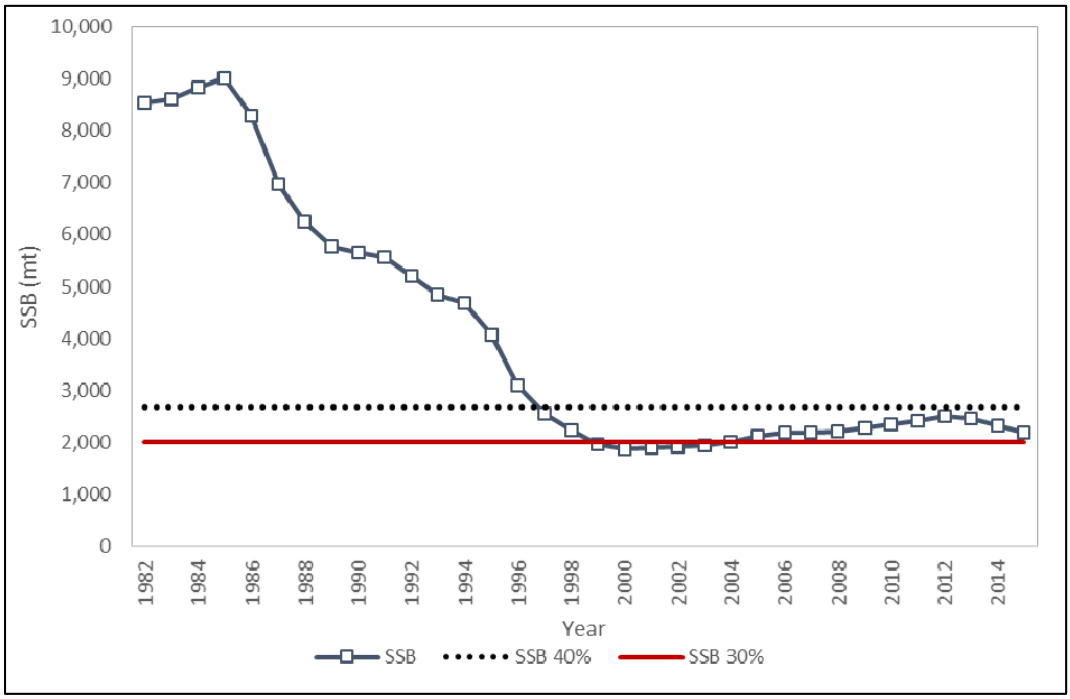


**Figure 2. Estimated spawning stock biomass, with target and threshold levels, for LIS region.**
Source: 2016 ASMFC Tautog Stock Assessment Update.

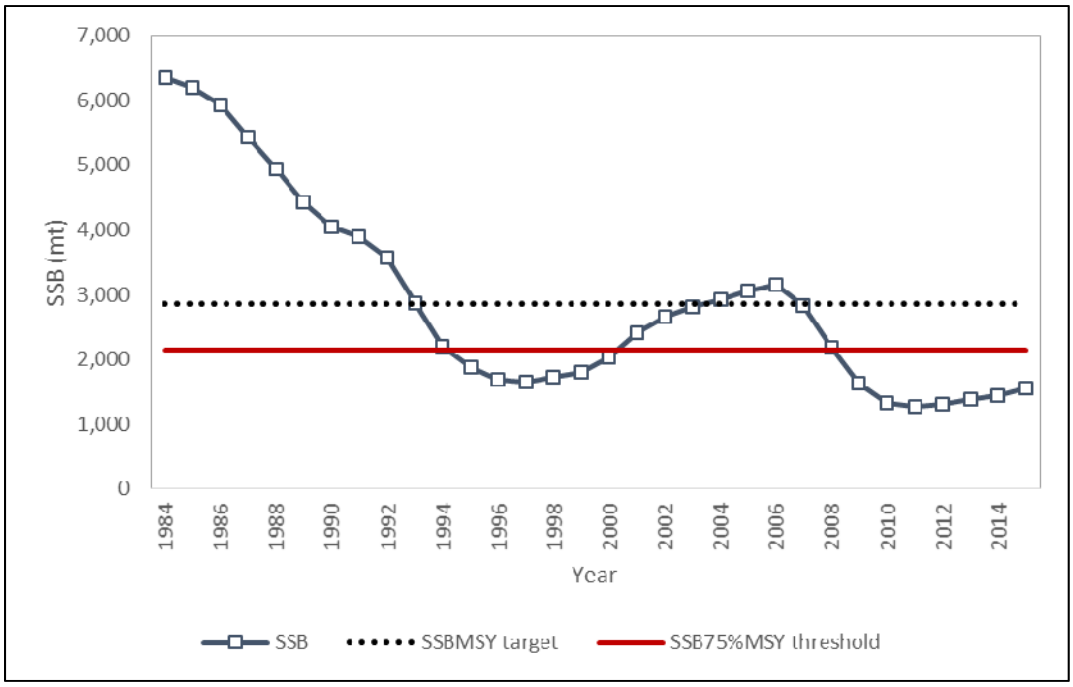

**Figure 3. Estimated spawning stock biomass, with target and threshold levels, for NJ-NYB region.**
Source: 2016 ASMFC Tautog Stock Assessment Update.

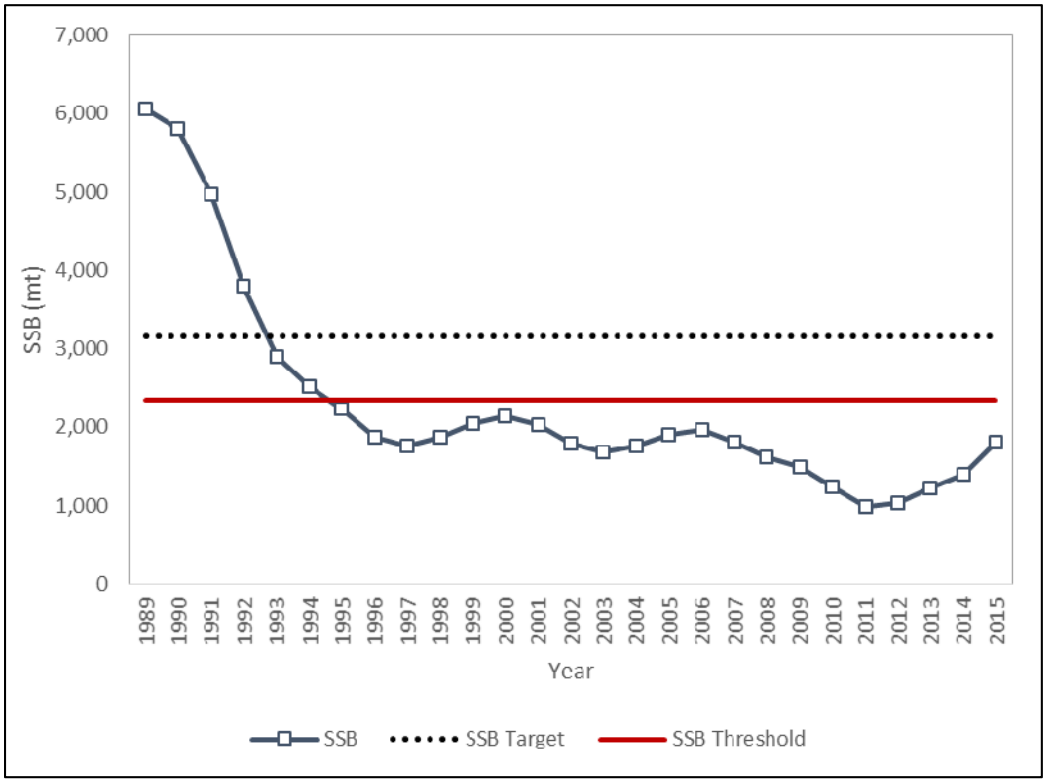


**Figure 4. Estimated spawning stock biomass, with target and threshold levels, for DelMarVa region.**
Source: 2016 ASMFC Tautog Stock Assessment Update.

