ATLANTIC STATES MARINE FISHERIES COMMISSION

REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN

FOR TAUTOG
(Tautoga onitis)

2020 FISHING YEAR

Prepared by the Plan Review Team

Approved by the Tautog Management Board
August 3, 2021

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

REVIEW OF THE ASMFC FISHERY MANAGEMENT PLAN AND STATE COMPLIANCE FOR TAUTOG (*Tautoga onitis*) FOR THE 2020 FISHERY

Management Summary

Date of FMP:	March 1996
Addenda/Amendments:	Addendum I to FMP (May 1997) Addendum II to FMP (November 1999) Addendum III to FMP (February 2002) Technical Addendum I (February 2003) Addendum IV to FMP (January 2007) Addendum V to FMP (August 2007) Addendum VI to FMP (March 2011, revised March 2012) Amendment 1 to FMP (October 2017)
Management Unit:	US state waters from Massachusetts through Virginia[1].
States With Declared Interest:	Massachusetts-Virginia, excluding Pennsylvania
Additional Jurisdictions:	National Marine Fisheries Service
Active Boards/Committees:	Tautog Management Board (Board) Tautog Plan Development Team (PDT) Tautog Plan Review Team (PRT) Tautog Technical Committee (TC) Tautog Stock Assessment Subcommittee (SAS) Tautog Advisory Panel (AP)
Stock Assessments:	Benchmark: 1999, 2005, 2015 Update: 2011 (revised in 2012), 2016

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

[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.

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. Coastwide implementation of the program began in 2020; more information on the current implementation can be found in Section VI. Status of Management Measures and Issues.

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. The next stock assessment update is scheduled to be completed in 2021.

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 for tautog are significant; for example, annual coastwide harvest (by weight) increased in all years—by 27% to 323%—after calibration. The tautog stock assessment update scheduled to be completed 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 2020[2], total coastwide tautog harvest (recreational + commercial) peaked at 22.5 million pounds in 1986. Harvest has since declined significantly, starting before state restrictions were implemented. Total harvest during the ASMFC managed period (1996–2020) has averaged approximately 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 20 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). Harvest in 2020 is estimated at 6.2 million pounds. Note that to address reduced intercept sampling caused by the COVID-19 pandemic, 2020 harvest estimates use imputed data from previous fishing years, and may be subject to change. On the coastwide level, the contribution of imputed data to the total harvest of tautog in pounds was 10%, and ranges between 0–39% at the state level (for states within the management unit). Most recreational harvest occurs in September–December (Figure 6). At the state level, New York and Connecticut anglers harvested the most tautog in 2020 (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 2020, the live discards of 14.6 million fish were more than eight times the estimated harvest of 1.7 million fish. A discard mortality rate of 2.5% is assumed for

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

the recreational tautog fishery, resulting in an estimated 365,676 recreational dead discards in 2020. This equates to approximately 17% 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). Landings in 2020 were approximately 313,400 pounds. The ex-vessel price (dollars per pound) for tautog has steadily increased since the late 1970s. In 2020, the coastwide average price declined to $3.45 per pound likely due to the impact of COVID pandemic restrictions on supply and demand (Figure 8).

Commercial landings accounted for approximately 5% of total coastwide harvest in 2020. On a state level, commercial landings comprised no more than 10% of a state's total landings (Table 3). New York had the most commercial landings of tautog in 2020 (58% of the coastwide total), with Massachusetts landing the second greatest amount (approximately 20% of the coastwide total) (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 2020. A number of states struggled to obtain 200 age and length samples due to the COVID pandemic.

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 states have adopted regulations compliant with the FMP including regional management programs and commercial harvest tagging program. Per the Amendment, the commercial tagging program was to be implemented by the 2019 fishing season; taking into account regulatory challenges among a number of the states, the Board postponed the implementation date to January 1, 2020. In 2020, due to the health risks posed by the COVID-19

[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.

pandemic, New York and Connecticut initially postponed implementation of the tagging program for the 2020 fishing season, with New York putting forward a formal request to the Board that was approved in September. Connecticut moved forward distributing commercial tags in fall 2020 but ultimately no data were collected. All other states implemented the tagging program in 2020 and a breakdown of their reporting is included in Table 12.

VII. Implementation of FMP Compliance Requirements

A. Submission of Compliance Report

All states in the tautog management unit submitted state compliance reports for the 2020 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 2020 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 needed to adjust their commercial and recreational measures to comply with the provisions of Amendment 1. In 2020, both Massachusetts and Rhode Island's commercial landings exceeded their respective state quotas, by 1% and 2.5% respectively. Both states have adjusted their 2021 quotas to account

for the overages. 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)

Connecticut, New Jersey, Delaware, and Virginia did not collect 200 age/length samples in 2020 as required by Addendum III (Table 9). These states indicated that challenges posed by the COVID-19 pandemic prevented them from collecting 200 samples.

The PRT finds that all states met the intent of the sampling requirements and recommends the Board find all states in compliance with the sampling requirements of the FMP. In 2019, the Technical Committee reconfirmed that 200 was the minimum number of biological samples needed for adequate catch characterization.

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.

