

Estimate of the 2010 Harvest
of Spring Coastal Migrant Striped Bass in Chesapeake Bay

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This report presents the calculation of the 2010 Maryland spring harvest of coastal migrant striped bass in Chesapeake Bay. The method used to estimate the spring trophy season harvest in Maryland was presented in detail in Jones (2003), Barker and Sharov (2004), and Sharov et al. (2005). Results of the 2010 calculations are summarized in Table 1. The specific steps used in the calculation are as follows:

Estimation of harvest.

- Maryland charter boat logbook reports provided the census values of daily charter boat harvest in numbers of fish (Table 1).
- NOAA MRFSS survey provided estimates of harvest for Maryland private/rental boats for Waves 2 and 3 (Table 1).
- VMRC provided the preliminary estimate of Virginia migratory striped bass harvest.

Harvest apportioned by time.

- The migrant harvest season overlaps parts of both Wave 2 and 3 of the MRFSS 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 17 and June 15.
- All Wave 2 landings occurred in the last 2 weeks of the wave.
- 2-week interval proportions for Wave 3 landings were developed as the proportions of the harvest registered in the Maryland charter boat logbook reports (Table 1).
- Total Maryland striped bass harvest per interval was calculated as charter boat harvest + private/rental harvest (Table 1).

Harvest apportioned by length.

- Data from the Maryland DNR Charter Boat Volunteer Survey were used to develop the length frequency distribution of the Maryland charter boat catch for each 2-week interval (Table 2A). Data from the Maryland volunteer private angler survey were used to develop the length frequency distribution of the Maryland private angler catch and the Virginia catch (Table 2B). For the 2-week periods from May 1-15, May 16-31 and June 1-15, the length frequency data provided by the Maryland volunteer private angler survey was supplemented with charter boat volunteer survey data due to small samples of fish reported.
- 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 2010 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.

- The preliminary estimate of the migrant harvest for Virginia's portion of Chesapeake Bay was provided by VMRC, based on mandatory reporting by recreational anglers and charter boat captains.

Results and Discussion.

The estimate of the 2010 Chesapeake Bay spring migrant harvest is 19,847 fish, which is the lowest harvest since 2002 (Table 4). The Maryland portion of the Chesapeake Bay migrant harvest is 19,765 migrants (Table 1). The Maryland charter boat migrant harvest is 12,504 fish. The Maryland private boat migrant harvest is 7,261 fish. The VMRC preliminary estimate of the spring 2010 migrant harvest in Virginia is 82 fish. Spring migrant harvest by length group is similar in each year from 2006 to 2010 (Figure 1).

Charter boat harvest estimates have been consistent for the last several years. This is true whether the estimates were derived from MRFSS (Figure 2 and 3) or from self-reported log books submitted to Maryland DNR (Table 4). The decrease in Maryland migratory striped bass harvest for 2010 occurred in the private sector due to a decrease in effort and angler success. MRFSS' 2010 estimates of private boat trips (Figure 2) and striped bass harvest (Figure 3) decreased dramatically compared to 2009. A decrease in private boat harvest per angler trip was documented by MRFSS (Figure 4). A slight decrease was also documented in the DNR creel survey, although it was not statistically different than 2009 (Figure 4).

References

- Barker, L. S., A. Sharov. 2004. Estimate of the 2004 Harvest and 2005 Quota for Spring Coastal Migrant Striped Bass in Chesapeake Bay.
- Dorazio, R. M., K. A. Hattala, C. B. McCollough and J. E. Skjveland. 1994. Tag recovery estimates of migration of striped bass from spawning areas of Chesapeake Bay. *Transactions of the American Fisheries Society* 123: 150-163.
- Jones, P. 2003. Estimates of the harvest of coastal migrant striped bass in Chesapeake Bay in the spring of 2003. Report to the ASMFC Striped Bass Technical Committee, November 2003.
- Sharov, A., L. S. Barker, and L. Warner. 2005. Estimate of the 2005 Harvest and 2006 Quota for Spring Coastal Migrant Striped Bass in Chesapeake Bay. Maryland Department of Natural Resources, Annapolis MD.

Table 1. 2010 Chesapeake Bay spring striped bass migrant harvest, distributed among 2-week intervals, based on data from Maryland charter boat log book reports, MRFSS Maryland recreational harvest estimate and VMRC reported migrant harvest (estimate as of 9/30/10). * Shaded areas represent no harvest (before April 17th), no migrant harvest (after June 15th), or no data.

