

Final Estimate for 2016 of
Spring Harvest of Coastal Migrant Striped Bass in Chesapeake Bay

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INTRODUCTION

This report presents the final estimates of the 2016 Maryland and Virginia spring harvest of coastal migrant striped bass in Chesapeake Bay (Table 1). The method used to determine coastal migrants in Maryland was presented in detail in Jones (2003), Barker and Sharov (2004), and Sharov et al. (2005). This report is submitted yearly to the Atlantic States Marine Fisheries Commission (ASMFC) as an appendix to the annual compliance reporting, and as an appendix to the recreational fishing section of the Chesapeake Bay Finfish Investigations Federal Aid Report to the U. S. Fish and Wildlife Service (USFWS).

ASMFC implemented Addendum IV to the Striped Bass Management Plan in 2014 in order to reduce fishing mortality to a level at or below the target. Addendum IV manages the trophy season as part of the coastal fishery and required a 25% reduction in harvest for 2016. Therefore, Maryland raised the minimum size limit to 35 inches from April 16 to May 15. Addendum IV also required a Chesapeake Bay reduction of 20.5% in the summer/fall fishery. The regulations were two fish ≥ 20 inches (only one over 28 inches) from May 16 to December 20th.

METHODS

Estimation of harvest

Maryland Department of Natural Resources (MD DNR) charter boat logbook reports provided the census values of daily charter boat harvest in numbers of fish (Table 1). Due to increased online reporting of charter boat logbook data, Standard Atlantic Fisheries Information System (SAFIS) data were also used for the charter calculation. The NOAA Marine Recreational Information Program (MRIP) survey provided final estimates of harvest for Maryland private and rental boats, in numbers of fish, for Wave 2 (March/April) and Wave 3

(May/June; Table 1). The Virginia Marine Resources Commission (VMRC) provided mandatory spring season striped bass reporting data.

Harvest apportioned by time

The migrant harvest season overlaps parts of both Waves 2 and 3 of the MRIP survey. Length distribution of the harvest is known to change over this time period, so total harvest was apportioned into 2-week intervals between April 16 and June 15. All Wave 2 landings for striped bass occurred in the last 2 weeks of the wave. The 2-week interval proportions for Wave 3 landings were developed as the proportions of the harvest recorded in the Maryland charter boat logbook and SAFIS reports (Table 1). Total Maryland striped bass harvest per interval was calculated as charter boat harvest (MD DNR) + private and rental harvest (MRIP; Table 1).

Harvest apportioned by length

Data from the MD DNR Volunteer Charter Boat Survey were used to develop the length frequency distribution of the Maryland charter boat catch for each 2-week interval (Table 2). Data from the Volunteer Charter Boat Survey were also used to develop the length frequency distribution for the Maryland private angler catch due to small samples of fish reported in the Volunteer Angler Survey. Harvest in each interval was distributed by the length frequency distribution for each 2-week interval. The number of migrants harvested in Maryland during the spring trophy season was determined by applying length-specific migration probabilities. These probabilities were derived from the estimate of the number of striped bass tagged on the spawning grounds in Maryland that migrate to the Atlantic coast before December of the first year at large (Dorazio et al. 1994). The result was a migrant and resident harvest estimate for each 2-week interval, distributed among interval-specific length groups (Table 3). The total 2016 Maryland spring harvest of coastal migrant striped bass in Chesapeake Bay was calculated

as the sum of migrants over all length groups and 2-week intervals from both sectors (charter and private). The estimate of the migrant harvest for Virginia's portion of Chesapeake Bay was calculated by applying the same length-specific migration probabilities to the length frequency data provided by VMRC, based on mandatory reporting by recreational anglers and charter boat captains.

RESULTS and DISCUSSION

MD DNR charter boat estimates of harvest were queried on 9/29/16. The total charter boat harvest was 5,581 fish from April 16 to April 30, 3,553 fish from May 1 to May 15, 5,635 fish from May 16 to May 31 and 6,354 fish from June 1 to June 15. Final MRIP private and rental boat estimates were downloaded on 5/17/17. Private and rental boat total harvest was 49,344 fish from April 16 to April 30, 14,327 fish from May 1 to May 15, 23,878 fish from May 16 to May 31 and 26,743 fish from June 1 to June 15 (Table 1).