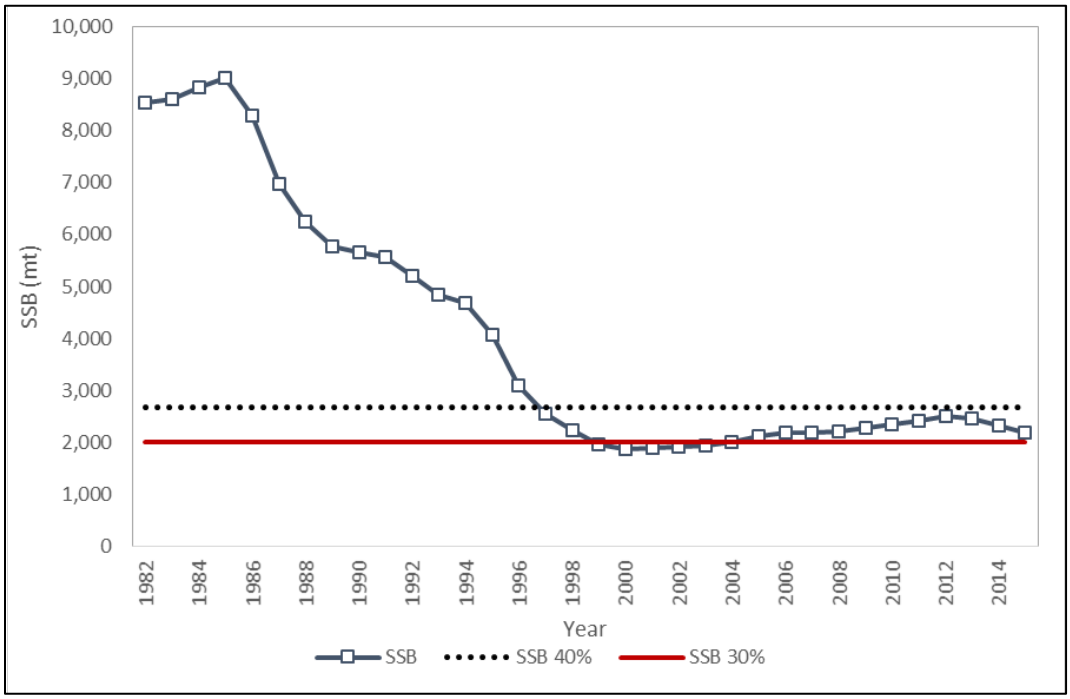

Figure 2. Estimated spawning stock biomass, with target and threshold levels, for LIS region.
Source: 2016 ASMFC Tautog Stock Assessment Update.

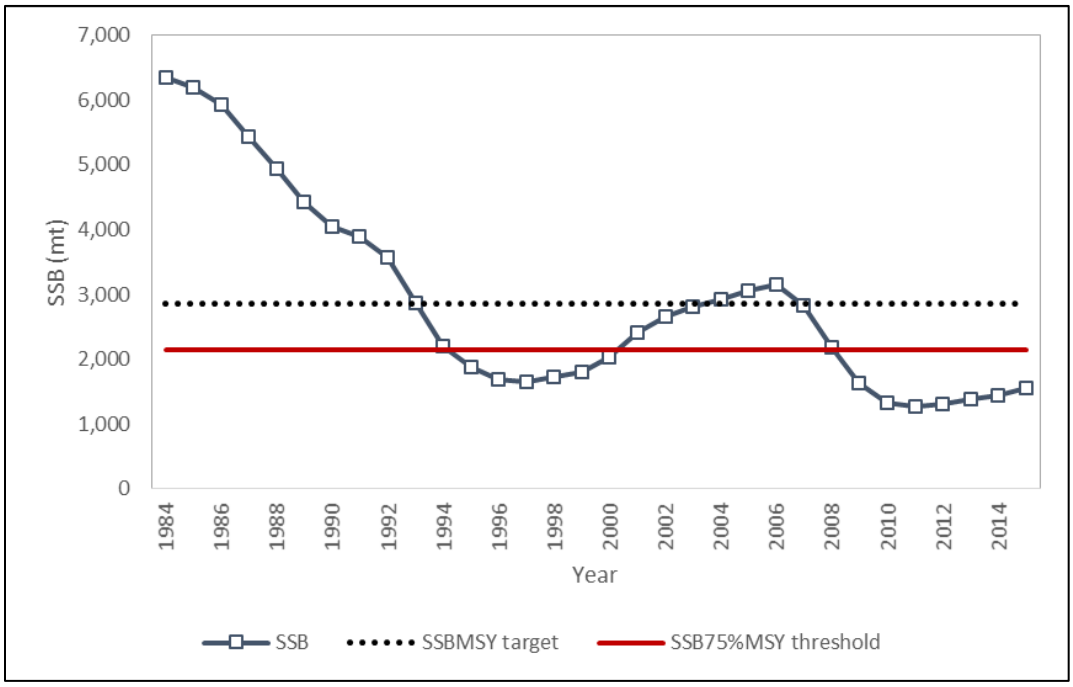

Figure 3. Estimated spawning stock biomass, with target and threshold levels, for NJ-NYB region.
Source: 2016 ASMFC Tautog Stock Assessment Update.