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 1-16	0	0	0	0	0	0		
	Apr 17-30	100	5,679	14,680	6,789	4,149	10,938		
Wave 3	May 1-15	22	3,759	10,620	4,743	2,592	7,335		
	May 16-31	28	4,784	13,833	564	298	862		
	June 1-15	24	4,101	11,663	407	221	628		
	June 16-30	26	4,442	12,853					
	<i>Wave 3 total</i>	<i>100</i>	<i>17,086</i>	<i>48,969</i>					
Season total		32,473	18,323	50,796	12,504	7,261	19,765	82	19,847

* – Numbers may not sum due to rounding

1 – Data from Maryland DNR charter logbooks

2 – Data from MRFSS

3 – Data from VMRC

Table 2A. Length distribution of the 2010 Maryland striped bass spring season harvest as voluntarily reported by charter boat captains, by 2-week intervals between April 17 and June 15. (Shaded areas represent no-take size groups.)

Length Group	April 17-30	May 1-15	May 16-31	June 1-15	Total
17	0	0	1	0	0
18	0	0	159	74	233
19	0	0	270	148	418
20	0	0	243	155	398
21	0	0	235	147	382
22	0	0	221	131	352
23	0	0	148	75	223
24	0	0	124	100	224
25	0	0	60	58	118
26	1	3	57	44	105
27	1	3	25	50	79
28	40	40	20	19	119
29	120	67	19	24	230
30	149	97	30	29	305
31	152	124	32	23	331
32	238	135	25	15	413
33	233	150	11	11	405
34	289	158	13	6	466
35	307	130	12	3	452
36	417	178	7	1	603
37	275	128	7	0	410
38	288	116	4	0	408
39	216	82	3	0	301
40	159	54	4	0	217
41	110	29	2	0	141
42	73	13	1	0	87
43	21	3	0	0	24
44	31	9	1	0	41
45	16	5	0	0	21
46	2	4	0	0	6
47	5	2	0	0	7
48	1	0	0	0	1
49	2	0	0	0	2
50	0	0	0	0	0
51	0	0	0	0	0
52	0	0	0	0	0
53	0	0	0	0	0
54	1	0	0	0	1
55	0	0	0	0	0
56	1	0	0	0	1
n	3,148	1,530	1,734	1,113	7,525

Table 2B. Length distribution of the 2010 Maryland striped bass spring harvest as reported by private anglers in 2 week intervals between April 17 and June 15. Due to small sample sizes during May 1-15, May 16-31, and June 1-15, the length frequency distribution below was supplemented by voluntary reports from charter boat captains (not shown in table). Shaded areas represent no-take size groups.

Length Group	April 17-30	May 1-15	May 16-31	June 1-15	TOTAL
17	0	0	5	0	1
18	0	0	3	3	6
19	0	0	9	4	13
20	0	0	8	1	9
21	0	0	5	1	6
22	0	0	10	3	13
23	0	0	6	0	6
24	0	0	3	0	3
25	0	0	3	1	4
26	0	1	1	0	2
27	0	0	0	0	0
28	1	1	1	2	5
29	7	3	4	0	14
30	3	2	0	0	5
31	5	3	2	0	10
32	7	1	0	0	8
33	10	1	0	0	11
34	16	3	0	1	20
35	12	1	1	0	14
36	11	2	0	0	13
37	7	2	0	0	9
38	7	1	0	0	8
39	4	2	1	0	7
40	4	0	0	0	4
41	3	0	0	0	3
42	0	0	0	0	0
43	2	0	0	0	2
44	3	0	0	0	3
45	1	0	0	0	1
46	1	0	0	0	1
47	0	0	0	0	0
48	0	0	0	0	0
49	0	0	0	0	0
n	104	23	62	16	205

Table 3. 2010 Maryland spring striped bass migrant harvest, distributed among 1 inch length groups (length as total length).*

Length Group	Apr 17-30			May 1-15		
	Charter	Private	Total	Charter	Private	Total
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	1	1	1
27	0	0	0	1	1	2
28	15	7	22	23	13	36
29	66	74	140	58	33	91
30	119	46	165	122	67	189
31	168	106	274	215	119	334
32	344	193	538	306	167	473
33	416	341	757	420	228	649
34	603	638	1,241	517	284	802
35	715	534	1,249	475	258	733
36	1,046	527	1,573	700	382	1,082
37	724	352	1,076	528	290	818
38	782	363	1,145	494	269	763
39	598	211	810	356	197	553
40	446	214	660	237	128	366
41	311	162	473	128	69	198
42	207	0	207	58	31	89
43	60	109	168	13	7	21
44	88	163	252	40	22	62
45	46	55	100	22	12	35
46	6	55	60	18	10	28
47	14	0	14	9	5	14
48	3	0	3	0	0	0
49	6	0	6	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	3	0	3	0	0	0
55	0	0	0	0	0	0
56	3	0	3	0	0	0
n	6,789	4,149	10,938	4,743	2,592	7,335

*18 and 19 inch length groups omitted, no migrants.