The final estimate of the 2016 Chesapeake Bay spring migrant harvest is 74,308 fish, an increase compared to 2015 and above the 2006-2016 average of 45,260 fish (Table 4). The Maryland portion of the Chesapeake Bay migrant harvest is 74,139 migrants (Table 1). The Maryland charter boat migrant harvest is 9,524 fish. The Maryland private boat migrant harvest is 64,615 fish. The estimate of the spring 2016 migrant harvest in Virginia is 169 fish. Annual spring migrant harvest by length group has shifted to slightly larger fish compared to 2013 to 2015. (Figure 1). As required by ASMFC Addendum IV, an increased minimum size limit of 35 inches for April 16 to May 15 and a new minimum size for May 16 to December 20th was in place for 2016. The length frequency distribution and Volunteer Charter Boat Survey data reflected this change in regulations (Table 2, Figure 1).

The increase in migratory striped bass harvest relative to 2015 occurred in the private and charter sectors. MRIP estimates of decreased private boat trips and increased harvest numbers indicated an increase in private angler success (Figure 2 and 3). MRIP methodology for effort estimations changed when the final 2016 numbers were released in 2017 and could have influenced angler success rates. The MD DNR Creel Survey documented a slight increase in angler success (Figure 4). The MRIP estimates of charter boat trips and harvest increased compared to 2015, and harvest per trip was higher than 2015 (Figure 2 and 3).

REFERENCES

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Table 1. 2016 Chesapeake Bay spring striped bass migrant harvest, distributed among 2-week intervals, based on data from Maryland charter boat logbook reports, MRIP Maryland recreational harvest estimate and VA calculated migrant harvest.* Shaded time intervals outside of the April 16th to June 15th season are shown to demonstrate partitioning of the total harvest.

	Interval	Charter Harvest (% by interval) ¹	MD Charter Harvest ¹	MD Private Harvest ²	MD Total Harvest	MD Charter Migrants	MD Private Migrants	MD Total Migrants	VA Migrants ³	Bay Total Migrants		
Wave 2	Apr 1-15	0	0	0	0	0	0	0				
	Apr 16-30	100	5,581	49,344	54,925	5,424	47,945	53,369				
Wave 3	May 1-15	15	3,553	14,327	17,880	3,408	13,744	17,152				
	May 16-31	25	5,635	23,878	29,513	420	1,781	2,201				
	June 1-15	28	6,354	26,743	33,097	272	1,145	1,417				
	June 16-30	32	7,367	30,564	37,931							
	<i>Wave 3 total</i>	<i>100</i>	<i>22,909</i>	<i>95,512</i>	<i>118,421</i>							
Season total (Apr 16 – June 15)			21,123	114,292	135,415	9,524	64,615	74,139			169	74,308

* – Numbers may not sum due to rounding

1 – Data from MD DNR charter logbooks and SAFIS (9/29/16)

2 – Data from MRIP (retrieved from NOAA NMFS website 5/17/17)

3 – Data from VMRC (Jill Ramsey, VMRC, Pers. Comm. 9/27/16)

Table 2. Length distribution, in inches, of the 2016 Maryland striped bass spring season harvest as voluntarily reported by charter boat captains, by 2-week intervals between April 16 and June 15. Shaded areas represent no-take size groups.