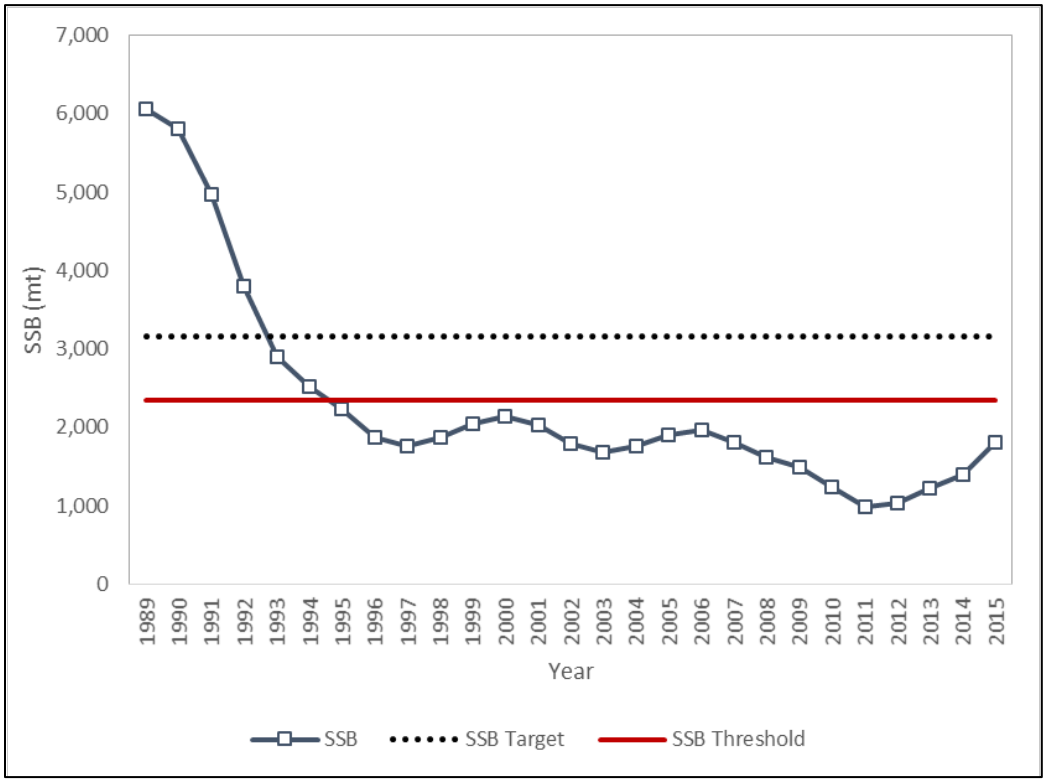

Figure 4. Estimated spawning stock biomass, with target and threshold levels, for DelMarVa region.
Source: 2016 ASMFC Tautog Stock Assessment Update.

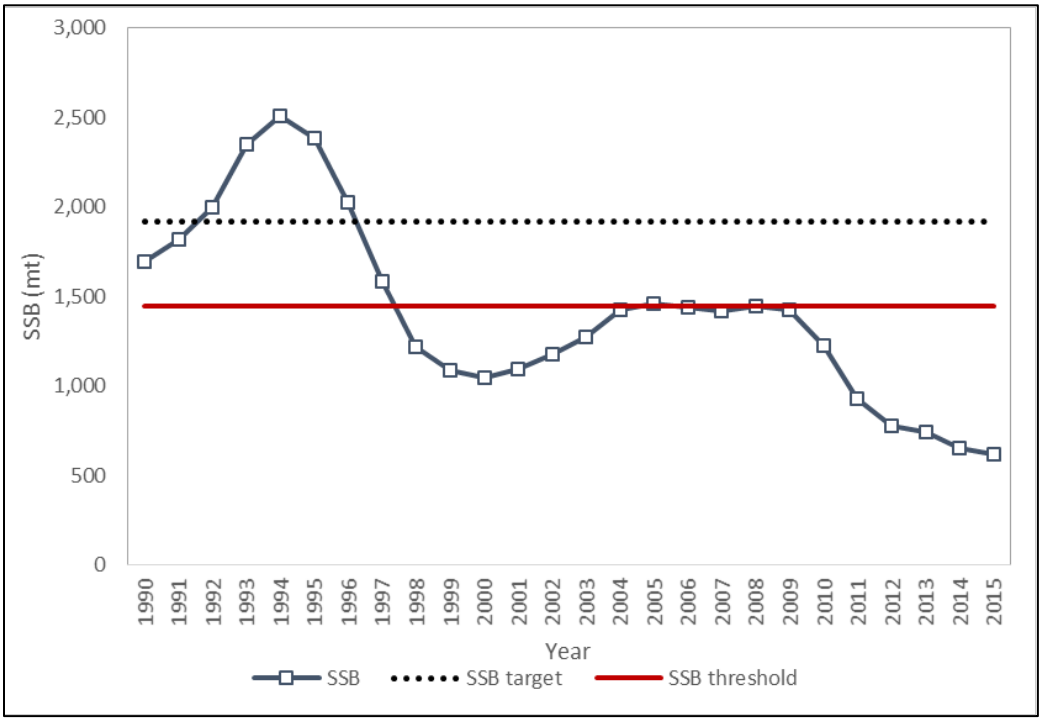

Figure 5. Total tautog harvest (recreational and commercial) in weight, 1981–2020.
Source: State compliance reports, MRIP.

