

2004 REVIEW OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
FISHERY MANAGEMENT PLAN FOR
TAUTOG
(Tautoga onitis)

Prepared by

Lydia Munger (ASMFC)

Tautog Plan Review Team

Paul Caruso (MA)
David Simpson (CT)
Jason McNamee (RI)

July 2004

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I. Status of Fishery Management Plan Development

The Atlantic States Marine Fisheries Commission (Commission) adopted the Fishery Management Plan for Tautog in March 1996. The FMP requires a minimum possession size to increase the spawning stock biomass and yield to the fishery. It also includes fishing mortality targets intended to rebuild the stocks and to prevent overfishing.

Addendum I to the FMP was approved by the Tautog Management Board on May 19, 1997. This Addendum was in response to the Board's concern about state's ability to meet the FMP's compliance schedule because of continuing problems with data deficiencies. Specifically, several states expressed concerns that the plan did not allow adequate time to determine state-specific fishing mortality rates. Further, the original FMP contained a compliance schedule that required states in the northern range of the species to implement management measures prior to states at the southern extent of the species range. Some of the members of the Management Board were concerned that the compliance dates should be consistent for states throughout the range of the species.

Addendum I required all states to implement management measures to reach the interim fishing mortality target ($F=0.24$) and a 14" size limit by April 1, 1998. Additionally it included the requirement that all states implement management measures to achieve the fishing mortality target of 0.15 by April 1, 2000. Also, the Addendum included *de minimis* requirements and corrected several typographical errors in the original FMP.

In the fall of 1999, the Tautog Management Board requested that Addendum II be developed to address: (1) adjusting the compliance schedule and (2) developing a list of issues to be considered in a subsequent addendum or amendment. Addendum II extended the compliance schedule out to April 2, 2002 instead of the earlier requirement, which mandated states to meet the target overfishing definition by April 1, 2000. Addendum II also listed a variety of issues, including (1) the chosen plan target of $F=M$ (2) clarification of the fishing mortality targets in the FMP with respect to individual state management program flexibility, (3) monitoring requirements in the FMP, (4) and data requirements to analyze management options by fishing modes within commercial and recreational fisheries.

Addendum III revised the plan target and compliance requirement $F=M=0.15$ to $F_{40\% SSB}$ and updated information pertaining to tautog habitat and the data collection compliance requirements under the Atlantic Coastal Cooperative Statistics and Tagging

Programs. Technical Addendum #1 to Addendum III corrected a typographical error in Addendum III to the FMP.

II. Status of Stocks

Tautog is a long lived species, with individuals over age 30 reported from Rhode Island and Connecticut. Most females mature (80%) at age 3. Natural mortality (M) has been estimated at $M=0.15$ for males and $M=0.2$ for females.

An assessment was most recently prepared in 2001, using data from 1981 through 2000. A coastwide estimate of fishing mortality rates was derived with a VPA using fisheries dependent and independent data (independent data from Massachusetts through New Jersey only). Results indicate that fishing mortality rates have declined from a high of 0.71 in 1993, to 0.41 in 2000. Since the 2000 rate exceeds the final plan target of $F_{40\%SSB}$, which is currently at $F=0.29$, tautog are overfished and overfishing is occurring. Abundance indices through 2000 show a slight increase in biomass and recruitment in recent years.

For states south of NJ, a lack of data hampers efforts to estimate current fishing mortality rates and tautog abundance at a regional level of assessment. Most states are now collecting additional age and growth data with a goal of maintaining reliable F estimates.

III. Status of Fishery

The tautog fishery is primarily recreational, extending from Maine to Virginia. Most landings occur in state waters between Cape Cod and the Chesapeake Bay. Tautog have historically ranked seventh in recreational species sought in both the North Atlantic and Mid-Atlantic sub-regions. Tautog are most frequently caught in the spring and fall months, although some Mid-Atlantic Region fishermen pursue them year-round and there is an active fishery off the Virginia Coast in Winter.