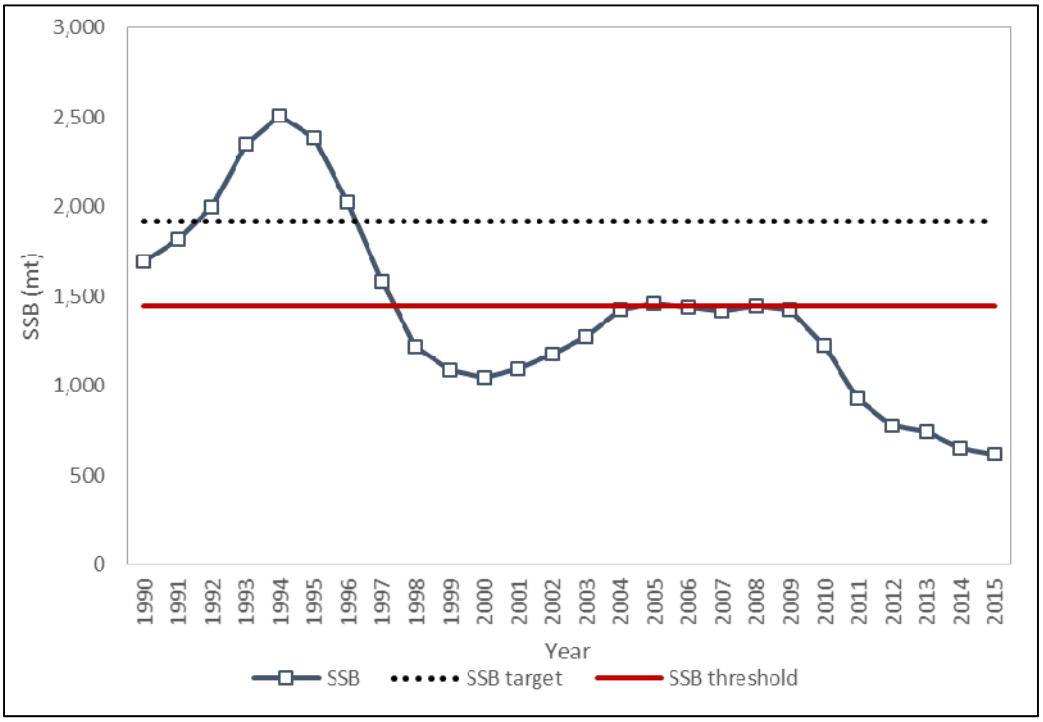

**Figure 5. Total tautog harvest (recreational and commercial), 1981–2018.**
Source: NMFS, MRIP.

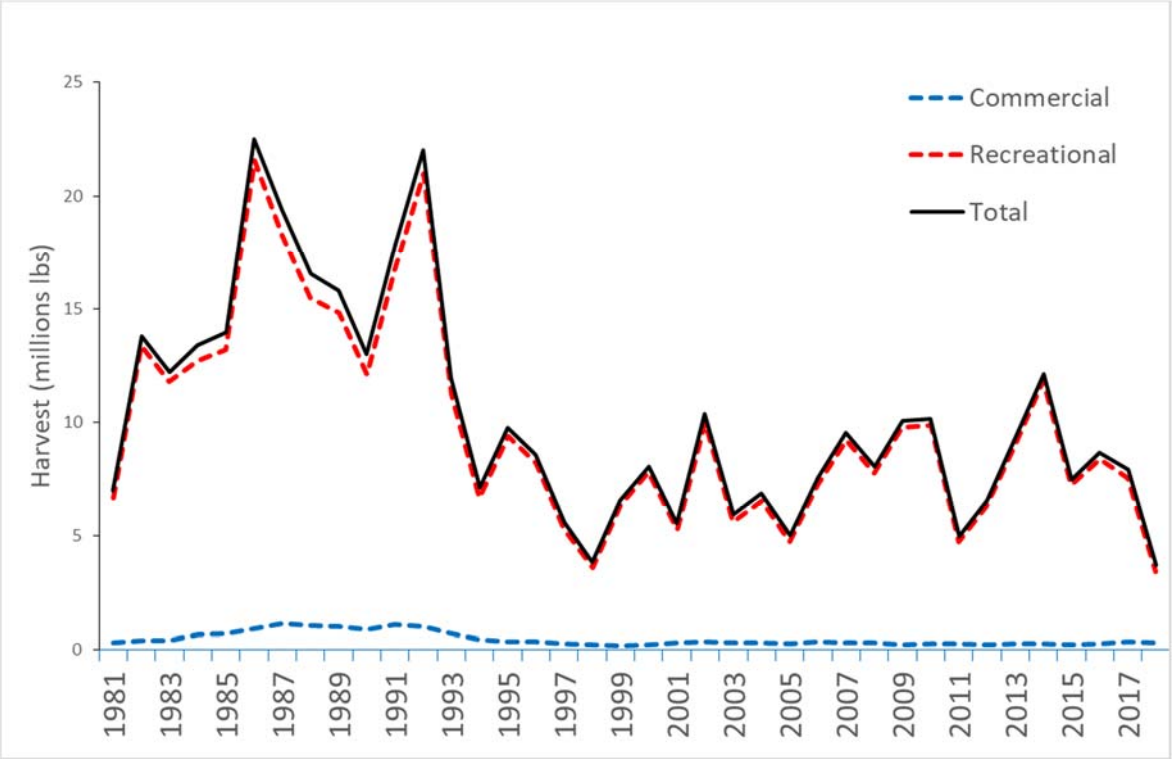


**Figure 6. Percent of annual recreational tautog harvest by wave (2016-2018).** Source: MRIP.

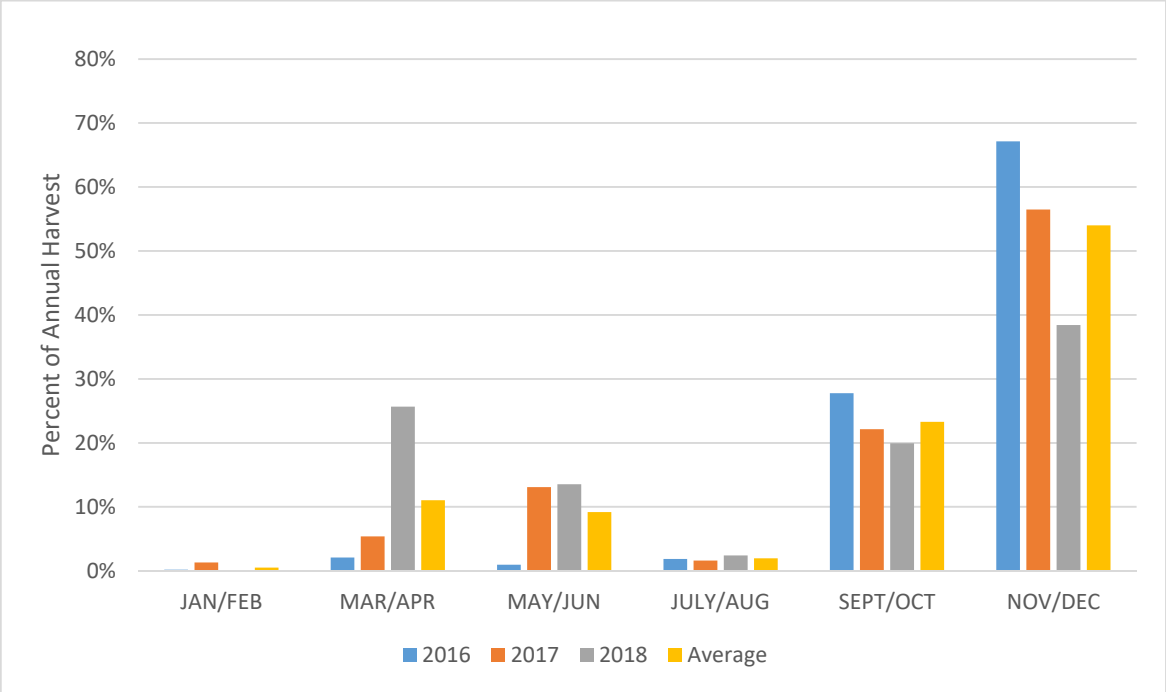

**Figure 7. Percent of annual recreational tautog harvest by state (2016-2018).** Source: MRIP

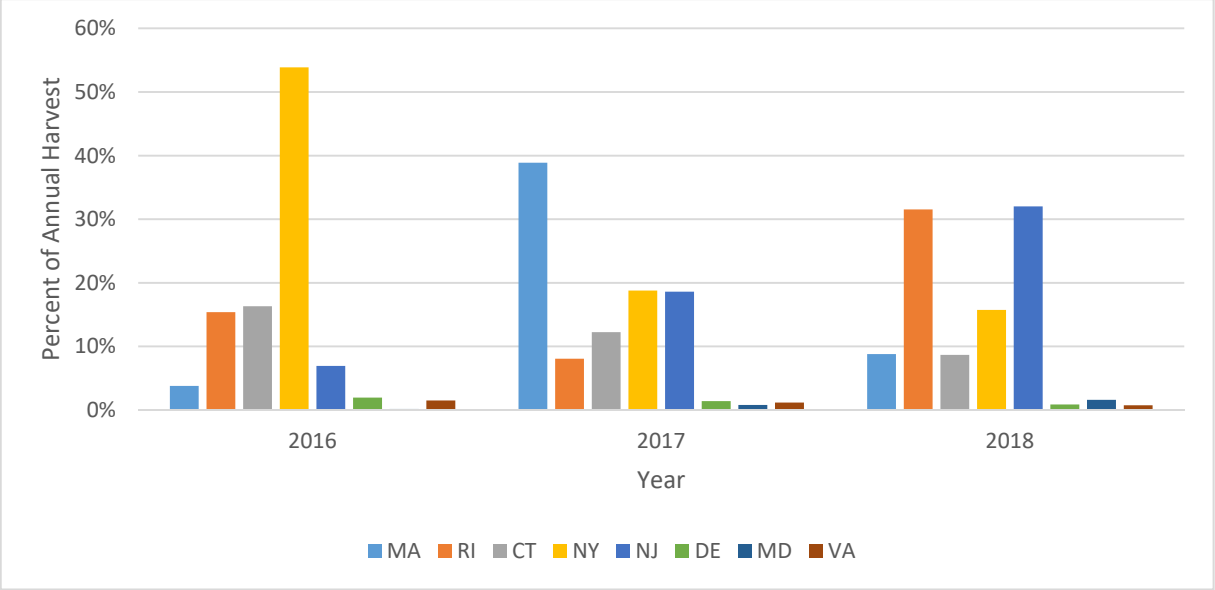


**Figure 8. Changes in tautog commercial landings (lbs) and price ($/lb) over time, 1950–2018.** Source: NMFS. Price unadjusted for inflation.

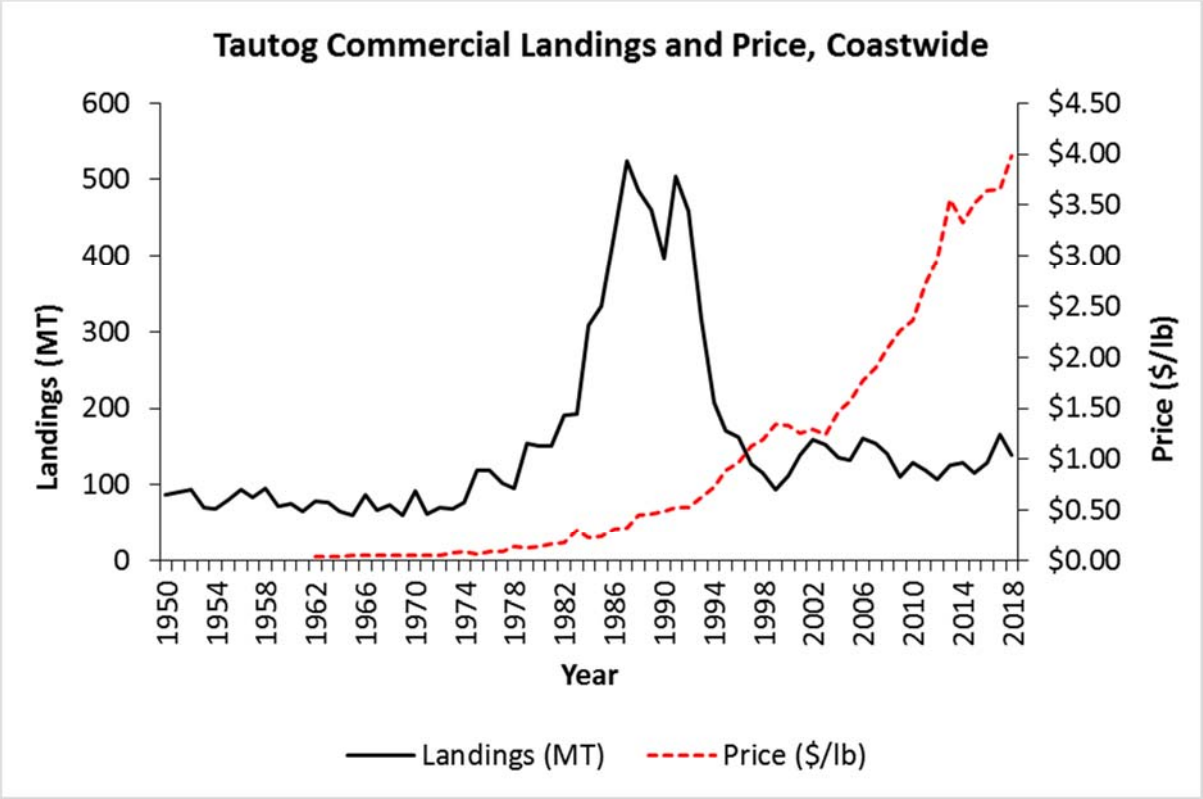

**Table 1. Current fishing mortality and biomass targets and thresholds for each region, and stock status in 2015. Source: ASMFC 2016 Tautog Assessment Update.**

| Region | $F_{target}$ | $F_{threshold}$ | $F_{3yravg}$ | $SSB_{target}$ | $SSB_{threshold}$ | $SSB_{2015}$ | MSY or SPR | Status |
|---|---|---|---|---|---|---|---|---|
| MARI | 0.28 | 0.49 | 0.23 | 2,684 mt | 2,004 mt | 2,196 mt | SPR | Not overfished, overfishing not occurring |
| LIS | 0.28 | 0.49 | 0.51 | 2,865 mt | 2,148 mt | 1,603 mt | MSY | Overfished, overfishing |
| NJ-NYB | 0.20 | 0.34 | 0.54 | 3,154 mt | 2,351 mt | 1,809 mt | SPR | Overfished, overfishing |
| DelMarVa | 0.16 | 0.24 | 0.16 | 1,919 mt | 1,447 mt | 621 mt | SPR | Overfished, overfishing not occurring |

**Table 2. Tautog recreational and commercial landings, 1981–2018, in pounds.**
Source: State Compliance Reports, NMFS, and ACCSP Data Warehouse.

| Year | Commercial Landings (lbs) | Recreational Harvest, A + B1 (lbs) | Total Harvest (lbs) | % Recreational |
|---|---|---|---|---|
| **1981** | 331,900 | 6,657,814 | 6,989,714 | 95.3 |
| **1982** | 419,556 | 13,352,817 | 13,772,373 | 97.0 |
| **1983** | 425,519 | 11,781,286 | 12,206,805 | 96.5 |
| **1984** | 677,615 | 12,730,550 | 13,408,165 | 94.9 |