Length Group	April 16-30	May 1-15	May 16-31	June 1-15	Total
17	0	0	0	0	0
18	0	0	0	0	0
19	0	0	0	1	1
20	0	0	70	61	131
21	0	0	77	58	135
22	0	0	42	39	81
23	0	0	25	39	64
24	0	0	32	31	63
25	0	0	20	18	38
26	0	0	10	10	20
27	0	0	6	13	19
28	0	0	6	11	17
29	0	0	4	7	11
30	0	0	4	6	10
31	0	0	2	4	6
32	0	0	5	0	5
33	0	0	0	1	1
34	0	0	4	3	7
35	2	2	1	0	5
36	21	15	1	0	37
37	57	21	3	0	81
38	112	47	1	0	160
39	139	39	1	0	179
40	152	29	1	0	182
41	103	13	2	0	118
42	83	18	2	0	103
43	32	9	0	0	41
44	40	8	0	0	48
45	22	3	0	0	25
46	17	2	0	0	19
47	8	0	0	0	8
48	5	1	0	0	6
49	1	0	0	0	1
50	3	0	0	0	3
51	1	0	0	0	1
52	0	0	0	0	0
53	0	0	0	0	0
54	1	0	0	0	1
55	1	0	0	0	1
56	0	0	0	0	0
n	800	207	319	302	1,628

Table 3. 2016 Maryland spring striped bass migrant harvest, distributed among 1 inch length groups (length as total length).*

Length Group	Apr 16-30			May 1-15		
	Charter	Private	Total	Charter	Private	Total
17	0	0	0	0	0	0
18	0	0	0	0	0	0
19	0	0	0	0	0	0
20	0	0	0	0	0	0
21	0	0	0	0	0	0
22	0	0	0	0	0	0
23	0	0	0	0	0	0
24	0	0	0	0	0	0
25	0	0	0	0	0	0
26	0	0	0	0	0	0
27	0	0	0	0	0	0
28	0	0	0	0	0	0
29	0	0	0	0	0	0
30	0	0	0	0	0	0
31	0	0	0	0	0	0
32	0	0	0	0	0	0
33	0	0	0	0	0	0
34	0	0	0	0	0	0
35	11	100	112	28	113	141
36	128	1,136	1,265	226	911	1,136
37	366	3,237	3,603	332	1,338	1,670
38	742	6,560	7,302	766	3,089	3,855
39	939	8,302	9,241	648	2,614	3,262
40	1,040	9,191	10,230	488	1,968	2,456
41	710	6,276	6,985	220	889	1,109
42	575	5,081	5,655	307	1,236	1,543
43	222	1,964	2,187	154	620	774
44	278	2,460	2,738	137	552	689
45	153	1,357	1,510	51	208	259
46	119	1,049	1,167	34	138	173
47	56	493	549	0	0	0
48	35	308	343	17	69	86
49	7	62	69	0	0	0
50	21	185	206	0	0	0
51	7	62	69	0	0	0
52	0	0	0	0	0	0
53	0	0	0	0	0	0
54	7	62	69	0	0	0
55	7	62	69	0	0	0
56	0	0	0	0	0	0
n	5,423	47,945	53,368	3,408	13,744	17,152

*Note: numbers may not sum due to rounding.

Table 3. 2016 Maryland spring striped bass migrant harvest, distributed among 1 inch length groups (length as total length).* Continued.

Length Group	May 16-31			June 1-15		
	Charter	Private	Total	Charter	Private	Total
17	0	0	0	0	0	0
18	0	0	0	0	0	0
19	0	0	0	0	0	0
20	4	16	20	4	16	20
21	7	28	35	6	25	31
22	6	25	31	7	27	34
23	6	24	30	11	44	55
24	12	50	61	14	57	70
25	12	50	61	13	53	65
26	9	40	49	11	47	58
27	9	37	46	23	96	118
28	14	58	71	30	125	155
29	14	58	71	28	120	148
30	20	84	104	35	149	184
31	14	58	72	33	137	170
32	45	189	234	0	0	0
33	0	0	0	13	55	68
34	52	219	270	46	194	240
35	14	61	75	0	0	0
36	15	66	81	0	0	0
37	49	207	256	0	0	0
38	17	71	88	0	0	0
39	17	72	90	0	0	0
40	17	73	91	0	0	0
41	35	148	183	0	0	0
42	35	149	184	0	0	0
43	0	0	0	0	0	0
44	0	0	0	0	0	0
45	0	0	0	0	0	0
46	0	0	0	0	0	0
47	0	0	0	0	0	0
48	0	0	0	0	0	0
49	0	0	0	0	0	0
50	0	0	0	0	0	0
51	0	0	0	0	0	0
52	0	0	0	0	0	0
53	0	0	0	0	0	0
54	0	0	0	0	0	0
55	0	0	0	0	0	0
56	0	0	0	0	0	0
n	420	1,781	2,201	272	1,145	1,417

*Note: numbers may not sum due to rounding.

