

2006 REVIEW OF THE
ATLANTIC STATES MARINE FISHERIES COMMISSION
FISHERY MANAGEMENT PLAN FOR
TAUTOG
(*Tautoga onitis*)



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ASMFC FISHERY MANAGEMENT PLAN FOR
TAUTOG (*Tautoga onitis*)**

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 difficulties to states in meeting 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 from $F=M=0.15$ to $F_{40\% \text{ SSB}}$ 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.

Addendum IV, approved by the Board on January 29, 2007 established spawning stock biomass target and threshold reference points allowing the ASMFC to determine whether or not the stock is overfished.¹ This Addendum also established a new fishing mortality rate of $F = 0.20$ to initiate rebuilding to the spawning stock biomass threshold and target levels. The $F = 0.20$ requires a coastwide reduction of 28.6 percent reduction in overall fishing mortality rate. States may only get credit for reductions made in the recreational fishery States and are required to implement management measures consistent with the measures contained in Addendum IV by January 1, 2008.

Addendum V was initiated by the Board on May 8, 2007. The main purpose of this addendum is to give states credit for both commercial and recreational reductions to reduce to $F = 0.20$ as stipulated in Addendum IV. This addendum also proposes removing North Carolina from the management unit because of their insignificant tautog fishery. The Tautog Board will consider approving Addendum V on August 15, 2007.

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.

A benchmark stock assessment was most recently prepared in 2005, using data from 1981 through 2003. 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). Results indicated that fishing mortality rates have declined from a high of 0.71 in 1993 to 0.29 in 2003. The assessment was updated in 2006 to include 2004 harvest and discard information. Fishing mortality rates from that update depict the terminal year F (2004) at 0.28, below the overfishing definition. However, the Technical Committee found that SSB stock size and total stock size remain well below the early time series averages. Accordingly and based upon recommendations of the Committee the Management Board approved a stock rebuilding target and an interim overfishing target of $F=0.20$ (Addendum IV), requiring a 25.6% reduction in annual exploitation, beginning in 2008.

For states south of NJ, a lack of fisheries independent data hampers efforts to estimate current fishing mortality rates and tautog abundance at the regional level. All states are collecting age and growth data to contribute to future stock assessments.

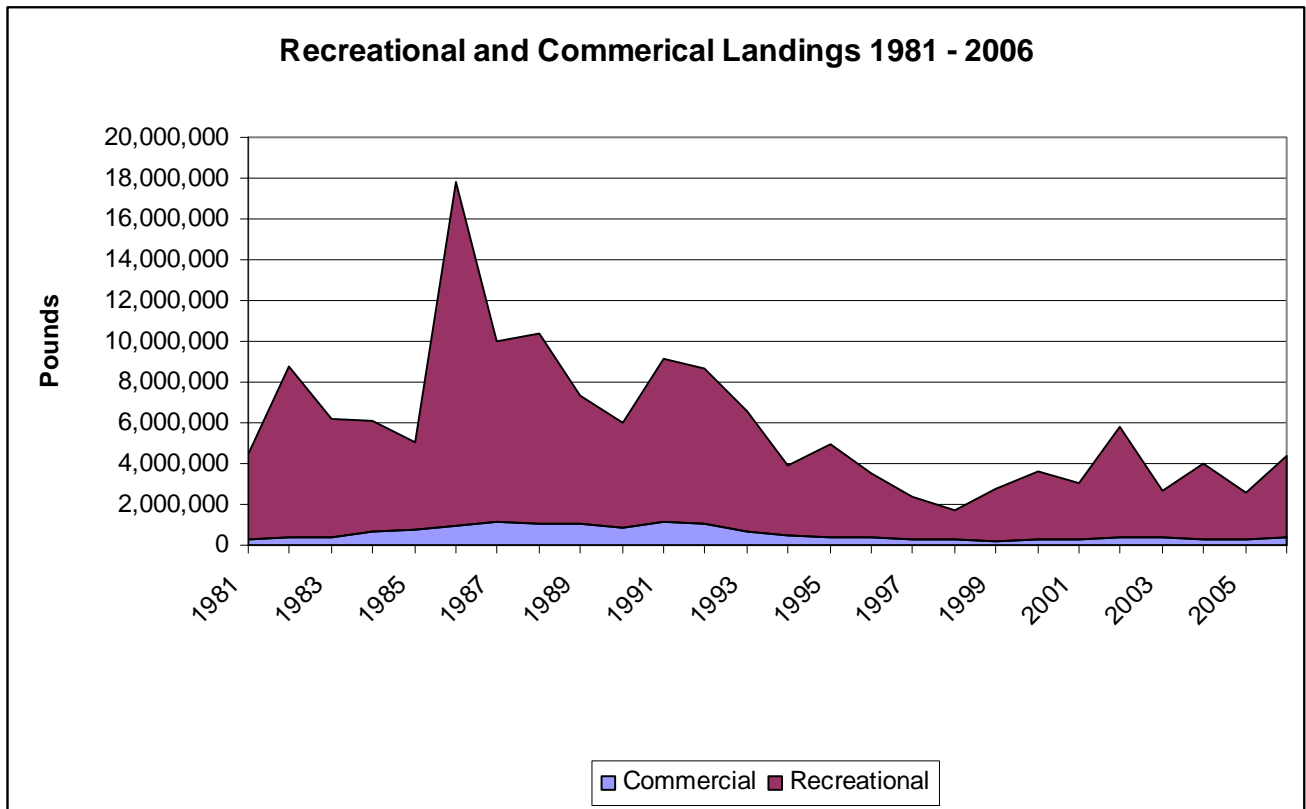
¹ The analysis supporting the selection of the biomass reference points and fishing mortality rate are fully described in a document by the ASMFC Tautog Technical Committee. The document is titled *Development of Fishing Mortality and Spawning Stock Biomass Reference Points Option for Addendum IV to the Tautog Fishery Management Plan*.