| **1985** | 734,370 | 13,214,787 | 13,949,157 | 94.7 |
| **1986** | 940,806 | 21,574,556 | 22,515,362 | 95.8 |
| **1987** | 1,157,100 | 18,245,557 | 19,402,657 | 94.0 |
| **1988** | 1,070,814 | 15,491,783 | 16,562,597 | 93.5 |
| **1989** | 1,016,431 | 14,795,435 | 15,811,866 | 93.6 |
| **1990** | 873,505 | 12,113,635 | 12,987,140 | 93.3 |
| **1991** | 1,110,111 | 16,749,359 | 17,859,470 | 93.8 |
| **1992** | 1,012,172 | 21,005,700 | 22,017,872 | 95.4 |
| **1993** | 698,440 | 11,233,660 | 11,932,100 | 94.1 |
| **1994** | 459,490 | 6,655,117 | 7,114,607 | 93.5 |
| **1995** | 375,567 | 9,398,724 | 9,774,291 | 96.2 |
| **1996** | 357,434 | 8,218,590 | 8,576,024 | 95.8 |
| **1997** | 280,912 | 5,314,384 | 5,595,296 | 95.0 |
| **1998** | 254,186 | 3,611,576 | 3,865,762 | 93.4 |
| **1999** | 207,981 | 6,350,388 | 6,558,369 | 96.8 |
| **2000** | 247,177 | 7,795,564 | 8,042,741 | 96.9 |
| **2001** | 305,193 | 5,249,781 | 5,554,974 | 94.5 |
| **2002** | 350,820 | 9,998,665 | 10,349,485 | 96.6 |
| **2003** | 336,685 | 5,630,853 | 5,967,538 | 94.4 |
| **2004** | 300,749 | 6,546,309 | 6,847,058 | 95.6 |
| **2005** | 289,984 | 4,755,445 | 5,045,429 | 94.3 |
| **2006** | 355,504 | 7,219,077 | 7,574,581 | 95.3 |
| **2007** | 340,925 | 9,189,558 | 9,530,483 | 96.4 |
| **2008** | 310,940 | 7,758,609 | 8,069,549 | 96.1 |
| **2009** | 243,644 | 9,801,365 | 10,045,009 | 97.6 |
| **2010** | 286,081 | 9,863,150 | 10,149,231 | 97.2 |
| **2011** | 263,241 | 4,740,790 | 5,004,031 | 94.7 |
| **2012** | 236,974 | 6,315,699 | 6,552,673 | 96.4 |
| **2013** | 275,839 | 9,017,101 | 9,292,940 | 97.0 |
| **2014** | 282,624 | 11,831,114 | 12,113,738 | 97.7 |
| **2015** | 255,915 | 7,246,071 | 7,501,986 | 96.6 |
| **2016** | 283,906 | 8,392,901 | 8,676,807 | 96.7 |
| **2017** | 364,736 | 7,546,839 | 7,911,575 | 95.4 |
| **2018** | 309,568 | 3,413,926 | 3,723,494 | 91.7 |
| **Average** | 474,853 | 9,758,119 | 10,232,927 | 95 |