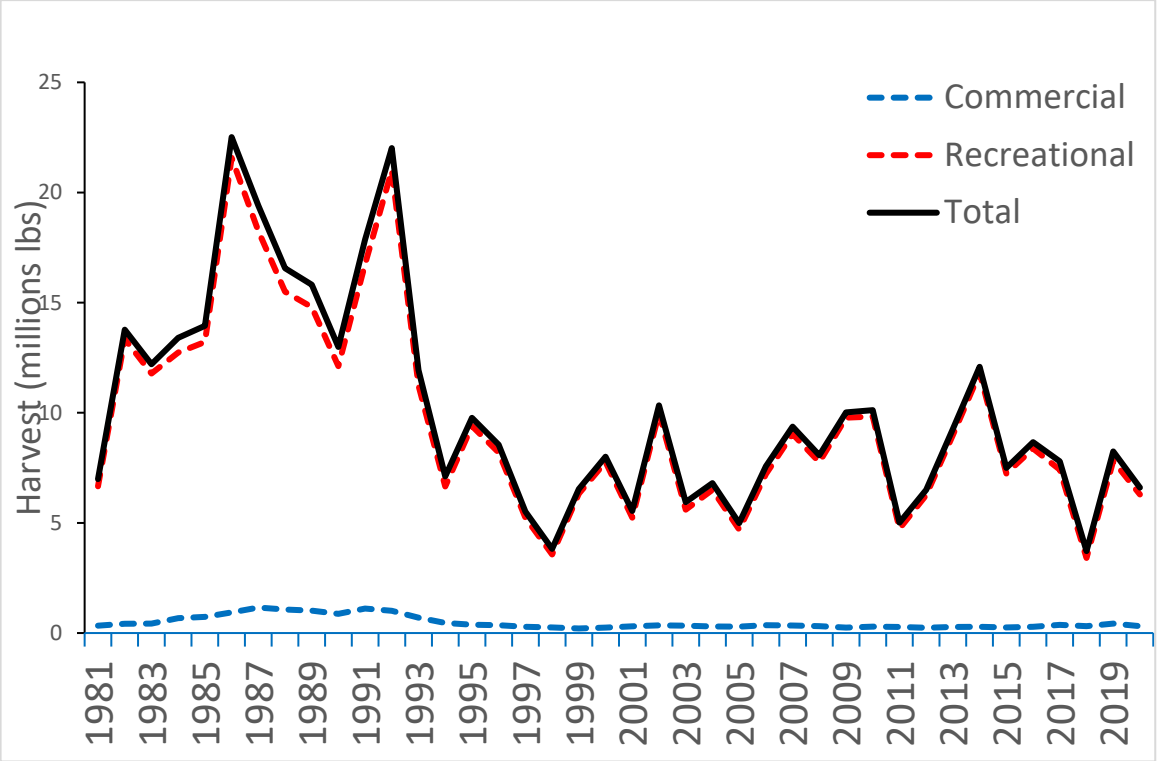

Figure 6. Percent of annual recreational tautog harvest by wave in numbers of fish (2018-2020).
Source: MRIP.