III. Status of Fishery

The tautog fishery is primarily recreational (Figure 1), extending from Maine to Virginia. Most landings occur in state waters between Cape Cod and the Chesapeake Bay. Tautog, historically ranking seventh in recreational species sought in both the North Atlantic and Mid-Atlantic sub-regions, are most frequently caught in the spring and fall months. Some Mid-Atlantic Region fishermen pursue tautog year-round and there is an active fishery off the Virginia Coast in winter.

Figure 1: Tautog recreational and commercial landings from 1981 – 2006.

Recreational Data from MRFSS. Commercial landings from the National Marine Fisheries Service Office of Science & Technology Commercial Fisheries Landing Data website, <http://www.st.nmfs.gov/st1/commercial/index.html> 2006 commercial landings are preliminary data taken directly from each states compliance report.



Recreational landings declined overall from 1986 to 1998 and then increased slightly after 1999 (Table 1 & Figure 2). Recreational landings have fluctuated every year since 2000 alternating with peaks on even years and valleys on odd years. Peak landings since 2000 were 5.4 million pounds in 2002 with lows of 2.3 million in 2003 & 2005. New York, New Jersey, and Connecticut landed the greatest weight of recreational tautog in 2006 accounting for 58% of the coastwide fishery.

Table 1. Tautog recreational harvest (A + B1) in pounds by state, 1981-2006.

Data from MRFSS.

Year	CT	DE	MD	MA	NJ	NY	RI	VA	Total
1981	242,336	6,585	10,295	790,611	161,423	1,496,039	664,568	742,653	4,114,510
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	615,595	1,267,164	5,729,391
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	391,257	2,145,288
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	652,008	104,247	521,611	1,184,560	2,135,221	265,116	116,798	5,426,700
2003	603,862	200,619	43,212	221,842	164,326	315,383	479,344	308,838	2,337,426
2004	449,293	459,403	39,592	123,394	215,039	1,235,936	546,289	631,680	3,700,626
2005	306,536	243,928	125,184	249,146	122,593	390,516	494,811	416,663	2,349,377
2006	702,189	423,226	44,343	251,309	700,505	969,076	403,160	536,040	4,029,848
Average	485,063	294,632	95,127	1,076,788	1,051,912	1,178,885	548,516	552,972	5,283,894

Figure 2. Tautog recreational harvest (A + B1) in pounds of fish, 1981-2006.
 Data from MRFSS.