Table 4. Harvest of migrant striped bass in the spring fishery from 1992-2016 (Individual estimates not available for all sectors prior to 2006). Average was only calculated for 2006-2016 due to techniques used to calculate migrant harvest.

Year	MD Charter Migrant Harvest	MD Private Migrant Harvest	VA Migrant Harvest	Total Migrant Harvest
1992				1,013
1993				2,719
1994				3,672
1995				42,634
1996				11,613
1997				21,222
1998				10,021
1999				17,051
2000				26,748
2001				25,728
2002				14,839
2003	43,248		242	43,900
2004	31,218		186	31,404
2005	64,345		1,319	65,664
2006	15,570	47,878	4,323	67,771
2007	9,359	26,229	740	36,328
2008	13,106	22,785	275	36,166
2009	12,740	77,799	243	90,782
2010	12,504	7,261	82	19,847
2011	13,673	22,616	145	36,434
2012	9,335	8,796	77	18,208
2013	13,724	34,810	23	48,557
2014	12,311	26,599	11	38,921
2015	5,771	24,725	37	30,533
2016	9,524	64,615	169	74,308
Avg (2006-16)	11,602	33,101	557	45,260

Figure 1. Comparison of Maryland’s 2013 through 2016 spring striped bass migrant harvests, apportioned by length.

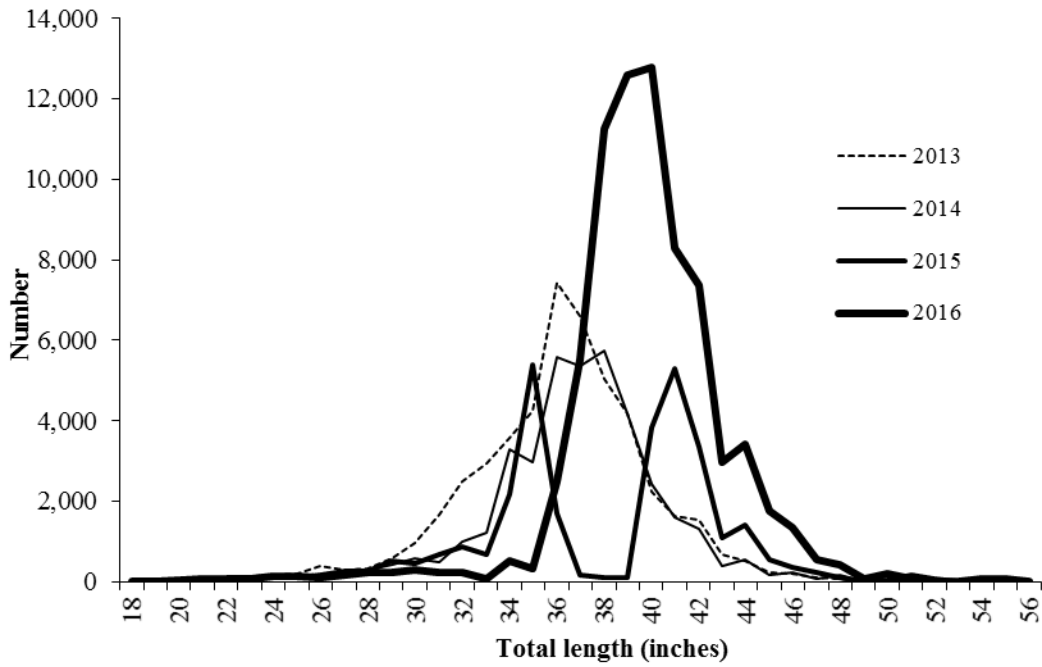
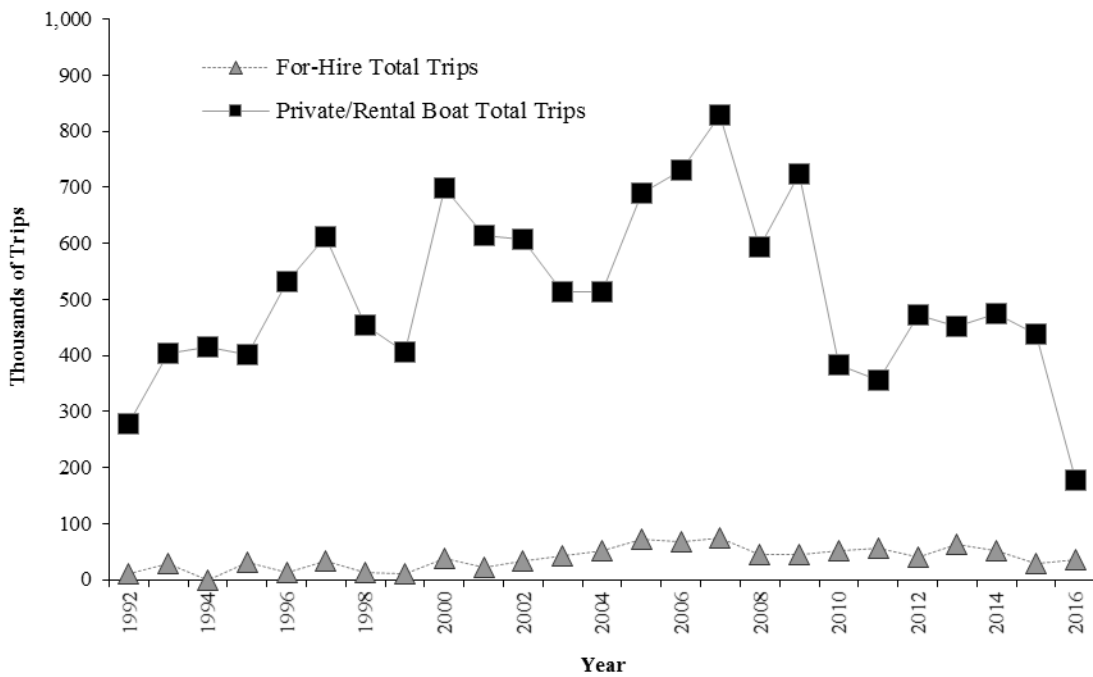