**Table 3. 2018 tautog landings by sector: percent recreational and commercial by weight.**

| State | Commercial Landings (%) | Recreational (A+B1) (%) |
|---|---|---|
| **MA** | 16.9 | 83.1 |
| **RI** | 4.6 | 95.4 |
| **CT** | 2.4 | 97.6 |
| **NY** | 25.8 | 74.2 |
| **NJ** | 0.1 | 99.9 |
| **DE** | 1.0 | 99.0 |
| **MD** | 0.5 | 99.5 |
| **VA** | 16.7 | 83.3 |
| **NC** | 2.2 | 97.8 |
| **Coastwide** | 8.3 | 91.7 |

**Table 4. Tautog recreational harvest (A+B1) by state and coastwide discards, in number of fish, 1981-2018.**
Source: MRFSS/MRIP (calibrated estimates), queried July 11, 2019. *indicates PSE above 50

| Year | MA | RI | CT | NY | NJ | DE | MD | VA | NC | Coastwide Harvest | Live Discards | Dead Discards |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1981 | 102,070* | 704,618 | 178,819 | 1,221,708 | 238,233* | 9,578* | 623* | 333,400* | 16,236* | 2,805,285 | 682,377 | 17,059 |
| 1982 | 1,214,730 | 595,042 | 402,784 | 942,912 | 624,103 | 194,937 | 92,693* | 391,278 | 21,023* | 4,479,502 | 509,584 | 12,740 |
| 1983 | 691,922 | 730,507 | 344,717 | 823,426 | 1,758,296 | 13,420 | 3,929* | 968,723 | 30,009 | 5,364,949 | 1,535,496 | 38,387 |
| 1984 | 629,491 | 675,421 | 682,458 | 837,951 | 2,747,894* | 8,685 | 26,662* | 509,701 | NA | 6,118,263 | 1,174,842 | 29,371 |
| 1985 | 116,723 | 403,944* | 290,547 | 2,630,603 | 1,769,597 | 38,875 | 631* | 681,972* | 30,989* | 5,963,881 | 1,696,927 | 42,423 |
| 1986 | 1,670,662 | 945,557 | 681,444 | 1,704,705 | 2,490,421 | 152,270 | 5,108* | 778,796 | 16,004* | 8,444,967 | 1,650,569 | 41,264 |
| 1987 | 1,113,866 | 273,398 | 604,411 | 1,424,534 | 3,275,152* | 298,648 | 187,281* | 239,543 | 4,329* | 7,421,162 | 3,189,571 | 79,739 |
| 1988 | 1,443,548 | 495,537 | 413,126 | 1,703,617 | 1,223,636 | 163,119 | 31,257* | 287,857 | 7,307* | 5,769,004 | 2,515,852 | 62,896 |
| 1989 | 501,239 | 373,955 | 770,503 | 898,115 | 2,045,556 | 502,012 | 79,803* | 589,848 | 25,312 | 5,786,343 | 2,230,076 | 55,752 |
| 1990 | 836,670 | 342,916 | 198,883 | 1,723,456 | 1,596,558 | 117,163 | 52,384 | 429,190* | 8,275* | 5,305,495 | 2,839,700 | 70,993 |
| 1991 | 389,000 | 1,105,100 | 276,495 | 1,467,713 | 1,713,382 | 183,576 | 60,483 | 558,668* | 9,821 | 5,764,238 | 4,195,634 | 104,891 |
| 1992 | 1,533,134 | 764,459 | 507,384 | 791,396 | 2,198,641 | 118,276 | 173,944* | 308,968* | 11,993* | 6,408,195 | 3,520,928 | 88,023 |
| 1993 | 475,757 | 235,964 | 414,334 | 633,942 | 1,521,542 | 233,449 | 77,140* | 782,635 | 6,685* | 4,381,448 | 3,803,124 | 95,078 |
| 1994 | 128,738 | 174,771 | 444,155 | 427,604 | 307,241 | 95,735 | 295,465 | 324,785 | 2,107 | 2,200,601 | 2,842,223 | 71,056 |
| 1995 | 148,722 | 114,142 | 233,762 | 195,001* | 1,311,043 | 408,528 | 127,394* | 622,205 | 5,954 | 3,166,751 | 3,815,969 | 95,399 |
| 1996 | 216,698 | 143,609 | 150,523 | 122,153 | 1,186,204 | 116,010 | 72,805* | 636,163 | 8,714 | 2,652,879 | 3,196,688 | 79,917 |
| 1997 | 78,669 | 174,516 | 83,153 | 156,487 | 573,479 | 117,773 | 193,521 | 161,549 | 15,008 | 1,554,155 | 2,443,651 | 61,091 |
| 1998 | 81,038 | 122,830 | 110,246 | 149,594 | 24,693 | 149,391 | 16,252* | 183,083 | 17,145* | 854,272 | 3,030,403 | 75,760 |
| 1999 | 302,890 | 191,287 | 44,581* | 407,886 | 279,728 | 267,875 | 23,468* | 77,898 | 9,450 | 1,605,063 | 5,413,107 | 135,328 |
| 2000 | 347,448 | 152,459 | 68,080* | 203,145* | 986,483 | 188,453 | 63,231* | 40,542 | 21,359 | 2,071,200 | 3,531,333 | 88,283 |
| 2001 | 246,811* | 86,818 | 51,941 | 118,267 | 819,588 | 69,987 | 57,984* | 39,132 | 7,702 | 1,498,230 | 4,264,960 | 106,624 |
| 2002 | 232,803 | 177,095 | 180,753 | 1,239,615 | 501,980 | 274,966 | 55,339 | 69,301 | 6,812* | 2,738,664 | 6,330,432 | 158,261 |
| 2003 | 95,969 | 328,392 | 337,867 | 245,762 | 215,920 | 100,802 | 18,223* | 126,406 | 12,647 | 1,481,988 | 4,033,017 | 100,825 |
| 2004 | 39,975* | 281,619* | 30,930 | 471,302 | 238,123 | 163,916 | 18,286* | 455,060 | 15,830* | 1,715,041 | 3,854,919 | 96,373 |
| 2005 | 155,754 | 311,966 | 75,848 | 153,333 | 110,308 | 98,542 | 63,320 | 165,204 | 27,090* | 1,161,365 | 3,618,496 | 90,462 |
| 2006 | 102,739 | 234,043 | 361,978 | 265,746 | 406,800 | 169,411 | 34,482* | 207,062 | 2,389* | 1,784,650 | 5,027,287 | 125,682 |
| 2007 | 67,432* | 234,152 | 544,712 | 509,816 | 624,915 | 203,846 | 118,459 | 155,012 | 36,673* | 2,495,017 | 6,694,584 | 167,365 |
| 2008 | 72,171* | 288,487 | 244,689 | 577,628 | 440,588 | 162,604 | 45,166 | 208,062 | 967* | 2,040,362 | 5,771,440 | 144,286 |
| 2009 | 66,280 | 396,835 | 356,881 | 690,545 | 420,012 | 324,157 | 107,289 | 196,142 | 6,467* | 2,564,608 | 7,232,074 | 180,802 |
| 2010 | 153,978 | 369,830 | 274,246 | 540,667 | 716,531 | 182,090 | 289,634 | 323,725 | 11,873* | 2,862,574 | 8,169,876 | 204,247 |
| 2011 | 173,101 | 79,060* | 42,289 | 322,704 | 313,745 | 117,938 | 64,295* | 153,066 | 3,010* | 1,269,208 | 6,386,822 | 159,671 |
| 2012 | 96,356 | 341,478 | 411,072 | 302,811 | 92,340 | 95,299 | 20,018* | 66,343* | 51,956* | 1,477,673 | 8,150,037 | 203,751 |
| 2013 | 239,699 | 539,788 | 307,409 | 472,562 | 442,786 | 96,733 | 22,954 | 19,721* | 17,128 | 2,158,780 | 10,173,418 | 254,335 |
| 2014 | 444,332 | 238,595 | 515,824 | 913,413* | 533,299 | 131,857 | 1,155* | 87,315 | 9,809* | 2,875,599 | 10,958,633 | 273,966 |
| 2015 | 188,145* | 295,674 | 389,139 | 581,203 | 339,357 | 29,199 | 12,442* | 24,493 | 5,158 | 1,864,810 | 10,664,826 | 266,621 |
| 2016 | 73,516 | 343,780 | 312,313 | 1,068,979 | 190,163 | 46,330 | 3,775* | 39,759* | 7,510* | 2,086,125 | 13,456,497 | 336,412 |
| 2017 | 635,994 | 140,778 | 218,506 | 405,691 | 568,940 | 32,315 | 18,741 | 22,259* | 29,559* | 2,072,783 | 13,652,738 | 341,318 |
| 2018 | 77,951 | 330,372* | 74,530 | 163,132 | 385,282 | 8,927 | 18,372* | 8,186 | 2,589* | 1,069,341 | 9,570,073 | 239,252 |