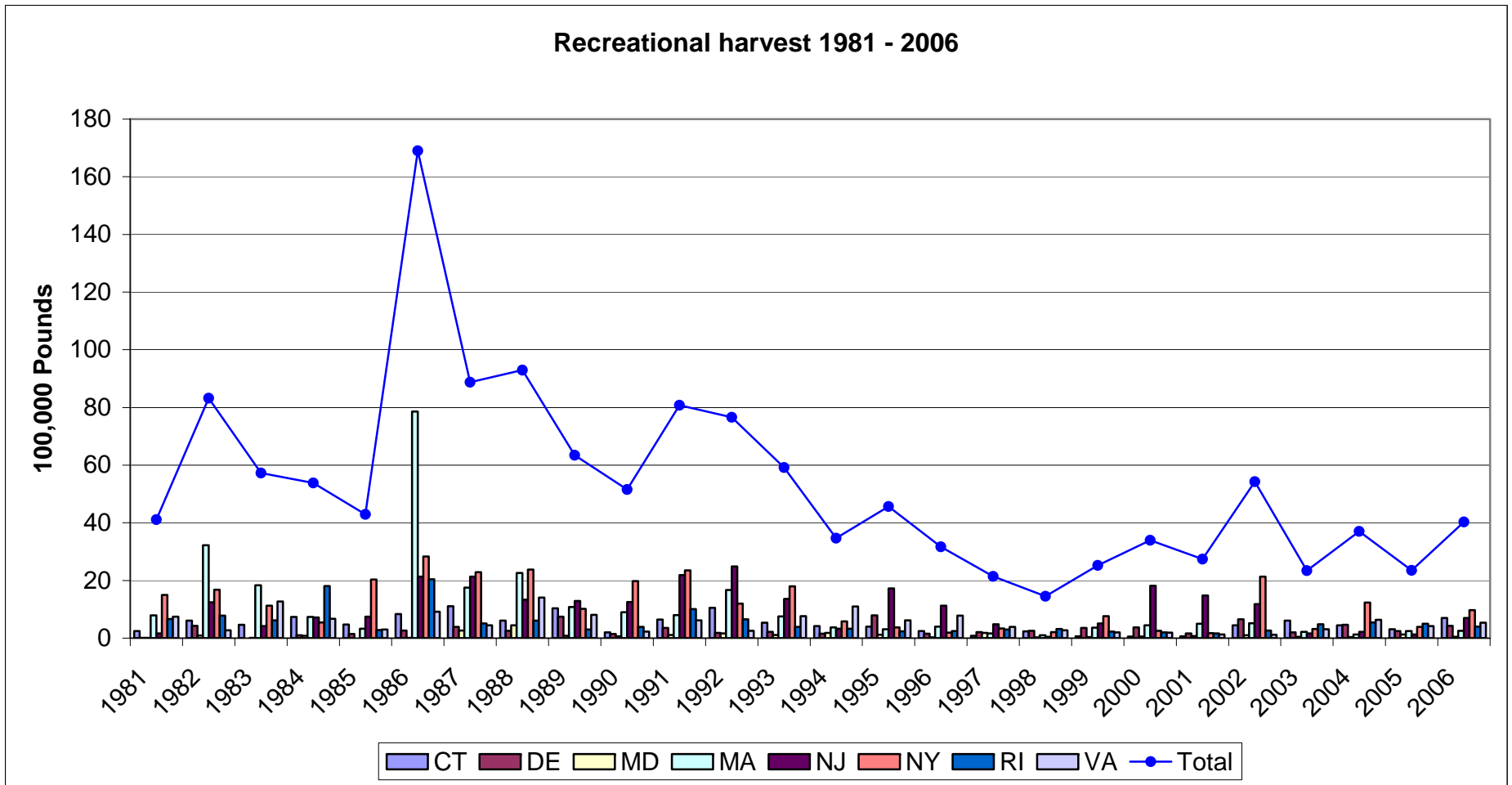
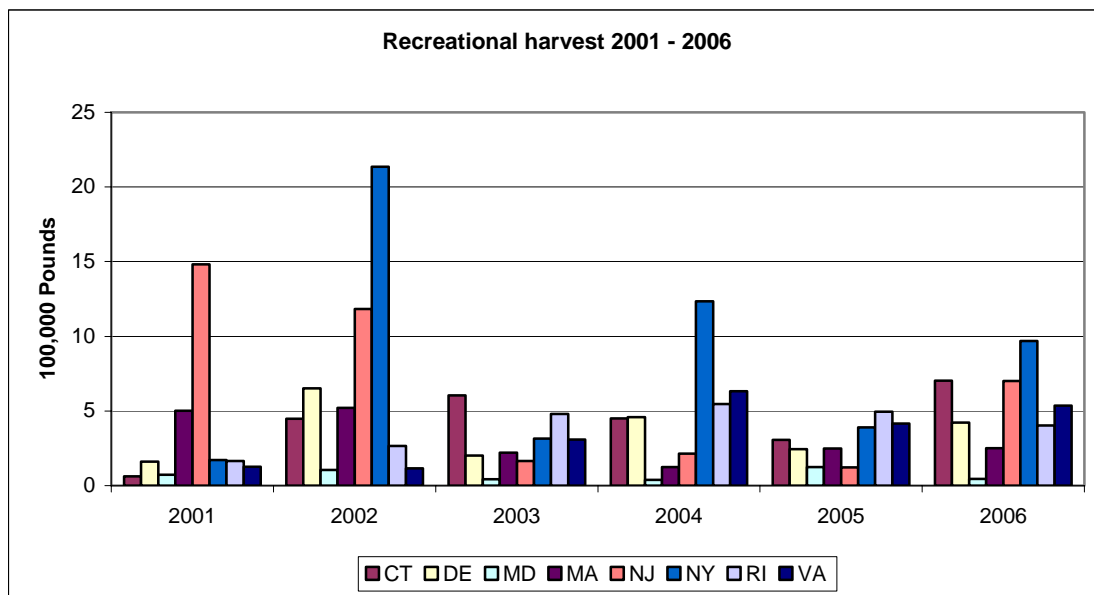