Figure 2. Total number of directed trips for striped bass in Maryland’s portion of Chesapeake Bay, Waves 2 and 3, from 1992 to 2016 for for-hire and private/rental boats according to MRFSS/MRIP data.*



*MRIP methodology for effort estimates changed in 2017. 2015 and older data is old estimation method. 2016 is the new estimation method.

Figure 3. Harvest of striped bass in Maryland’s portion of Chesapeake Bay, Waves 2 and 3, from 1992 to 2016 for for-hire and private/rental boats according to MRFSS/MRIP data. Data includes migrant and resident striped bass.

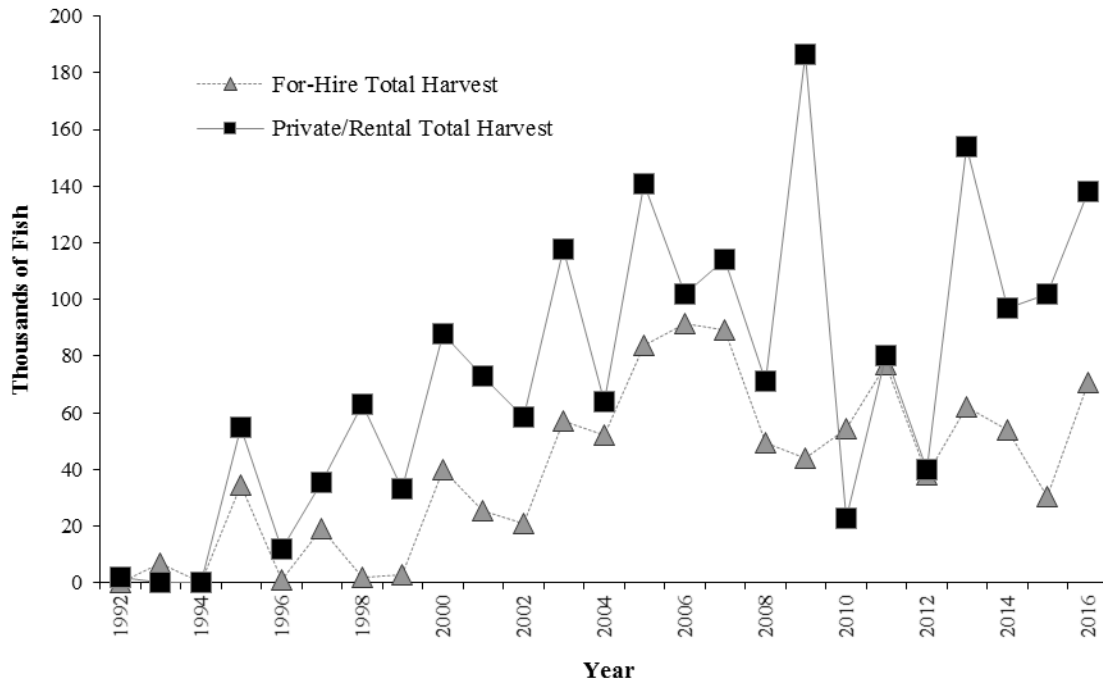
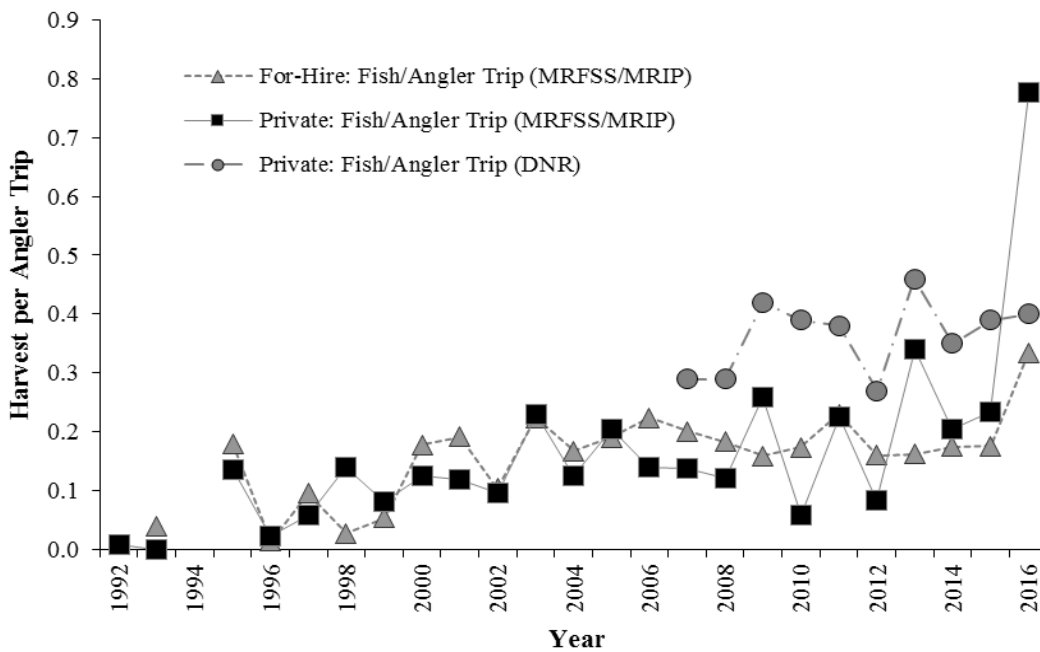


Figure 4. Harvest per angler trip of striped bass in Maryland’s portion of Chesapeake Bay, Waves 2 and 3, from 1992 to 2016 for for-hire and private/rental boats according to the MRFSS/MRIP data and private boats from the DNR Creel Survey (2007-2016). Data includes migrant and resident striped bass.*



*MRIP methodology for effort estimates changed in 2017. 2015 and older data is old estimation method. 2016 is the new estimation method.