Recreational landings declined from 1987 to 2003 (figure 1). Most recreationally landed tautog were caught in Massachusetts, New York, and New Jersey over the 1981 to 2003 time period, with those states accounting for 64 % of the recreational harvest by weight (table 1).

Commercial landings averaged 7% of total landings in 2002. Commercial interest in tautog has increased in response to higher market prices, exceeding \$1.00/LB at times. Most commercial landings are taken by otter trawls, with gillnets, handlines, fish pots, and lobster traps all accounting for a share. Commercial landings for 2003 were not available at the time this report was prepared.

Commercial landings fluctuated without trend around the 200,000 pound mark from 1950 until 1980. Landings began to increase in the early 1980's and reached a high

of 1,157,100 pounds in 1987 (figure 2). From 1986 through 1992 landings were sustained at around a million pounds. A steep decline in landings began in 1991 and continues to the present. Commercial landings were 350,835 pounds in 2002. Table 2 shows commercial landings from 1981 - 2002.

Recent declines in landings of both user groups can be attributed to both stock conditions and more rigorous management measures.

IV. Status of Assessment Advice

Tautog stock status was last reviewed by the Technical Committee through an updated coastwide VPA run performed in the summer of 2001. After reviewing all results, the Technical Committee recommended that fishing mortality rates be reduced by 29% (or exploitation rates by 25%) to meet the final plan target and to begin rebuilding the stock. The next stock assessment is scheduled for review in 2005.

V. Status of Research and Monitoring

Addendum III requires all states to collect data to continue support of a coast-wide stock assessment until such time that there are sufficient data and analyses to allow for regional or redefined regional assessment approaches. As such, states are required to collect and report commercial and recreational catch estimates, a suitable time series as determined by the Tautog Technical committee of fisheries independent indices of abundance, and 200 age and length samples per state, within the range of lengths commonly caught by the fisheries.

Length and abundance data are collected in trawl surveys in Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland and Virginia. New York, Rhode Island and New Jersey are collecting length and age data from party boats. Age/length information is also being collected in Massachusetts, Connecticut, Virginia, and Maryland.

Connecticut conducted a hook and release mortality study in 1993 and 1995; Virginia conducted a study in 1995. Results indicate about a 2.5% discard mortality rate. This rate was used in the last assessment.

A genetic study of Tautog from Rhode Island evaluated genetic variation patterns through DNA analysis to determine if Tautog is from one or multiple genetic stocks. This study could not determine that Tautog populations from Rhode Island to Virginia were from multiple stocks (Orbacz, Gaffney 1999).

VI. Status of Management Measures and Issues

Addendum III to the Interstate Fishery Management Plan for Tautog includes commercial and recreational minimum sizes, and catch restrictions to reach the target fishing mortality rate at 40% SSB. The target fishing mortality rate is $F_{40\%SSB}$, which is

currently estimated at 0.29. States were required to reduce fishing mortality in the recreational fishery to achieve the target by April 1, 2003. Reductions were achieved through possession limits, seasons, or a combination of both. States may implement more restrictive regulations in either the recreational or commercial fishery at any time.

VII. Current State-by-State Implementation of FMP Compliance Requirements

States were expected to implement regulations to meet $F_{40\%SSB}$ target in compliance with Addendum III to the FMP by April 1, 2003. Each state included the changes to be made for the 2003 fishing year in its annual compliance report.

The Tautog Plan Review Team reviewed the states' annual compliance reports during summer 2003. Annual required monitoring programs as well as all commercial and recreational management measures (including minimum size) for Tautog are considered compliance elements in Addendum III to the FMP. The state of New York did not complete the required monitoring program in 2003 and has no plans to do so in 2004, meaning that the state of New York is not fully and effectively implementing the requirements of the American eel FMP. The Plan Review Team recommended that all of the remaining states be found in compliance.