**Table 5. Tautog recreational harvest (A + B1) by state in pounds, 1981-2018**.
Source: MRFSS/MRIP (calibrated estimates), queried July 11, 2019. *indicates PSE above 50

| Year | MA | RI | CT | NY | NJ | DE | MD | VA | NC |
|---|---|---|---|---|---|---|---|---|---|
| **1981** | 316,767 | 2,253,015 | 444,759 | 2,043,511 | 419,174* | 34,430* | 1,682* | 1,132,094* | 12,382 |
| **1982** | 3,469,281 | 2,484,605 | 1,041,854 | 2,553,770 | 1,332,697 | 409,244 | 112,822* | 1,926,799 | 21,745 |
| **1983** | 1,777,207 | 2,001,692 | 797,211 | 1,763,109 | 2,632,185 | 31,741* | 17,117* | 2,744,229 | 16,795 |
| **1984** | 1,989,329 | 1,894,842 | 1,977,960 | 1,599,703 | 2,714,442 | 19,196* | 69,496* | 2,465,582 | |
| **1985** | 274,730 | 1,055,517* | 776,401 | 5,533,412 | 3,504,759 | 49,312 | 1,527* | 1,994,903* | 24,226 |
| **1986** | 6,664,034 | 2,956,799 | 1,615,028 | 4,405,989 | 3,500,911 | 274,639* | 12,124* | 2,123,045 | 21,987 |
| **1987** | 3,057,036 | 987,308 | 2,333,325 | 3,855,404 | 5,647,886 | 987,945 | 306,013* | 1,061,763 | 8,877 |
| **1988** | 5,091,638 | 1,314,725 | 1,104,356 | 4,302,524 | 2,208,915 | 349,799 | 122,122* | 994,443 | 3,261 |
| **1989** | 2,409,824 | 948,232 | 2,058,110 | 2,001,204 | 3,442,316 | 2,081,738 | 196,281* | 1,599,363 | 58,367 |
| **1990** | 3,033,484 | 917,651 | 513,870 | 4,135,800 | 2,329,494 | 319,297 | 94,109 | 759,668 | 10,262 |
| **1991** | 1,762,192 | 3,755,122 | 901,432 | 4,106,211 | 3,702,498 | 538,411 | 221,137 | 1,724,672* | 37,684 |
| **1992** | 7,531,141 | 2,663,107 | 1,909,770 | 2,371,795 | 5,067,709 | 411,895 | 293,519* | 733,913 | 22,851 |
| **1993** | 1,669,945 | 774,926 | 1,320,472 | 1,866,328 | 2,430,109 | 767,054 | 161,814 | 2,222,192 | 20,820 |
| **1994** | 529,595 | 748,608 | 1,294,708 | 925,451 | 397,187 | 242,964 | 397,926 | 2,113,405 | 5,273 |
| **1995** | 650,506 | 467,400 | 803,174 | 548,974* | 3,250,236 | 1,094,687 | 491,518* | 2,077,822 | 14,407 |
| **1996** | 1,039,911 | 659,785 | 490,239 | 291,482 | 2,681,850 | 350,297 | 98,324* | 2,579,379 | 27,323 |
| **1997** | 308,098 | 666,065 | 215,724 | 749,252* | 1,712,208 | 440,518 | 497,161 | 644,872 | 80,486 |
| **1998** | 310,600 | 605,908 | 391,933 | 485,810 | 70,731* | 659,866 | 69,541* | 972,295 | 44,892 |
| **1999** | 1,489,331 | 788,279 | 153,339* | 1,509,978 | 895,556 | 1,049,562 | 42,003* | 402,028 | 20,312 |
| **2000** | 1,301,437 | 689,698 | 256,201* | 662,491* | 3,756,593 | 692,466 | 161,426* | 241,231 | 34,021 |
| **2001** | 1,052,175* | 392,503 | 205,109 | 506,301 | 2,502,115 | 240,770 | 168,595* | 168,103 | 14,110 |
| **2002** | 994,467 | 743,409 | 811,658 | 4,428,842 | 1,530,757 | 948,850 | 140,672 | 385,679 | 14,331 |
| **2003** | 527,044 | 1,388,657 | 1,180,217 | 875,271 | 639,109 | 358,999 | 59,071 | 573,623 | 28,862 |
| **2004** | 213,380* | 1,590,436* | 144,278 | 1,687,077 | 639,685 | 563,332 | 41,259* | 1,624,091 | 42,771 |
| **2005** | 744,036 | 1,575,454 | 290,848 | 566,375 | 333,101 | 357,682 | 167,633 | 663,938 | 56,378 |
| **2006** | 484,094 | 1,130,146 | 1,589,614 | 1,002,049 | 1,443,680 | 599,179 | 106,148* | 858,131 | 6,036 |
| **2007** | 260,548* | 1,173,787 | 2,109,801 | 1,923,067 | 2,073,632 | 598,291 | 270,530 | 622,935 | 156,967 |
| **2008** | 230,549* | 1,385,061 | 1,077,399 | 2,238,161 | 1,261,010 | 575,319 | 119,209 | 870,249 | 1,652 |
| **2009** | 236,974 | 1,648,614 | 1,353,957 | 3,057,551 | 1,273,529 | 1,034,484 | 277,124 | 892,873 | 26,259 |
| **2010** | 506,622 | 1,933,773 | 1,073,576 | 1,818,920 | 1,864,817 | 464,859 | 920,773 | 1,246,454 | 33,356 |
| **2011** | 803,546 | 328,959* | 137,565* | 1,284,037 | 1,008,756 | 380,758 | 189,361* | 604,361 | 3,447 |
| **2012** | 403,108 | 1,512,425 | 2,093,847 | 1,285,933 | 312,531 | 341,015 | 62,097* | 252,111* | 52,632 |
| **2013** | 860,594 | 2,602,962 | 1,290,726 | 2,207,750 | 1,530,776 | 341,896 | 81,662 | 75,449* | 25,286 |
| **2014** | 1,623,717 | 1,017,780 | 2,274,293 | 4,188,165* | 1,849,045 | 485,332 | 3,544* | 365,657* | 23,581 |
| **2015** | 1,041,058* | 1,105,259 | 1,594,233 | 2,153,150 | 1,100,117 | 100,302 | 45,067* | 100,143* | 6,742 |
| **2016** | 317,006 | 1,290,428 | 1,368,363 | 4,514,164 | 582,199 | 164,887 | 15,059* | 126,135* | 14,660 |
| **2017** | 2,883,890 | 599,424 | 908,549 | 1,394,388 | 1,380,992 | 103,331 | 59,901* | 88,228* | 128,136 |
| **2018** | 300,067 | 1,075,131* | 295,758 | 536,332 | 1,091,046 | 30,240 | 54,332* | 25,766 | 5,254 |

**Table 6. Commercial landings for tautog in pounds, by state, 1981-2018.**

Source: ACCSP Data Warehouse and State Compliance Reports.