Table 3. 2010 Maryland spring striped bass migrant harvest, distributed among 1 inch length groups (continued).*

Length Group	May 16-31			June 1-15		
	Charter	Private	Total	Charter	Private	Total
20	4	2	6	3	2	5
21	6	3	9	5	3	8
22	9	5	14	7	4	11
23	10	5	15	7	3	10
24	13	7	20	14	8	22
25	10	6	16	13	7	20
26	16	8	24	16	8	24
27	11	6	16	28	15	43
28	13	7	21	17	10	26
29	19	12	31	31	17	48
30	44	22	66	55	29	85
31	65	35	100	60	32	93
32	66	34	100	52	28	79
33	36	18	54	47	25	72
34	50	25	75	30	19	48
35	51	28	79	17	9	25
36	32	16	48	6	3	9
37	34	17	51	0	0	0
38	20	10	30	0	0	0
39	15	10	25	0	0	0
40	20	10	31	0	0	0
41	10	5	16	0	0	0
42	5	3	8	0	0	0
43	0	0	0	0	0	0
44	5	3	8	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	564	298	863	407	221	628

*18 and 19 inch length groups omitted, no migrants

Table 4. Harvest of migrant striped bass in the spring fishery from 1992-2010 (Individual estimates not available for all sectors prior to 2006).

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

Figure 1. Comparison of Maryland’s 2006 through 2010 spring striped bass migrant harvests, apportioned by length. 2007 is omitted due to slot length regulations in place that year.

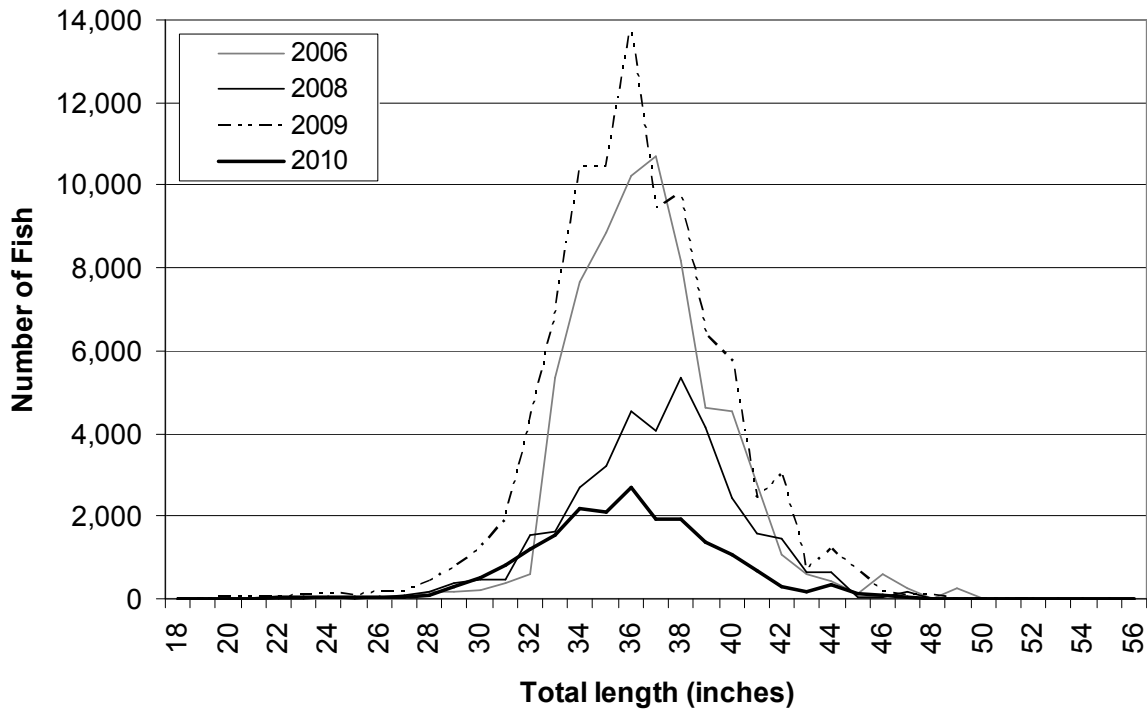


Figure 2. Total number of trips in Maryland’s portion of Chesapeake Bay, Waves 2 and 3, from 1992 to 2010 for for-hire and private/rental boats according to MRFSS data.