VIII. Prioritized Research Needs (As of June 2004)

1. Increased catch and discard length sampling from the commercial/recreational fishery for all states from Massachusetts through Virginia.
2. Increase MRFSS 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 than in early spring/late fall when tautog catches are more likely.
3. Establish standardized state-by-state long-term fisheries independent surveys to monitor tautog abundance and length-frequency distributions, and to develop young-of-the-year indices.
4. Continue and expand biological sampling of recreational and commercial catches, by mode and gears respectively (Including weights, lengths, sex, maturity, and especially age from hard parts) at minimum levels as established by the FMP.
5. Collect effort data for determining commercial and recreational CPUE.
6. Define the status (condition and extent) of optimum or suitable juvenile habitats and trends in specific areas important to the species.
7. Determine pot and trap escape vent dimensions needed to release tautog over a range of sizes.

8. Explore possible regional and local genetic differences (stock differentiation) and relate these to recruitment, growth, exploitation rates, and habitat differences. These differences can help support appropriate region-specific management strategies.
9. 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.
10. Define local and regional movement patterns and site fidelity in the southern part of the species range. This information may provide insights into questions of aggregation vs. recruitment to artificial reef locations. (Note: This work is currently being conducted as a Masters Thesis at VIMS)
11. Collect basic sociocultural data on tautog user groups including demographics, location, and aspects of fishing practices such as seasonality.
12. 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 be investigated 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.
13. Define the susceptibility of juveniles to coastal and anthropogenic contamination and resulting effects. The synergistic effects of leaked fuel, bilge water, treated pilings, and antifouling paints on tautog health should also be studied.
14. Confirm that tautog, like cunner, hibernate in the winter, and in what areas and temperature thresholds, for how long, and are there 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.
15. 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.
16. Reexamine the source of offshore eggs and larvae (in situ or washed out coastal spawning).

Table 1. Tautog recreational harvest (A + B1) in weight¹ (lbs.) of fish, 1981-2003 by state. Personal communication from the National Marine Fisheries Service, Fisheries Statistics and Economics Division, Silver Spring, MD.

Year	CT	DE	MD	MA	NJ	NY	RI	VA	Total
1981	242,339	6,585	10,295	790,611	161,423	1,496,039	664,568	742,653	4,114,513
1982	610,608	428,036	90,644	3,226,869	1,241,155	1,674,949	777,931	271,920	8,322,112
1983	458,581	4,438	6,550	1,837,263	414,956	1,124,844	615,592	1,267,164	5,729,388
1984	733,711	95,739	79,110	733,876	717,260	541,805	1,809,822	669,870	5,381,193
1985	471,185	144,858	1,107	328,042	741,656	2,034,903	277,385	298,796	4,297,932
1986	838,345	264,744	10,049	7,862,585	2,132,571	2,833,206	2,042,584	918,139	16,902,223
1987	1,106,606	387,075	266,093	1,751,372	2,130,955	2,288,075	507,424	442,750	8,880,350
1988	610,172	249,803	446,947	2,255,930	1,331,832	2,380,285	612,123	1,410,003	9,297,095
1989	1,038,217	743,338	78,391	1,076,365	1,289,186	1,018,016	296,889	806,337	6,346,739
1990	199,999	142,627	59,720	895,326	1,256,488	1,980,289	389,579	229,442	5,153,470
1991	648,633	354,497	106,222	798,890	2,189,144	2,352,646	1,007,548	619,215	8,076,795
1992	1,048,638	183,855	159,730	1,668,485	2,485,693	1,199,558	656,713	255,996	7,658,668
1993	531,024	217,881	105,232	752,598	1,361,612	1,800,794	389,734	758,409	5,917,284
1994	417,439	152,034	177,358	373,188	330,551	585,037	328,668	1,101,129	3,465,404
1995	402,617	793,339	115,993	309,224	1,722,714	369,643	237,094	613,348	4,563,972
1996	245,817	158,751	26,484	397,284	1,123,173	193,046	248,840	778,314	3,171,709
1997	84,297	204,419	182,995	166,042	483,639	331,530	301,109	319,257	2,073,288
1998	231,622	257,347	27,648	96,694	41,431	208,743	316,338	273,516	1,453,339
1999	61,142	358,329	37,677	363,472	511,672	761,447	223,762	203,249	2,520,750
2000	58,475	373,580	56,127	442,816	1,812,959	258,099	203,601	188,187	3,393,844
2001	63,157	159,961	72,357	502,248	1,482,613	171,928	165,380	127,556	2,745,200
2002	447,139	646,664	56,178	521,611	858,046	2,137,521	205,654	44,707	4,917,520
2003	596,302	167,314	17,077	177,878	117,558	380,263	469,251	281,289	2,206,932
Average	464,645	271,173	91,033	1,135,576	1,078,418	1,172,121	530,383	524,451	5,267,804