*2018 Landings data are preliminary and subject to change.

| Year | MA | RI | CT | NY | NJ | DE | MD | VA | NC |
|---|---|---|---|---|---|---|---|---|---|
| **1981** | 102,900 | 69,800 | 20,500 | 81,400 | 54,400 | 1,000 | 1,200 | 700 | N/A |
| **1982** | 69,300 | 86,300 | 21,200 | 90,400 | 148,200 | 800 | 100 | 2,600 | 656 |
| **1983** | 57,600 | 142,600 | 33,500 | 88,400 | 100,600 | 800 | N/A | 1,700 | 319 |
| **1984** | 68,100 | 334,700 | 32,700 | 102,500 | 129,700 | 1,400 | 2,600 | 1,200 | 4,715 |
| **1985** | 63,300 | 403,200 | 50,100 | 84,500 | 125,500 | 3,200 | 2,400 | 1,639 | 531 |
| **1986** | 165,800 | 363,100 | 104,200 | 201,300 | 100,700 | 300 | 2,600 | 1,800 | 1,006 |
| **1987** | 250,000 | 420,500 | 159,200 | 225,200 | 95,200 | 500 | 3,800 | 2,700 | confid |
| **1988** | 277,100 | 328,900 | 112,100 | 255,000 | 88,000 | 600 | 6,100 | 2,800 | 214 |
| **1989** | 352,100 | 214,800 | 99,700 | 285,400 | 51,900 | 500 | 4,000 | 7,500 | 531 |
| **1990** | 289,074 | 211,084 | 82,008 | 181,543 | 99,112 | 500 | 3,954 | 5,151 | 1,079 |
| **1991** | 354,346 | 371,597 | 54,000 | 226,413 | 93,022 | 1,300 | 3,164 | 5,058 | 1,211 |
| **1992** | 292,291 | 359,767 | 65,700 | 169,011 | 116,332 | 200 | 4,058 | 4,389 | 424 |
| **1993** | 160,336 | 201,593 | 86,064 | 89,467 | 153,474 | 300 | 1,432 | 5,423 | 351 |
| **1994** | 37,062 | 130,719 | 43,000 | 71,375 | 162,641 | 400 | 1,718 | 11,441 | 1,134 |
| **1995** | 35,298 | 94,989 | 20,466 | 72,879 | 115,970 | 600 | 4,416 | 30,020 | 929 |
| **1996** | 32,579 | 64,817 | 33,327 | 105,466 | 89,435 | 1,599 | 3,622 | 26,137 | 452 |
| **1997** | 64,240 | 39,601 | 14,519 | 78,228 | 49,726 | 841 | 7,663 | 25,471 | 623 |
| **1998** | 91,319 | 20,304 | 6,905 | 68,892 | 42,426 | 1,715 | 5,682 | 14,770 | 2,173 |
| **1999** | 75,619 | 26,090 | 12,961 | 37,886 | 27,307 | confid | 6,489 | 20,901 | 728 |
| **2000** | 96,001 | 43,719 | 8,504 | 39,953 | 39,636 | confid | 3,896 | 14,794 | 674 |
| **2001** | 84,330 | 56,065 | 22,259 | 62,795 | 60,152 | confid | 4,591 | 14,587 | 414 |
| **2002** | 148,073 | 50,007 | 26,781 | 60,805 | 36,605 | confid | 5,010 | 22,834 | 705 |
| **2003** | 86,205 | 54,650 | 40,784 | 72,264 | 66,766 | confid | 5,213 | 10,705 | 98 |
| **2004** | 88,192 | 36,581 | 26,037 | 76,606 | 51,057 | 3,064 | 6,049 | 13,079 | 84 |
| **2005** | 99,344 | 42,838 | 24,053 | 52,525 | 61,163 | confid | 4,338 | 5,667 | 56 |
| **2006** | 147,609 | 47,261 | 16,841 | 71,683 | 58,119 | confid | 5,411 | 8,533 | 47 |
| **2007** | 95,820 | 63,441 | 30,002 | 73,797 | 62,979 | 2,814 | 3,297 | 8,588 | 187 |
| **2008** | 73,867 | 48,027 | 20,160 | 88,571 | 63,958 | 2,253 | 2,964 | 10,946 | 194 |
| **2009** | 54,703 | 50,920 | 21,194 | 87,289 | 14,591 | 2,116 | 1,638 | 11,132 | 61 |
| **2010** | 75,317 | 44,054 | 16,948 | 93,153 | 49,213 | confid | 1,285 | 6,077 | 34 |
| **2011** | 57,787 | 47,426 | 14,784 | 82,761 | 45,865 | confid | confid | 14,590 | 28 |
| **2012** | 67,870 | 50,126 | 6,233 | 76,373 | 20,831 | 1,444 | confid | 13,870 | 227 |
| **2013** | 70,157 | 53,428 | 5,887 | 110,849 | 22,079 | confid | 1,458 | 11,776 | 205 |
| **2014** | 63,191 | 53,384 | 5,164 | 121,538 | 31,665 | confid | confid | 7,545 | 137 |
| **2015** | 61,752 | 47,140 | 7,249 | 111,925 | 17,538 | 2,107 | 1,173 | 6,937 | 94 |
| **2016** | 58,095 | 50,680 | 7,651 | 144,650 | 13,367 | 2,083 | 1,098 | 6,252 | 30 |
| **2017** | 66,481 | 52,844 | 8,485 | 171,508 | confid | confid | confid | 5,165 | 116 |
| **2018*** | 61,055 | 51,414 | 7,341 | 186,109 | 1,559 | 306 | 273 | 1,402 | 109 |

**Table 7. State recreational regulations implemented for Tautog in the 2018 fishing year.**

| STATE | SIZE LIMIT (inches) | POSSESSION LIMITS (fish/person/day) | OPEN SEASONS (dates inclusive) |
|---|---|---|---|
| Massachusetts | 16” | 3<br>1<br>3<br>5<br>(10 fish/day/vessel max for private/rental mode) | Apr 1-May 31<br>Jun 1-Jul 31<br>Aug 1-Oct 14<br>Oct 15-Dec 31 |
| Rhode Island | 16” | 3<br>3 | Apr 15 – May 31<br>Aug 1 – Oct 14 |
| | | 5<br>(10 fish/day/vessel max for private/rental mode) | Oct 15 – Dec 31 |
| Connecticut | 16” | 2<br>2<br>3 | Apr 1 – Apr 30<br>Jul 1 – Aug 31<br>Oct 10 – Nov 23 |
| New York | 16” | LIS: 2<br>LIS: 3 | Apr 1- Apr 30<br>Oct 11-Dec 9 |
| | | NY Bight: 2<br>NY Bight: 4 | Apr 1- Apr 30<br>Oct 15-Dec 22 |
| New Jersey | 15” | 4<br>1<br>5 | Jan 11 – Feb 28<br>Apr 1 – Apr 30<br>Aug 1 – Nov 15<br>Nov 16 – Dec 31 |
| Delaware | 16” | 4 | Jan 1 – May 15<br>Jul 1 – Dec 31 |
| Maryland | 16” | 2<br>4 | Jul 1 – Oct 31<br>Nov 1 – Dec 31 |
| Virginia | 16" | 3 | Jan 1 – Apr 30<br>Sep 20 – Dec 31 |

**Table 8. State commercial regulations implemented for Tautog in the 2018 fishing year.**

| STATE | SIZE LIMIT | POSSESSION LIMITS (number of fish) | OPEN SEASONS | QUOTA (pounds) | GEAR RESTRICTIONS |
|---|---|---|---|---|---|
| Massachusetts | 16" | 40 | Sept 1 – 100% of Quota | 62,945* | Mandatory pot requirements. Limited entry and area/time closures for specific gear types. Fishery permit endorsement |
| Rhode Island | 16" | 10 | Apr 1 – May 31<br>Aug 1-Sept 15<br>Oct 15 – Dec 31 | 49,888** | Harvest allowed by permitted gear types only. |
| Connecticut | 16" | 4 (restricted licenses)<br>10 (all other) | Apr 1 – Apr 30<br>Jul 1 – Aug 31<br>Oct 8 – Dec 24 | - | Mandatory pot requirements. |
| New York | 15" | 25<br>(10 fish w/ lobster gear and when 6 lobsters are in possession) | LIS: May 7 – July 31; Sept 1- Nov 23<br>NY Bight: Apr 18 – Jan 25 | - | Mandatory pot requirements. Gill or trammel net is prohibited. |
| New Jersey | 15" | *> 100 lb requires directed fishery permit* | Jan 1 – May 1<br>Sept 19-Dec 31 | 103,000 | Mandatory pot requirements. |
| Delaware | 16" | 4 | Jan 1 – May 15<br>July 1 – Dec 31 | - | Mandatory pot requirements. |
| Maryland | 16" | 2<br>4 | July 1 – Oct 31<br>Nov 1- Dec 31 | - | Mandatory pot requirements. |
| Virginia | 15" | - | Jan 1 – Jan 21<br>Mar 1 – May 15<br>Nov 1 – Dec 31 | - | Mandatory pot requirements. Pots prohibited in tidal waters. |

* Massachusetts' quota adjusted for overage in 2017 from a base quota of 64,753 lbs.

