

TABLES

Table D.1. Catch at age of Atlantic menhaden (millions) from 1982-2002. The period from 1985-2002 includes combined landings from the reduction and bait components of the fishery (ASMFC, 2004a).

Year	Age						
	0	1	2	3	4	5	6+
1982	114.1	919.4	1739.6	379.7	16.3	5.8	0.8
1983	964.4	517.2	2293.1	114.3	47.4	5.0	0.2
1984	1294.2	1024.2	892.1	271.5	50.3	15.2	0.5
1985	637.6	1088.7	1254.4	72.2	49.1	7.5	1.9
1986	98.7	237.0	1547.8	81.0	28.4	7.2	1.3
1987	43.2	518.4	1615.8	186.3	43.9	3.5	1.0
1988	339.2	297.7	1186.7	343.6	94.2	8.5	0.9
1989	150.1	1172.6	1194.0	141.3	64.0	13.0	0.5
1990	308.5	153.5	1589.4	141.7	59.2	13.6	0.7
1991	882.2	1051.9	982.0	294.1	59.3	12.3	2.5
1992	400.1	744.5	834.6	108.3	72.8	12.7	2.3
1993	68.3	391.4	1015.1	187.4	30.7	5.5	0.6
1994	88.8	289.1	911.0	194.6	86.9	10.4	0.4
1995	56.9	559.1	703.0	347.0	87.0	4.5	0.1
1996	33.8	211.8	716.5	159.3	34.0	2.2	0.1
1997	25.2	251.6	456.9	263.0	63.4	12.0	1.8
1998	75.4	189.2	578.5	157.2	96.1	13.0	1.5
1999	194.1	305.1	508.5	114.8	42.0	5.5	0.8
2000	78.1	127.4	399.7	133.2	21.9	3.3	0.3
2001	23.1	46.1	398.9	266.9	22.9	1.5	0.3
2002	178.2	216.5	296.6	179.9	26.5	1.4	0.2

Table D.2. Coastwide age-0 menhaden CPUE index in state seine surveys (ASMFC, 2004a).

	Age
Year	0
1982	5.005
1983	4.554
1984	5.189
1985	4.936
1986	4.962
1987	3.743
1988	4.774
1989	4.150
1990	4.298
1991	4.271
1992	3.285
1993	2.585
1994	3.118
1995	2.765
1996	2.572
1997	2.817
1998	2.938
1999	2.662
2000	2.308
2001	3.021
2002	2.481

Table D.3. Potomac River pound net CPUE indices for Atlantic menhaden. The aggregated biomass index (ASMFC, 2004a) was disaggregated by applying a selectivity curve (0.25 - age 1, 1.0 - age 2, 0.25- age 3) and converting catch in pounds to numbers based upon annual weight-at age-data.

Year	Age		
	1	2	3
1982	885.0	1773.8	270.9
1983	825.3	1550.1	237.7
1984	555.4	966.2	147.5
1985	574.7	976.5	147.7
1986	477.9	853.5	128.6
1987	780.2	1487.5	228.4
1988	822.8	1464.3	220.7
1989	386.3	772.6	120.5
1990	172.5	352.9	62.1
1991	223.9	477.7	81.9
1992	237.3	452.0	78.3
1993	336.7	743.4	131.4
1994	284.4	486.8	78.1
1995	248.8	443.3	75.5
1996	183.9	288.4	46.9
1997	202.4	347.0	55.8
1998	124.4	249.6	40.0
1999	158.9	292.4	46.9
2000	162.8	275.2	46.1
2001	78.4	163.2	29.1
2002	82.1	153.9	27.4

Table D.4. Size-at-age of Atlantic menhaden (mm) from 1982-2002 calculated from five-year averages of annual von Bertalanffy growth curve parameters (ASMFC, 2004a)