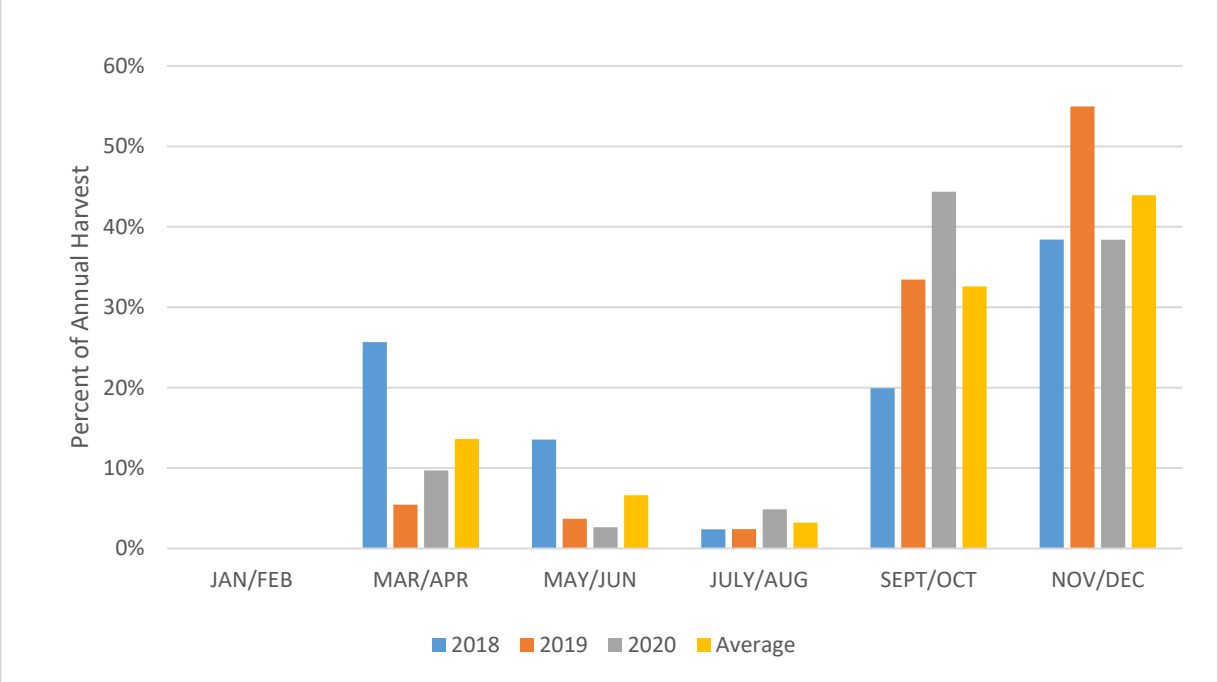

Figure 7. Percent of annual recreational tautog harvest by state in numbers of fish (2018-2020).
Source: MRIP

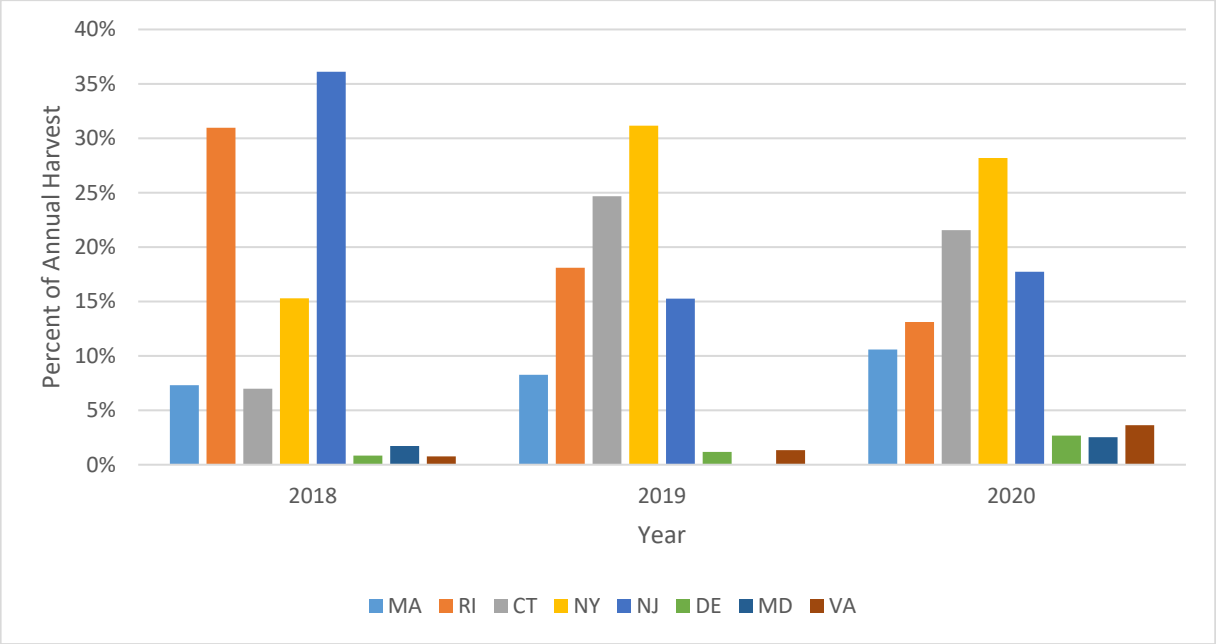

Figure 8. Changes in tautog commercial landings (mt) and price ($/lb) over time, 1950–2020.
Source: NMFS. Price unadjusted for inflation.