¹ Caution – MRFSS weight estimates are minimums and may not reflect the actual total weight landed or harvested.

Table 2. Tautog commercial landings in pounds, 1981-2002 by state. Personal communication from the National Marine Fisheries Service, Fisheries Statistics and Economics Division, Silver Spring, MD.

Year	CT	DE	MD	MA	NJ	NY	RI	VA	Total
1981	20,500	1,000	1,200	103,000	54,400	81,400	69,800	700	332,000
1982	21,200	800	100	69,300	148,200	90,400	86,300	2,600	418,900
1983	33,500	800	-	57,600	100,600	88,400	142,600	1,700	390,900
1984	32,700	1,400	2,600	68,100	129,700	102,500	334,700	1,200	672,900
1985	49,900	3,200	2,400	63,200	125,500	84,500	403,200	1,639	733,539
1986	103,900	300	2,600	165,800	100,700	201,300	363,100	1,800	939,500
1987	159,200	500	3,800	250,000	95,200	225,200	420,500	2,700	1,157,100
1988	112,100	600	6,100	277,100	88,000	255,000	328,900	2,800	1,070,600
1989	99,706	-	3,978	352,507	51,842	285,422	214,928	7,387	916,064
1990	82,008	500	4,599	289,074	99,112	181,543	211,084	5,151	873,071
1991	54,000	1,300	3,164	354,346	93,022	226,413	371,597	5,058	1,108,900
1992	65,700	200	4,058	292,291	116,332	169,011	359,767	4,389	1,011,748
1993	44,000	300	1,432	160,336	153,474	89,467	201,593	2,660	653,262
1994	43,000	400	1,718	37,399	162,641	71,375	130,719	10,315	457,567
1995	20,466	600	4,416	35,298	116,123	72,879	95,019	27,701	372,502
1996	33,327	-	3,622	32,579	89,435	105,466	64,876	26,137	322,115
1997	14,519	841	7,663	64,275	49,726	78,228	39,601	25,471	280,324
1998	6,905	1,715	5,682	91,424	42,426	69,004	20,327	14,770	252,253
1999	12,961	844	6,489	75,685	27,392	38,033	26,107	20,901	208,412
2000	8,504	272	3,896	96,001	39,636	38,839	43,719	14,794	245,661
2001	22,259	287	4,591	84,330	60,152	62,795	56,065	14,587	305,066
2002	26,781	629	5,101	148,073	36,605	60,805	50,007	22,834	350,835
Average	46,302	708	3,886	137,634	85,933	118,835	174,883	9,488	577,670

Figure 1. Tautog recreational harvest (A + B1) in weight (lbs.) of fish, 1981-2003. Personal communication from the National Marine Fisheries Service, Fisheries Statistics and Economics Division, Silver Spring, MD.