** Rhode Island's quota of 51,348 lbs is divided equally among the three sub-periods.

**Table 9. Number of age/length samples by state in 2018.** Addendum III requires all states to collect 200 samples per year. Source: State compliance reports

| State | 2018 Samples | Sample Sources |
|---|---|---|
| **MA** | 1105 lengths; 244 otoliths, 255 spines | Commercial Fishery Market sampling; Fishery independent rod and reel, and trawl surveys, ventless trap survey for Lobster |
| **RI** | 219 lengths; 217 ages | Recreational fishery sampling, RIDMF Fish Pot Survey, RIDMF Trawl Survey |
| **CT** | 201 ages | Long Island Sound Trawl Survey |
| **NY** | 832 lengths; 148 ages | Commercial markets sampling; fishery independent surveys |
| **NJ** | 359 lengths and ages | Recreational fishery; NJ Ocean Trawl Survey and Artificial Reef Ventless Trap Survey |
| **DE** | 134 otoliths | Recreational sampling |
| **MD** | 243 lengths and 211 otoliths | Recreational sampling |
| **VA** | 26 lengths and ages | Marine Sport Fish Collection Project |

**Table 10.** Ongoing fishery-independent surveys, as of 2018. Shaded cells indicate survey data used in 2016 stock assessment.

| State | Areas Surveyed | Survey Type | # of Survey Stations | Dates of Survey | Initial Year |
|---|---|---|---|---|---|
| MA | MA territorial waters | Trawl | 1 station per 19 square nautical miles | May and September | 1978 |
| | Buzzards Bay, south of the Elizabeth Islands, and portions of Rhode Island Sound | Trap | 42 stations twice per month | June through September | 2015 |
| | Buzzards Bay and Vineyard Sound | Rod & Reel | 48 stations per month | Spring (Apr-May)<br>Fall (Sep-Nov) | 2016 (fall) |
| RI | Narragansett Bay | Trawl | 13 stations per month | June through October | 1990 |
| | Narraganset Bay, Rhode Island Sound and Block Island Sound | Trawl | 44 stations | Spring (April-May)<br>Fall (Sept/October) | 1979 |
| | Narragansett Bay Beach | Seine | 18 stations per month | June through October | 1988 |
| | Coastal Ponds | Seine | 24 stations in 8 coastal ponds per month | May through October | 1994 |
| | Narragansett Bay | Trap | 10, 5 pot trawls set per month | April through October | 2013 |
| CT | Long Island Sound (CT and NY waters) | Trawl | 40 stations per month | Spring (April-June)<br>Fall (Sept-Oct) | 1984 |
| NY | Peconic Bay | Trawl | 16 stations per week | May through October | 1987 |
| | Western Long Island (Little Neck, Manhasset Bay, Jamaica Bay) | Seine | 5-10 sites, semimonthly | May through October | 1984 |
| | Long Island Sound | Trap | 35 stations per week | May through October | 2007 |
| NJ | Nearshore ocean waters between Cape May and Sandy Hook | Trawl | 30 tows in Jan; 39 tows per month in Apr, Jun, Aug & Oct | Jan, Apr, June, Aug & Oct | August 1988 |
| DE | Fisheries independent surveys do not collect tautog in quantities needed for monitoring purposes | | | | NA |
| MD | Maryland Coastal Bays | Trawl | 20 stations per | April through October | 1989 |
| | | Seine | 19 stations per month | June, September | 1989 |
| | Submerged Aquatic Habitat in Sinepuxent Bay | Seine | 5 zones | September only | 2015 |
| VA | Fisheries independent surveys do not collect tautog in quantities needed for monitoring purposes | | | | NA |

**Table 11.** Ongoing fishery-dependent monitoring in each state, as of 2018

| State | Fishery Sector | Data Collected | Data Source |
|---|---|---|---|
| MA | Commercial | Landings at the trip level | Harvesters and primary buyers |
| | Commercial | Length | Market sampling |
| RI | Recreational | Age, Length | Recreational harvest sampling |
| | Commercial | Age | Fish Pot Survey |
| CT | Commercial | Monthly landings | Harvesters and dealers |
| NY | Commercial | Age, Length | Markets and dockside sampling |
| NJ | Commercial | Age, Length, Weight, Sex | Commercial vessel sampling |
| | Recreational | Age, Length, Sex | Party/charter boat sampling (retained fish) |
| DE | Commercial | Landings | Monthly harvester logbooks |
| | Recreational | Age, Length | Recreational harvest sampling |
| MD | Recreational | Age, Length, Weight, Sex | Charter boat hook and line sampling |
| | Commercial | Landings | Harvest reports |
| VA | Commercial | Age, Length, Weights | Samples from commercial hook-and-line gear, haul seines, pots/traps, pound nets |
| | Recreational | Age, Length, Weights | VMRC Marine Sport Fish Collection Project |
| | | Tagging data | Game Fish Tagging Program |

*Surveys as part of MRIP occur in all states and are not included in the table. Commercial landings monitoring by the Standard Atlantic Fisheries Information System (SAFIS) is also excluded.

Atlantic States Marine Fisheries Commission

1050 N. Highland Street • Suite 200A-N • Arlington, VA 22201
703.842.0740 • 703.842.0741 (fax) • www.asmfc.org

# MEMORANDUM

July 18, 2019

**To:** **Tautog Management Board**

**From:** **Tautog Technical Committee**

**RE:** **Review of Commercial Tagging Program and Recommendations for next Stock Assessment**

**Attendees**: Coly Ares (RI), Lindy Barry (NJ; Chair), Sandy Dumais (NY), Dave Ellis (CT), Alexa Kretsch (VA), Craig Weedon (MD), Bob Glenn (MA)

**Staff**: Caitlin Starks, Katie Drew, Kirby Rootes-Murdy

The Commission's Tautog Technical Committee met via conference call on Tuesday July 9 to discuss the following items:

1) The Commercial Tagging Program
2) Type and timing of next Stock Assessment

Call Summary and Recommendations

**Commercial Tagging Program**

The group discussed the tagging program with the objective of reviewing and considering 1) where the tag would be applied to the fish; 2) the biological metric to request annual number of commercial tags and 3) the tag expiration date.

1) Where the tag will be applied on the fish

Staff presented on where and which side of the fish tags could be applied based on feedback from the TC members. Concerns had previously been raised over the tag potentially damaging the operculum and impacting the ability to age the fish. TC members confirmed that the tag does leave a hole in the operculum, however it should not make the operculum unreadable. In considering a preference on which operculum is used for biological sampling, many states indicated they take both opercula for aging, so if one is damaged it would not be an issue.

The TC did not specify which operculum the tag should be applied to, so it would be up to the states to specify on which is side harvesters would be required to place the tags to aid enforcement. The current tagging guidelines are meant to assist the states in writing regulations, but only the language included in Amendment 1 is required of all states.

The group also revisited the rationale for choosing a strap tag applied to the operculum over other tag types and placements. Soft tissue areas were shown to not hold tags well. When considering the application of tags to soft tissue or muscle, there were also concerns that the tags may damage the quality of the fish meat. Lastly, tags placed in soft tissue are also easily removed and re-used, which could create opportunities for cheating the program.

2) Biological Metric to request annual number of commercial tags

As part of Amendment 1, states will need to develop a biological metric to annually estimate the number of tags needed to supply the commercial fishermen in their state. Staff highlighted to TC members that while the methodology and number is not needed yet, they should have a methodology and estimate ready by the end of August or beginning of September.

In discussing potential methodologies, the group focused on 'tag failures' and how to incorporate this into their tag estimate. MA DMF and NYDEC staff who have tested the tags indicated there is a failure rate, related to both the tags not sealing properly and operator error. Tags can also reasonably be lost over the side of the boat when tagging at sea. There was consensus among those who have tested the tag and applicator of roughly a 10% failure rate. The buffer within the guidance document indicated a 20% buffer, so the approximate failure rate would be encompassed within that buffer.