Figure 3: Recreational Harvest (A + B1) 2001 – 2006.

Data from MRFSS



Preliminary commercial landings averaged 8% of total landings in 2006. 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 fluctuated without trend around the 200,000-pound mark from 1950 until 1980 (Figure 4). Landings began to increase in the early 1980's and reached a high of 1,157,100 pounds in 1987 (Figure 4). From 1986 through 1992 landings were sustained at around a million pounds. A decline in landings occurred between 1991 and 1999. Landings have increased slightly over the most recent five-year period. Commercial landings were 334,050 pounds in 2006. Table 2 shows commercial landings from 1981 - 2006.

Table 2. Tautog commercial landings in pounds by state, 1981-2003.

Data from the National Marine Fisheries Service Office of Science & Technology Commercial Fisheries Landing Data website, <http://www.st.nmfs.gov/st1/commercial/index.html>

*2006 data are preliminary data taken directly from each states compliance report. Delaware 2005 landings were taken from their compliance report as well.

- indicates unavailable data or 0 value

	CT	DE	MD	MA	NJ	NY	RI	VA	Total
1981	20,500	1,000	1,200	102,900	54,400	81,400	69,800	700	331,900
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	425,200
1984	32,700	1,400	2,600	68,100	129,700	102,500	334,700	1,200	672,900
1985	50,100	3,200	2,400	63,300	125,500	84,500	403,200	1,639	733,839
1986	104,200	300	2,600	165,800	100,700	201,300	363,100	1,800	939,800
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	99,700	500	4,000	352,100	51,900	285,400	214,800	7,500	1,015,900
1990	82,008	500	3,954	289,074	99,112	181,543	211,084	5,151	872,426
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	86,064	300	1,432	160,336	153,474	89,467	201,593	5,423	698,089
1994	43,000	400	1,718	37,062	162,641	71,375	130,719	11,441	458,356
1995	20,466	600	4,416	35,298	115,970	72,879	94,989	30,020	374,638
1996	33,327	-	3,622	32,579	89,435	105,466	64,817	26,137	355,383
1997	14,519	841	7,663	64,240	49,726	78,228	39,601	25,471	280,289
1998	6,905	1,715	5,682	91,319	42,426	68,892	20,304	14,770	252,013
1999	12,961	844	6,489	75,619	27,307	37,886	26,090	20,901	208,097
2000	8,504	272	3,896	96,001	39,636	39,953	43,719	14,794	246,775
2001	22,259	287	4,591	84,330	60,152	62,795	56,065	14,587	305,066
2002	26,781	629	5,010	148,073	36,605	60,805	50,007	22,834	350,744
2003	40,784	3,816	5,213	86,205	66,766	72,264	54,650	10,705	340,403
2004	26,037	3,064	-	88,176	51,057	76,606	36,581	13,123	294,644
2005	24,053	2,207*	4,338	99,344	57,506	52,525	42,838	5,667	262,218
2006 (Preliminary)	16,841*	410*	4,220*	140,634*	69,146*	47,508*	47,502*	7,789*	334,050*
Average	49,021	1,038	3,805	139,215	87,411	117,820	171,895	10,310	558,461*

Figure 4. Tautog commercial landings in pounds of fish, 1981-2003.