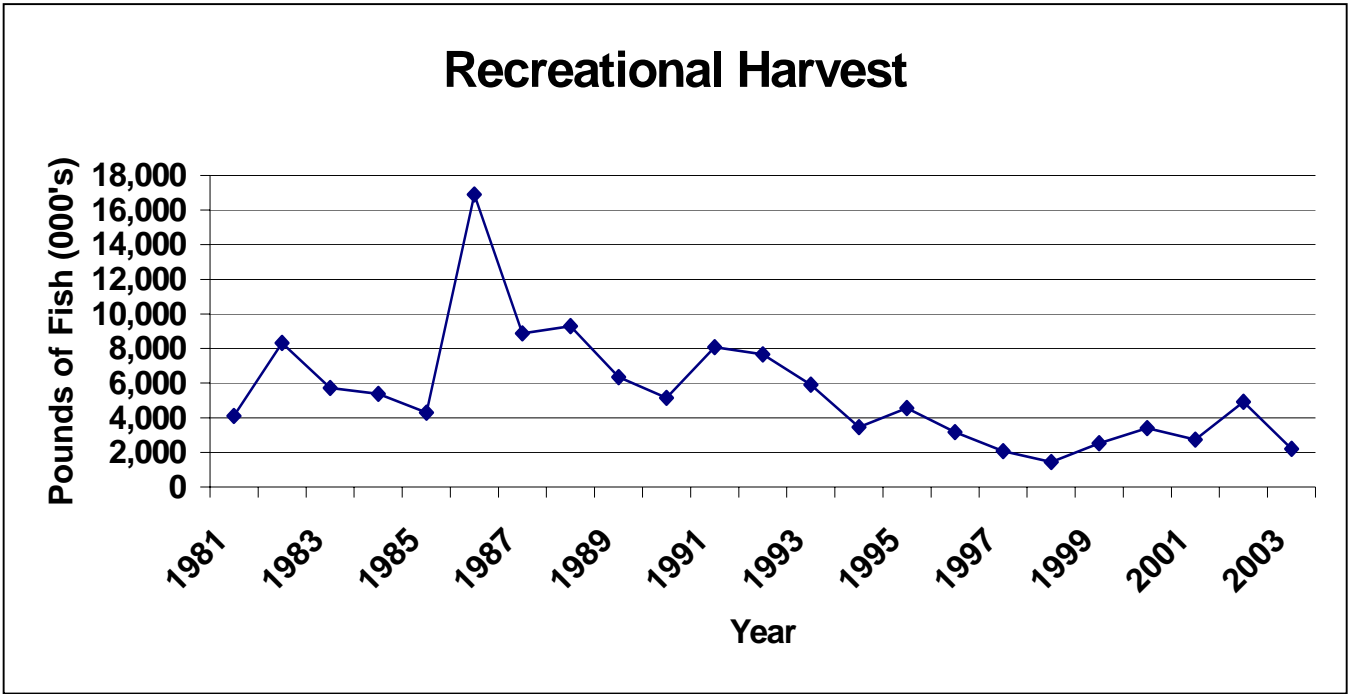
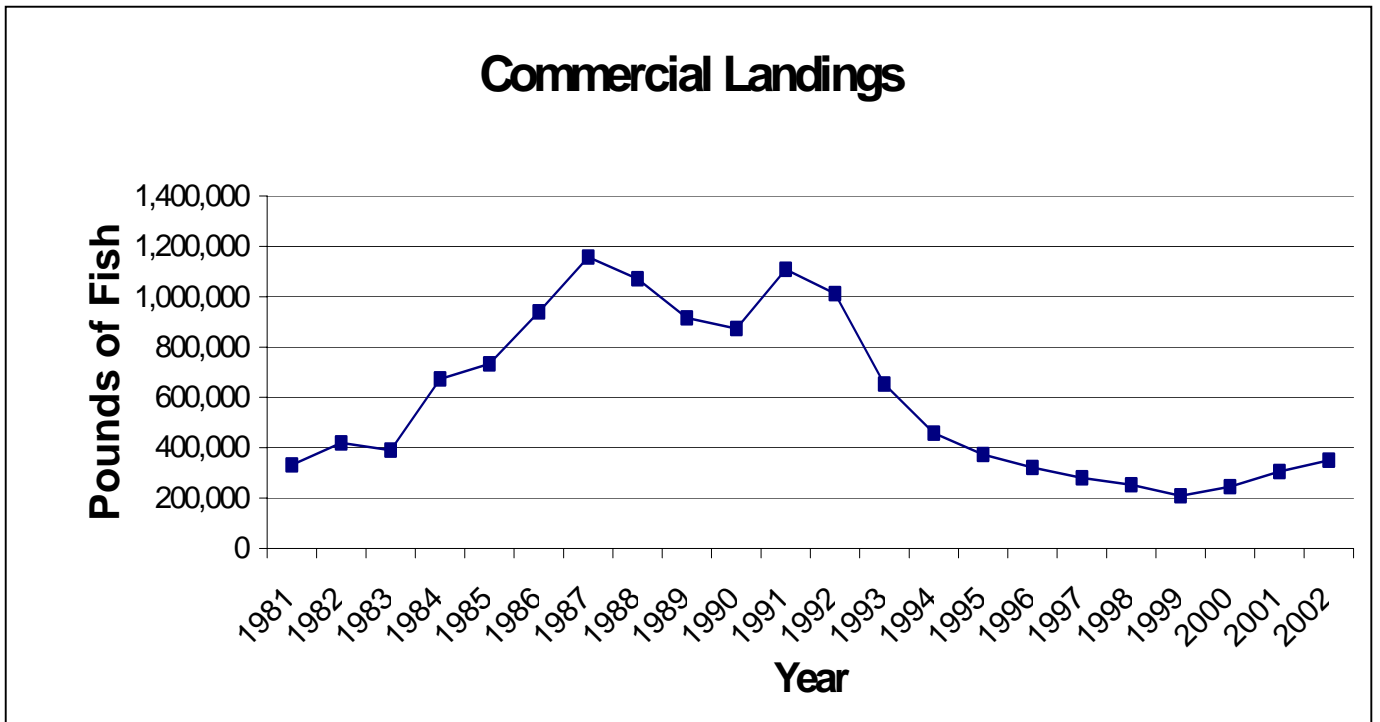