It was also noted that it is unlikely that tags will always be applied in sequential order due to tag loss or failure. The group was in agreement that once the 1st year of the tagging program has been completed, there should be a reevaluation of the appropriate tag loss rate. At that time, it could be determined that continual tag loss on the part of fishermen above a certain level could potentially be an enforcement issue. Given there may be a variety of reasons for a tag being lost or damaged, an important piece of information during first year will be how many tags were applied and returned compared to the total number distributed to each harvester. The group did not express any concerns with using available data to develop a biological metric. Most TC members indicated they would likely be estimating an average fish weight around 4 pounds.

ASMFC staff explained that the Commission plans to order all tags in bulk to distribute to the states later in 2019, and that states must submit a request for the number of tags to order; the states would then reimburse ASMFC for their tags. Regarding applicators, staff indicated that an initial purchase of these could also be included in the bulk order, but it would be another item the states would need to estimate and request. The group agreed that if additional applicators are needed during the fishing year, individual fishermen should be able to purchase them directly from the supplier. During the August meeting the

Board should discuss how to handle an instance where a state underestimates the number of tags needed, and needs more tags mid-season.

3) Expiration date for tags

Next, the TC discussed the expiration date for tags. The draft tagging guidelines indicate the following:

- Tags expire at the end of the fishing year for which they were issued (unless a state determines this would unnecessarily restrict harvest and sale at the end of the year, in which case an alternative expiration date could be determined).
- It will be illegal for any dealer to buy or sell any tautog with an expired tag.
- Tautog with expired tags may be sold only directly to the final consumer.

TC members indicated that some fishermen keep fish caught at the end of the year (November/December) in tanks and sell them later in January/early February. If the fishing season aligns with the calendar year, these fish could have the previous year's tags on them. In these cases, the fish are often caught and held in tanks for around a month.

Given this scenario, tag accounting that requires fishermen to return all tags from the prior year in order to receive the new year's tags may be challenging. For the states in which this situation occurs, an alternate tag expiration date should be requested. Additionally, having clear documentation of when tags are applied may help address this concern.

Due to these challenges, the TC indicated that there should be more clarity written into the guidelines to differentiate between a tag expiration date for fishermen and what the expiration date is for commerce/ or sale of the fish. Additionally, the TC indicated the Law Enforcement Committee should also provide a recommendation on this issue.

<u>There was no clear consensus on a preferred tag expiration date, though some members indicated the end of February may be a suitable time. Staff encouraged TC members to work with their states to determine what would be an appropriate alternate date for their fishery.</u>

**Discussion on next Stock Assessment**

The TC reviewed the research recommendations and recent updates to MRIP harvest information with the objective of providing recommendations on the timing and type of next Stock Assessment.

ASMFC Staff presented on changes to MRIP that have adjusted the recreational harvest estimates for tautog. The new calibrated estimates for the entire time series indicate increases in annual coastwide harvest ranging from 50% to 313% (harvest in numbers of fish) and 27% to 322% (harvest by weight). The coastwide PSEs are below 50 (greater than 50 indicates high uncertainty in the estimate) for annual harvest estimates in both weight and number of fish, generally ranging from 9-30. State by state harvest increases also vary over time, with the highest increases occurring in the states of Massachusetts through New Jersey.

Staff also presented on progress that has been made relative to research recommendations from the previous stock assessments. Many of the previous research recommendations remain works in progress. One that could have implications for future assessments is a recent genetics study completed by VIMS that may indicate different grouping of stock units relative to the most recent stock assessment. Staff clarified that in considering whether the next assessment should be a benchmark stock assessment or assessment update, the key distinction is that an update would not require peer review, nor could new data sources or models be considered; with a benchmark, everything would be reconsidered and it would go through a peer review process. The incorporation of the new MRIP estimates could be done through an assessment update.

In considering changes to the MRIP data, questions were raised about the PSEs at the state and regional level. Staff noted that the current model can account for the uncertainty of the estimates at the regional levels the resource is assessed at. It is possible changes in MRIP could impact the model converging and operating correctly, but this would not be determined until the process is underway. Additionally, assumptions about harvest in wave 1 (Jan/Feb) may need to be revisited given MRIP does not sample then, but many states do have open fishing seasons during that wave.

The group also discussed the extent of work that would be required for either approach (benchmark or update). Because each region is assessed as a unique stock, there will be four models that would either need to be updated or re-assessed; it would be a significant workload under either approach. The group also briefly discussed whether different modeling techniques could be explored at the regional level; this could be done only through a benchmark assessment.

Given the discussion and information presented, the group was in favor of an assessment update being completed with data through 2020, when available. This would ensure the regulatory changes aimed at conserving tautog that went into effect after Amendment 1 could be evaluated; specifically the average F rate using 3 years of data (2018-2020).

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# MEMORANDUM

July 18, 2019

**To:** **Tautog Management Board**

**From:** **Tautog Advisory Panel**

**RE:** **Advisory Panel Review of Commercial Harvest Tagging Program**

**Attendees**: Greg Jackson (DE; Commercial), Wes Blow (VA; Recreational), John Mihale (NY; Commercial), Craig Weedon (MD DNR; public)

**Staff**: Caitlin Starks, Dustin Colson Leaning, Kirby Rootes-Murdy

The Commission's Tautog Advisory Panel (AP) met via conference call on Wednesday July 10 to review the draft Commercial Tagging Program Guidelines and provide comments to the Board.

**Commercial Tagging Program**
ASMFC Staff presented background specific to Amendment 1 and the different parts of the guidelines from the initial biological metric to determine the number of tags through to tag reporting and accounting, as well as tag expiration. The draft guidance document is intended to promote consistency in applying the tagging program across the management unit, while allowing the states flexibility to align their program with the needs of their unique fisheries.

In reviewing the guidance document, AP members had the following comments (organized below by category):

*Tag Application*

- Concerns were raised about the tags that will be used are based on NY study. In general, concerns centered on how successful applying the tags will be and potential mortality to tagged fish before they are brought to market given the study was conducted in a very controlled environment. For example, all the fish were caught in pots and not by rod and reel, and some contend that stress induced by catching the fish via fishing rod and then tagging may increase mortality rates.
- Trying to apply the tags to fish will be very challenging at sea and there may be many tags broken, damaged, or lost.
- Additionally, in reference to the study, smaller fish from shallower water have a better retention/survival rate; a number of fish used in the study were below the current legal size limit for all states. These smaller fish may have a different survival rate than larger, legal size fish caught in deeper water.

- In some states such as Delaware, Commercial permit holders do occasionally take trips with recreational anglers on their boats and differentiating between commercial caught fish vs recreational caught fish will be important as the current guidelines implies all Tautog on the vessel must be tagged. An AP member recommended that the guidelines be changed to read 'All tautog on the vessel landed for commercial purposes must be tagged'.
- One AP member indicated that applying the tags in sequential order may be too difficult.
- One AP member indicated that state agencies should conduct outreach to demonstrate proper tagging techniques and potentially tag fish for commercial harvesters during the first year of the tagging program.

*Tag Accounting and Distribution*

- One AP member suggested that partial allocation of tags could be distributed to harvesters for the beginning of the year before the harvester turns in their old tags. The remaining allocation would be distributed to the harvester once they turned in their remaining unused tags.

*Tag Expiration*

- Some AP members noted that a tag expiration date would not be needed if 1) tag numbering system indicates the year, 2) tags are to be applied in the calendar year and 3) any unused tags as of December 31st should be turned in immediately.
- In NY, the commercial bag limit is 25 fish from April 16-January 25. Harvesters/dealers are holding fish until mid-February. There is more demand in February (bad weather, less fish, higher price) so they hold the fish until then. Tagging fish along the calendar year- starting January 1- will likely create challenges for law enforcement to keep track of fish tagged the previous year vs the current year, especially during these months (January-February).

*Penalties*

- Regarding penalties, questions were raised on what penalties would be applied to recreational anglers and for-hire captains who attempt to sell their catch without a commercial permits; some AP members expressed concern this sector may attempt to illegally sell Tautog.
- Illegal harvest for sale (by recreational anglers and other unlicensed fishermen) remain an issue in this fishery and while the guidance document outlines how the tagging program will modify the commercial fishery, it doesn't address illegal sale.
- It was recommend that there be severe penalties for recreational and unlicensed sale of untagged fish.

*Other*

- There is a greater demand in the commercial market for Chinese New Years for fish smaller than the current minimum size limit.
- One AP member suggested that under the tagging program states should consider moving away from bag limit and season closure as the tags could become the limiting factor for the commercial fishery.
- Selling fillets of Tautog to restaurants may be challenging for keeping tags with the fish through to final sale.