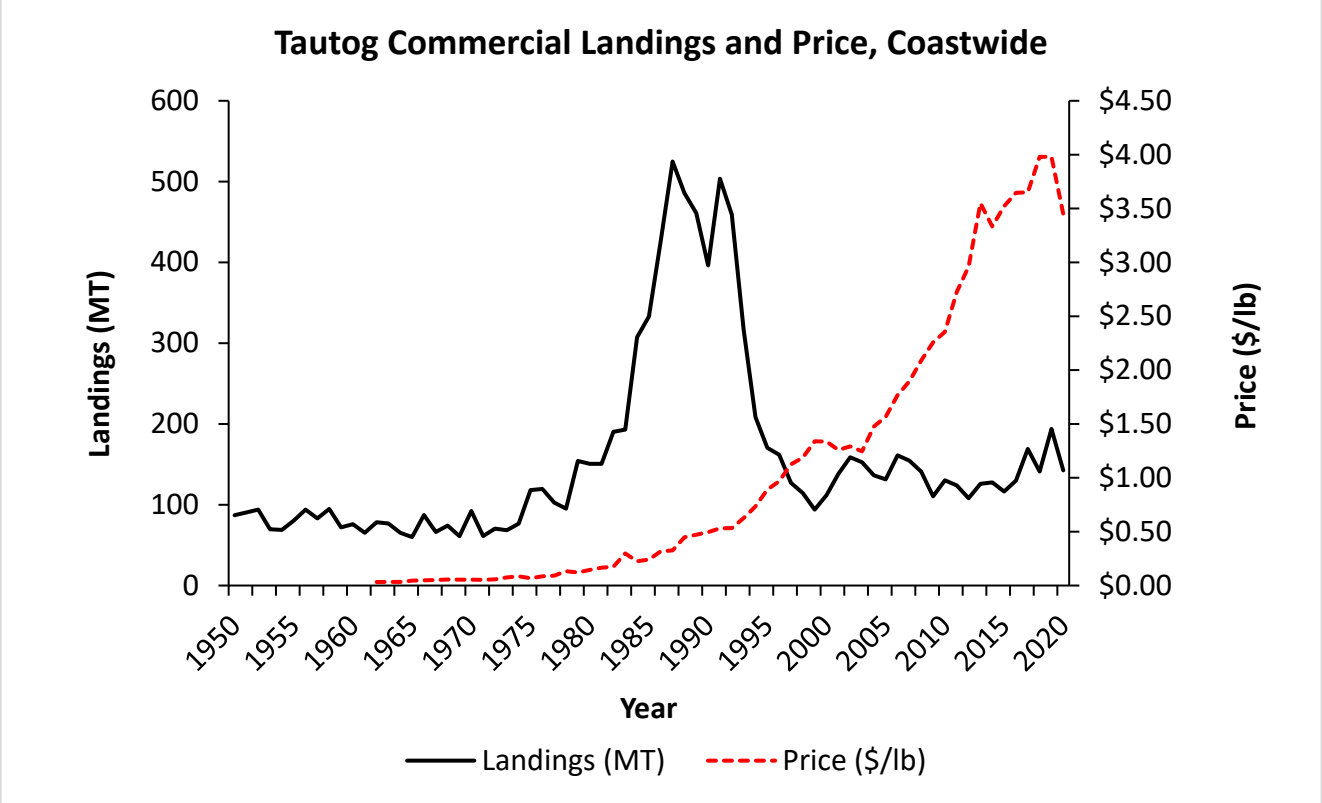

Table 1. Current fishing mortality and biomass targets and thresholds for each region, and stock status in 2015. Source: ASMFC 2016 Tautog Assessment Update.

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, 1996–2020, in pounds.

Source: State Compliance Reports, NMFS, and ACCSP Data Warehouse.

Year	Commercial Landings (lb)	Recreational Harvest (lb)	Total Harvest (lb)	% Recreational
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
2019	427,078	7,815,557	8,242,635	94.8
2020	313,467	6,290,648	6,604,115	95.3
Average	299,585	7,162,670	7,465,635	96

Table 3. 2020 tautog landings by sector: percent recreational and commercial by weight.

State	Commercial Landings (%)	Recreational (A+B1) (%)
MA	8.4	91.6
RI	5.8	94.2
CT	0.8	99.2
NY	9.5	90.5
NJ	0.2	99.8
DE	0.4	99.6
MD	0.0	100.0
VA	0.9	99.1
Coastwide	4.8	95.2

Table 4. Tautog recreational harvest by state and coastwide discards, in number of fish, 1996-2020. Source: MRFSS/MRIP (calibrated estimates), queried June 7, 2021. 2020 estimates are subject to change. *indicates PSE above 50. Dead discards are calculated using a 2.5% release mortality rate.

Year	MA	RI	CT	NY	NJ	DE	MD	VA	Coastwide Harvest	Live Discards	Dead Discards
1996	216,698	143,609	150,523	122,153	1,186,204	116,010	72,805*	636,163	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	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	854,272	3,030,403	75,760
1999	302,890	191,287	44,581*	407,886	279,728	267,875	23,468*	77,898	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	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	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	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	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	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	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	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	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	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	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	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	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*	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*	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	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	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*	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*	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	1,069,341	9,570,073	239,252
2019	168,776	369,450	503,529	635,866	311,363	24,065	779*	27,215*	2,041,043	13,357,455	333,936
2020	184,653	228,996	376,271	491,869	309,379	46,617	44,088	63,372	1,745,245	14,627,028	365,676

Table 5. Tautog recreational harvest (A + B1) by state in pounds, 1996-2020.
Source: MRFSS/MRIP (calibrated estimates), queried June 7, 2021. 2020 estimates are subject to change. *indicates PSE above 50