Data from the National Marine Fisheries Service Office of Science & Technology Commercial Fisheries Landing Data website, <http://www.st.nmfs.gov/st1/commercial/index.html> 2006 preliminary landings from state compliance reports.

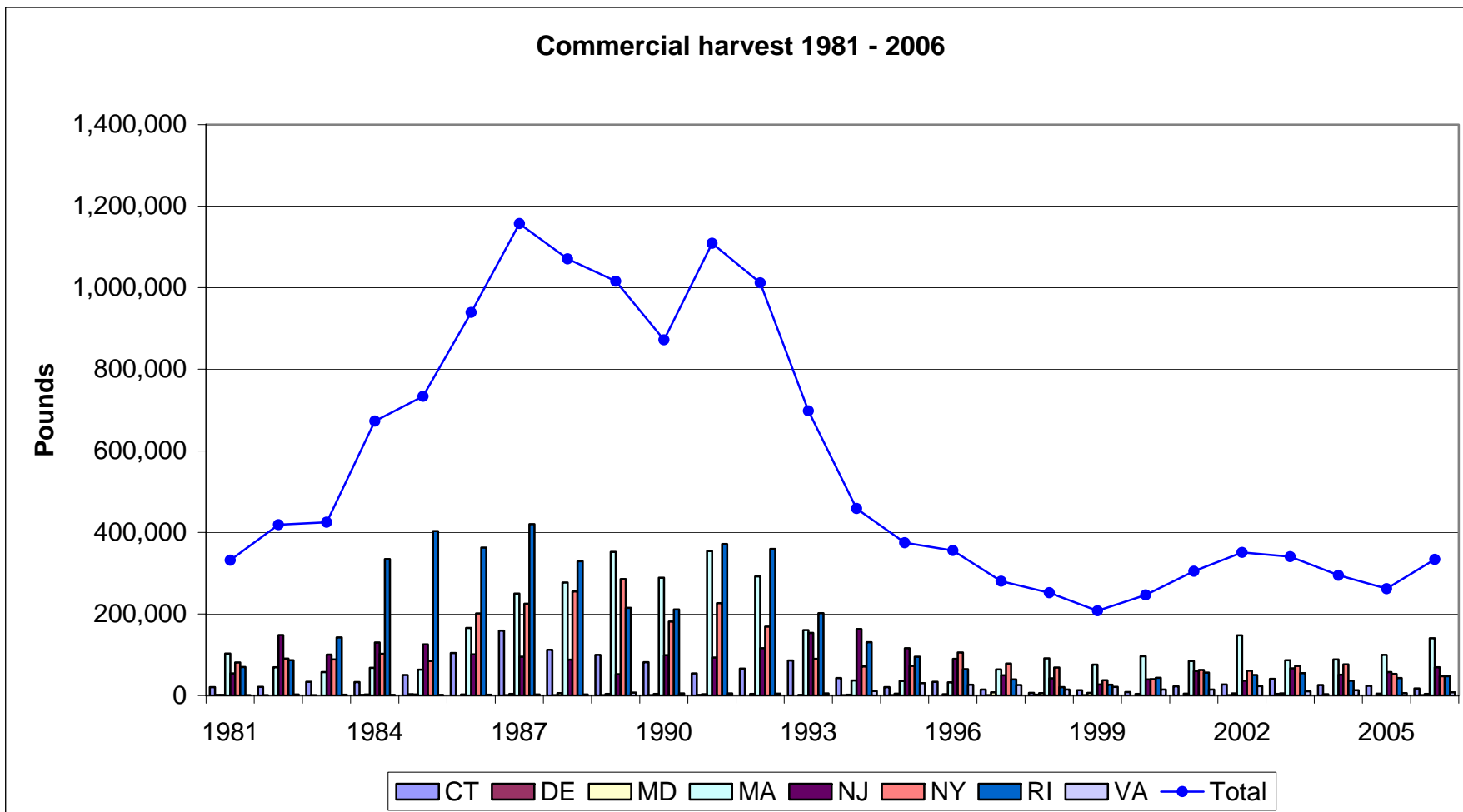
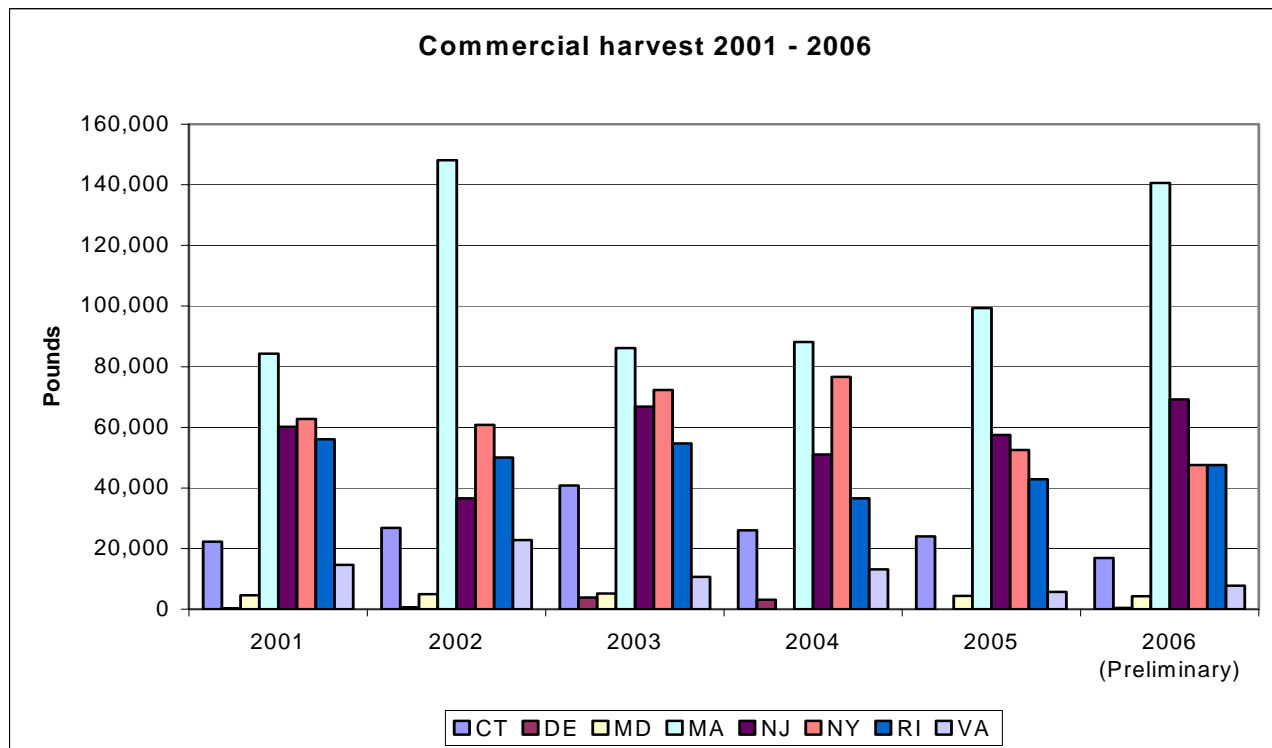


Figure 5: Tautog commercial landings in pounds of fish, 1981-2003.

Data from the National Marine Fisheries Service Office of Science & Technology Commercial Fisheries Landing Data website, <http://www.st.nmfs.gov/st1/commercial/index.html> 2006 preliminary landings from state compliance reports.



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 2006. Results depicted terminal year (2004) fishing mortality rates at 0.28, below the existing overfishing definition. However, the Committee found that SSB stock size and total stock size remain well below the early time series averages. Accordingly, the Management Board approved a stock rebuilding target and an interim overfishing target of $F=0.20$ based upon recommendations of the Technical Committee. These targets require a 25.6% reduction in annual exploitation beginning in 2008.