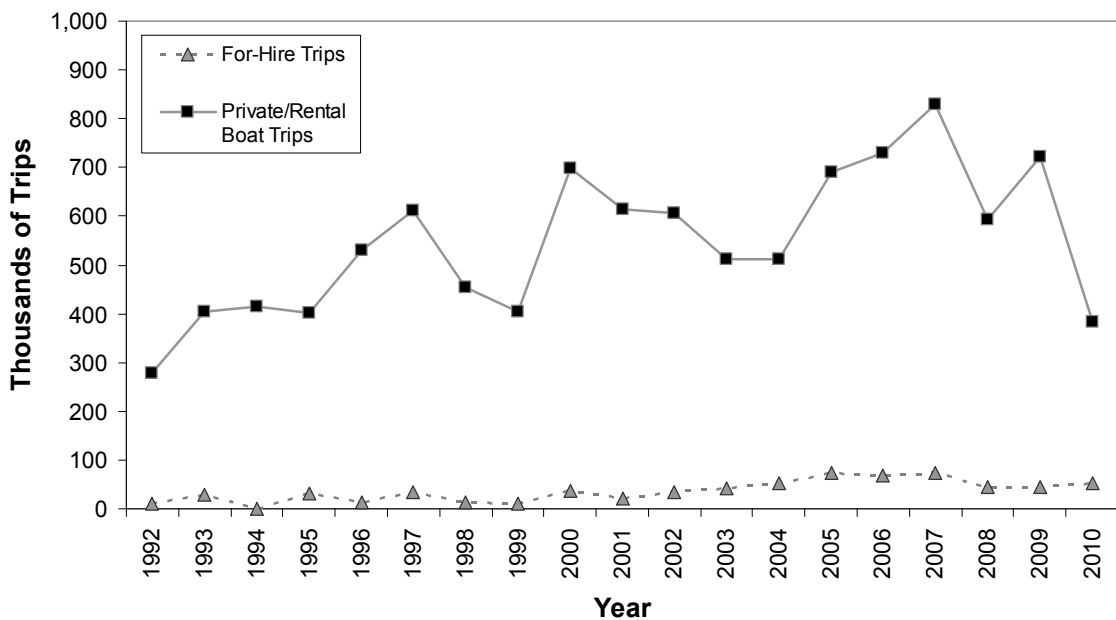


Figure 3. Harvest of striped bass in Maryland's portion of Chesapeake Bay, Waves 2 and 3, from 1992 to 2010 for for-hire and private/rental boats according to MRFSS data. Data included migrant and resident striped bass.

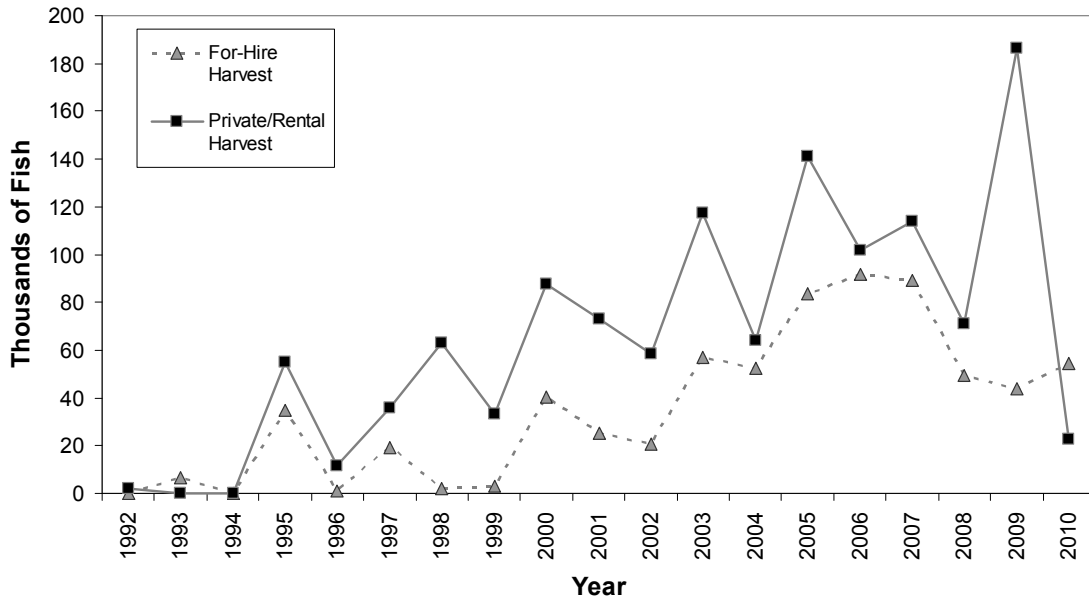


Figure 4. Harvest per trip of striped bass in Maryland's portion of Chesapeake Bay, Waves 2 and 3, from 1992 to 2010 for for-hire and private/rental boats according to the MRFSS data and private boats from the DNR creel survey (2007-2010). Data includes migrant and resident striped bass.