Year	MA	RI	CT	NY	NJ	DE	MD	VA	Coastwide Harvest
1996	1,039,911	659,785	490,239	291,482	2,681,850	350,297	98,324*	2,579,379	8,191,267
1997	308,098	666,065	215,724	749,252*	1,712,208	440,518	497,161	644,872	5,233,898
1998	310,600	605,908	391,933	485,810	70,731*	659,866	69,541*	972,295	3,566,684
1999	1,489,331	788,279	153,339*	1,509,978	895,556	1,049,562	42,003*	402,028	6,330,076
2000	1,301,437	689,698	256,201*	662,491*	3,756,593	692,466	161,426*	241,231	7,761,543
2001	1,052,175*	392,503	205,109	506,301	2,502,115	240,770	168,595*	168,103	5,235,671
2002	994,467	743,409	811,658	4,428,842	1,530,757	948,850	140,672	385,679	9,984,334
2003	527,044	1,388,657	1,180,217	875,271	639,109	358,999	59,071	573,623	5,601,991
2004	213,380*	1,590,436*	144,278	1,687,077	639,685	563,332	41,259*	1,624,091	6,503,538
2005	744,036	1,575,454	290,848	566,375	333,101	357,682	167,633	663,938	4,699,067
2006	484,094	1,130,146	1,589,614	1,002,049	1,443,680	599,179	106,148*	858,131	7,213,041
2007	260,548*	1,173,787	2,109,801	1,923,067	2,073,632	598,291	270,530	622,935	9,032,591
2008	230,549*	1,385,061	1,077,399	2,238,161	1,261,010	575,319	119,209	870,249	7,756,957
2009	236,974	1,648,614	1,353,957	3,057,551	1,273,529	1,034,484	277,124	892,873	9,775,106
2010	506,622	1,933,773	1,073,576	1,818,920	1,864,817	464,859	920,773	1,246,454	9,829,794
2011	803,546	328,959*	137,565*	1,284,037	1,008,756	380,758	189,361*	604,361	4,737,343
2012	403,108	1,512,425	2,093,847	1,285,933	312,531	341,015	62,097*	252,111*	6,263,067
2013	860,594	2,602,962	1,290,726	2,207,750	1,530,776	341,896	81,662	75,449*	8,991,815
2014	1,623,717	1,017,780	2,274,293	4,188,165*	1,849,045	485,332	3,544*	365,657*	11,807,533
2015	1,041,058*	1,105,259	1,594,233	2,153,150	1,100,117	100,302	45,067*	100,143*	7,239,329
2016	317,006	1,290,428	1,368,363	4,514,164	582,199	164,887	15,059*	126,135*	8,378,241
2017	2,883,890	599,424	908,549	1,394,388	1,380,992	103,331	59,901*	88,228*	7,420,148
2018	300,067	1,075,131	295,758	536,332	1,091,046	30,240	54,332	25,766	3,408,672
2019	646,031	1,483,123	2,133,656	2,455,837	908,871	87,348	2,680	98,011	7,815,557
2020	692,588	853,470	1,462,227	1,733,995	1,010,011	154,065	148,760	235,532	6,290,648

Table 6. Commercial landings for tautog in pounds, by state, 1996-2020.
Source: ACCSP Data Warehouse and State Compliance Reports. 2020 Landings are preliminary.

Year	MA	RI	CT	NY	NJ	DE	MD	VA
1996	32,579	64,817	33,327	105,466	89,435	1,599	3,622	26,137
1997	64,240	39,601	14,519	78,228	49,726	841	7,663	25,471
1998	91,319	20,304	6,905	68,892	42,426	1,715	5,682	14,770
1999	75,619	26,090	12,961	37,886	27,307	confid	6,489	20,901
2000	96,001	43,719	8,504	39,953	39,636	confid	3,896	14,794
2001	84,330	56,065	22,259	62,795	60,152	confid	4,591	14,587
2002	148,073	50,007	26,781	60,805	36,605	confid	5,010	22,834
2003	86,205	54,650	40,784	72,264	66,766	confid	5,213	10,705
2004	88,192	36,581	26,037	76,606	51,057	3,064	6,049	13,079
2005	99,344	42,838	24,053	52,525	61,163	confid	4,338	5,667
2006	147,609	47,261	16,841	71,683	58,119	confid	5,411	8,533
2007	95,820	63,441	30,002	73,797	62,979	2,814	3,297	8,588
2008	73,867	48,027	20,160	88,571	63,958	2,253	2,964	10,946
2009	54,703	50,920	21,194	87,289	14,591	2,116	1,638	11,132
2010	75,317	44,054	16,948	93,153	49,213	confid	1,285	6,077
2011	57,787	47,426	14,784	82,761	45,865	confid	confid	14,590
2012	67,870	50,126	6,233	76,373	20,831	1,444	confid	13,870
2013	70,157	53,428	5,887	110,849	22,079	confid	1,458	11,776
2014	63,191	53,384	5,164	121,538	31,665	confid	confid	7,545
2015	61,752	47,140	7,249	111,925	17,538	2,108	1,173	6,937
2016	58,095	50,680	7,651	144,650	13,367	2,083	1,098	6,252
2017	66,481	52,844	8,485	231,644	6,551	1,372	confid	5,165
2018	61,055	51,451	7,341	186,108	1,559	654	273	1,349
2019	67,021	46,562	18,651	289,746	2,512	646	confid	1,982
2020	63,405	52,651	11,644	181,639	1,941	585	confid	2,210

Table 7. State recreational regulations implemented for Tautog in the 2020 fishing year.

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

Table 8. State commercial regulations implemented for Tautog in the 2020 fishing year.