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 of fisheries independent indices of abundance as determined by the Tautog Technical committee, 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 did 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 a 14” minimum size for both the recreational and commercial fishery and a target fishing mortality rate at 40% SSB for the recreational fishery. The target fishing mortality rate of $F_{40\%SSB}$, is currently estimated at 0.29.

Addendum IV changed the target fishing mortality rate definition from $F_{40\%SSB}$ to $F = 0.20$. Reductions to meet the new F must come from the recreational fishery only. The Board felt that reductions in the recreational fishery would be most effective based on the historical 90/10 recreational/commercial harvest split. Under Addendum IV, states cannot get credit for reductions in the commercial fishery to meet F . This addendum also defined biomass reference points with a target of 26,800mt and threshold of 20,100mt (75% of target). The new biological reference points give the Board the ability to determine the status of the stocks, providing a clear metric to determine if the stock is overfished. States are required to implement management measures consistent with Addendum IV by January 1, 2008.

As states developed proposals to achieve the required $F = 0.20$, it became apparent that there were exceptions to the 90/10 harvest split. As an example, one state comprised close to 40% of total harvest in 2005. To achieve reductions to meet $F = 0.20$, that state would have had to reduce their recreational harvest by 53%. Several states expressed interest in additional flexibility in achieving the $F = 0.20$ target.

Agreeing that the “recreational only” language contained in Addendum IV had the potential to disproportionately reduce recreational fisheries in some states, the Board initiated Draft Addendum V to the Fishery Management Plan for Tautog in May 2007. Addendum V also proposes to drop North Carolina from the management unit because of their insignificant tautog fishery. The Board will approve or deny Addendum V in late August 2007.

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

The Tautog Plan Review Team reviewed the states' annual compliance reports during June of 2006. 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 Plan Review Team recommended that all states and jurisdictions be found in compliance for the 2006 fishing year.*

According to Addendum I, a state must prove that its commercial landings in the most recent year for which data is available did not exceed the greater of 10,000 pounds or 1% of the coastwide commercial landings to qualify for *de minimis* status. States must request *de minimis* status each year and requests for *de minimis* status will be reviewed by the Tautog Plan Review Team as part of the annual FMP review process. The states of Delaware (410 lbs – 2006) and North Carolina (47 lbs – 2006) meet these criteria for calendar year 2006, and both states have formally requested *de minimis* status for the 2006 fishing year.

Table 3. Percentage of commercial coastwide catch. Data from 2006 state compliance reports

	CT	DE	MD	MA	NJ	NY	RI	VA	NC	Total
Landings	16,841	410	4,220	140,634	69,146	47,508	47,502	7,789	47	334,097
% of Coastwide Average	5.04%	0.12%	1.26%	42.09%	20.70%	14.22%	14.22%	2.33%	0.01%	100.00%

VIII. Prioritized Research Needs

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 spawning or washed out coastal spawning).

2006 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" 16" 16"	10 10 10	April 15-May 30 August 1-September 15 October 15-December 31	15,440 lbs 15,440 lbs 15,440 lbs	Yes
Connecticut	14"	a	January 1-April 30 June 15-December 31		Yes
New York	14"	b	April 8 - Feb. 28		Yes
New Jersey	14"		April 15-June 30 November 1-January 15	103,000lbs	Yes
Delaware	14" 14" 15"	10 10 3	Jul 1 - July 31 Oct 1 - Mar 31 Apr 1 - Jun 30		
Maryland	14"	5	Jan 1 - Nov 30		Yes
Virginia	14"		Jan 1- April 30 Sept 1- Dec 31		Yes

2006 Recreational Tautog Regulations

STATE	SIZE LIMIT	POSSESSION LIMITS	SEASONS
Massachusetts	16"	3	-
Rhode Island	16" 16"	3 3	May 1-May 31 July 1-October 22 October 23-December 15
Connecticut	14" 14" 14"	4 (daily) 4 (daily) 4 (daily)	January 1-April 30 June 15- September 7 September 22-December 13
New York	14"	10	October 1-May 31
New Jersey	14" 14" 14"	4 1 8	January 1-May 31 June 1-November 14 November 15-December 31
Delaware	14" 14" 15"	10 10 3	Jul 1 - July 31 Oct 1 - Mar 31 Apr 1 - Jun 30
Maryland	14"	5	January 1-November 30
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.