Figure 2. Tautog commercial landings in thousands of pounds, 1981-2002. Personal communication from the National Marine Fisheries Service, Fisheries Statistics and Economics Division, Silver Spring, MD.



2003 Commercial Tautog Regulations

STATE	SIZE LIMIT	POSSESSION LIMITS	SEASONS	QUOTA	GEAR RESTRICTIONS
Massachusetts	16"	40	April 15-May 15 July 11-October 31		Yes
Rhode Island	16"	10	April 15-May 31	17,116lbs	Yes
	16"	10	August 1-September 15	17,116lbs	
	16"	10	October 15-December 31	17,116lbs	
Connecticut	14"	a	January 1-April 30 June 15-Dec 31		Yes
New York	14"	b	some gears		Yes
New Jersey	14"		April 15-June 30 November 1-January 15	103,000lbs	Yes
Delaware	14"/15"	See recreational	See Recreational		
Maryland	14"	5			Yes
Virginia	14"		Jan 1- April 30 Sept 1- Dec 31		Yes

2003 Recreational Tautog Regulations

STATE	SIZE LIMIT	POSSESSION LIMITS	SEASONS
Massachusetts	16"	3	-
Rhode Island	16"	3	May 1-October 14
	16"	10	October 15-December 31
Connecticut	14"	4 (daily)	Jan 1-Apr 30, June 15- Nov 23
New York	14"	10	October 1-May 31
New Jersey	14"	4	January 1-May 31
	14"	1	June 1-November 14
	14"	8	November 15-December 31
Delaware	14"	10 ^c	Jul 1 - Mar 31
	15"	3	Apr 1 - Jun 30
Maryland	14"	5	d
Virginia	14"	7	Open

a The trawl fishery has a possession limit of 75 fish, the commercial hook, fish pot, trap net, fyke net, and gill net fisheries the possession limit is 25 fish, and in the lobster pot fishery the possession limit is 10 fish. Holders of Connecticut Marine Pound Net Registration may possess up to twelve fish year round except that during the May 1 through June 14 closed season all female tautog must be released without avoidable injury. All possession limits are daily limits.

b New York has a 25 fish vessel trip limit for commercially caught tautog, except only 10 per vessel are allowed when lobster pot gear and more than six lobsters are in possession.

c Delaware has a 28 day closure from September 1 through September 28.

d Maryland will close the tautog recreational fishing season from December 1 through December 31.