STATE	SIZE LIMIT	POSSESSION LIMITS (number of fish)	OPEN SEASONS	QUOTA (pounds)	GEAR RESTRICTIONS
Massachusetts	16”	40	Sept 1 – 100% of Quota	64,753	Mandatory pot requirements. Limited entry and area/time closures for specific gear types. Fishery permit endorsement
Rhode Island	16”	10	Apr 1 – May 31 Oct 15 – Dec 31	51,348*	Harvest allowed by permitted gear types only.
Connecticut	16”	3 (restricted licenses) 10 (all other)	Apr 1 – Apr 30 Jul 1 – Aug 31 Oct 8 – Dec 24	-	Mandatory pot requirements.
New York	15”	25 (10 fish w/ lobster gear and when 6 lobsters are in possession)	LIS: May 7 – July 31; Sept 1- Nov 23 NY Bight: Apr 18 –Jan 25	-	Mandatory pot requirements. Gill or trammel net is prohibited.
New Jersey	15”	*> 100 lb requires directed fishery permit; <= 100 lb requires either directed or non-directed fishery permit*	Jan 1 – May 1 Sept 19-Dec 31	103,000	Mandatory pot requirements.
Delaware	16”	4	Jan 1 – May 15 July 1 – Dec 31	-	Mandatory pot requirements.
Maryland	16”	4 2 4	Jan 1-May 15 July 1 – Oct 31 Nov 1- Dec 31	-	Mandatory pot requirements.
Virginia	15”	-	Jan 1 – Jan 21 Mar 1 – May 15 Nov 1 – Dec 31	-	Mandatory pot requirements. Pots prohibited in tidal waters.

* 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 2020. Addendum III requires all states to collect 200 samples per year. Source: State compliance reports

State	2020 Samples	Sample Sources
MA	364 lengths; 211 ages	Commercial Fishery Market sampling; Pot sampling; Rod and Reel sampling; F-I trawl survey; Lobster ventless trap survey
RI	251 lengths; 249 ages	Recreational fishery sampling, RIDMF Fish Pot Survey, RIDMF Trawl Survey, and Beach Seine survey
CT	0	Long Island Sound Trawl Survey
NY	285 lengths and ages	Commercial markets and recreational sampling; fishery independent surveys
NJ	185 lengths and ages	Recreational fishery and Artificial Reef Ventless Trap Survey
DE	161 lengths and ages	Recreational sampling
MD	202 lengths and ages	Recreational sampling
VA	109 lengths and ages	Commercial markets and recreational sampling

Table 10. Ongoing fishery-independent surveys, as of 2020. 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) 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) 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) 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
	East End Seine*	Seine	30 stations per month	June through October	2018
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
	Nearshore ocean waters within Sea Girt, Manasquan Inlet and Little Egg Artificial Reefs	Trap	48-54 traps set each Spring, Summer, Fall sampling periods	Spring (March-April); Summer (June-August); Fall (October-November)	2016
DE	Ventless Trap Survey	Trap	13 stations per two weeks	May through December	2018
MD	Maryland Coastal Bays	Trawl	20 stations per month	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

***Survey did not run in 2020 due to the COVID-19 pandemic**

Table 11. Ongoing fishery-dependent monitoring in each state, as of 2020

State	Fishery Sector	Data Collected	Data Source
MA	Commercial	Landings at the trip level	Harvesters and primary buyers
	Commercial	Length, Weight	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.

Table 12. Tagging Data collected in 2020. Amendment 1 requires all states to implement a commercial harvest tagging program. Source: state Compliance reports

State	Quota (if applicable)	Biological Metric (including initial tag request)	Number of Participants	Number of Tags Issued	Number of Tags Returned
MA	62,797	30,000 tags; 2014-2018 avg weight 3 lbs. Annual Commercial Quota ~ 64,753/3= 21,584 + tag loss	160	34,775	13,502
RI	51,348	15,405 tags; avg weight 4 lbs. Commercial Quota 51,348/4 * 1.2 (tag loss buffer)= 15,405	295	25,501	8,369
CT	N/A	6,000 tags; Maximum number of fish landed by each permit holder (2016-2018) and rounded to the nearest multiple of 10	No Tagging in 2020		
NY (LIS)	N/A	170,000 tags; avg weight 3.3 lbs. Max fish landed between 2015-2018 (112,796)+ .2 buffer for loss+ .2 buffer for underreporting, rounded to nearest multiple of 25, then rounded to nearest 1,000	No Tagging in 2020		
NY (South Shore)					
NJ	103,000	10,000 tags; avg weight 2.6 lbs. Divide avg annually landing for past 10 years (22,127 lbs) by avg weight+ .2 buffer for tag failure and loss	22	4,900	2,789
DE	N/A	750 tags; Avg weight 2 lbs. Avg commercial landings 2016-2018 (1,254 lbs) divided by avg weight + .25 buffer	36	796	656
MD		500 tags; 2012-2018 avg weight 4 lbs. Annual landings from 2012-2018 divided by avg weight multipled by .2 buffer to get tags required per year. 2013 was the highest estimate of needed tags (427 tags), rounded up to 500	1	25	21
VA		3,250 tags; avg weight 3.9 lbs. 5-year avg landings for each permit holder divided by avg weight + .3 buffer	25	2,055	1,604