Year	Age						
	0	1	2	3	4	5	6
1982	70.28	137.68	189.81	230.12	261.30	285.41	304.05
1983	70.28	137.68	189.81	230.12	261.30	285.41	304.05
1984	70.28	137.68	189.81	230.12	261.30	285.41	304.05
1985	70.28	137.68	189.81	230.12	261.30	285.41	304.05
1986	70.28	137.68	189.81	230.12	261.30	285.41	304.05
1987	83.14	152.39	203.33	240.81	268.38	288.66	303.58
1988	83.14	152.39	203.33	240.81	268.38	288.66	303.58
1989	83.14	152.39	203.33	240.81	268.38	288.66	303.58
1990	83.14	152.39	203.33	240.81	268.38	288.66	303.58
1991	83.14	152.39	203.33	240.81	268.38	288.66	303.58
1992	49.43	153.12	216.01	254.15	277.29	291.32	299.83
1993	49.43	153.12	216.01	254.15	277.29	291.32	299.83
1994	49.43	153.12	216.01	254.15	277.29	291.32	299.83
1995	49.43	153.12	216.01	254.15	277.29	291.32	299.83
1996	49.43	153.12	216.01	254.15	277.29	291.32	299.83
1997	66.51	163.94	227.16	268.19	294.81	312.09	323.30
1998	66.51	163.94	227.16	268.19	294.81	312.09	323.30
1999	66.51	163.94	227.16	268.19	294.81	312.09	323.30
2000	66.51	163.94	227.16	268.19	294.81	312.09	323.30
2001	66.51	163.94	227.16	268.19	294.81	312.09	323.30
2002	66.51	163.94	227.16	268.19	294.81	312.09	323.30

Table D.5. Weight-at-age of Atlantic menhaden (g) from 1982-2002 calculated from five-year averages of annual length-weight regression parameters (ASMFC, 2004a)

Year	Age						
	0	1	2	3	4	5	6
1982	4.76	38.89	106.05	193.58	287.92	379.36	462.30
1983	4.76	38.89	106.05	193.58	287.92	379.36	462.30
1984	4.76	38.89	106.05	193.58	287.92	379.36	462.30
1985	4.76	38.89	106.05	193.58	287.92	379.36	462.30
1986	4.76	38.89	106.05	193.58	287.92	379.36	462.30
1987	9.16	64.22	162.29	279.55	396.07	500.58	588.62
1988	9.16	64.22	162.29	279.55	396.07	500.58	588.62
1989	9.16	64.22	162.29	279.55	396.07	500.58	588.62
1990	9.16	64.22	162.29	279.55	396.07	500.58	588.62
1991	9.16	64.22	162.29	279.55	396.07	500.58	588.62
1992	1.41	51.84	155.14	260.43	343.73	402.26	440.91
1993	1.41	51.84	155.14	260.43	343.73	402.26	440.91
1994	1.41	51.84	155.14	260.43	343.73	402.26	440.91
1995	1.41	51.84	155.14	260.43	343.73	402.26	440.91
1996	1.41	51.84	155.14	260.43	343.73	402.26	440.91
1997	5.18	93.27	265.27	451.61	611.63	734.09	821.99
1998	5.18	93.27	265.27	451.61	611.63	734.09	821.99
1999	5.18	93.27	265.27	451.61	611.63	734.09	821.99
2000	5.18	93.27	265.27	451.61	611.63	734.09	821.99
2001	5.18	93.27	265.27	451.61	611.63	734.09	821.99
2002	5.18	93.27	265.27	451.61	611.63	734.09	821.99

Table D.6. Commercial and recreational catch at age matrix for striped bass (ASMFC, 2003).

Year	Age												
	1	2	3	4	5	6	7	8	9	10	11	12	13+
1982	1.810	105.555	256.699	220.835	58.429	19.180	24.213	16.802	11.692	10.593	11.017	13.668	15.671
1983	3.625	110.327	178.236	193.141	150.019	39.286	18.713	4.125	2.895	3.709	4.581	5.644	13.548
1984	5.563	542.751	302.698	82.425	60.374	51.680	18.280	4.668	2.117	2.078	0.693	0.336	11.139
1985	1.311	72.529	101.959	40.483	58.703	43.106	43.522	17.283	6.351	3.404	1.043	0.827	10.321
1986	11.332	21.009	63.841	132.875	49.899	31.972	20.367	23.997	9.191	5.260	3.355	1.564	10.116
1987	1.368	10.915	37.629	51.422	67.260	25.041	13.204	6.490	6.384	2.982	1.448	1.968	12.916
1988	2.566	30.882	41.755	63.222	107.100	97.917	40.598	24.411	13.995	5.773	3.676	3.251	9.560
1989	0.729	35.994	79.665	68.244	104.896	95.437	45.645	21.026	10.423	3.758	3.234	1.965	8.848
1990	2.123	46.231	124.469	187.830	173.215	165.168	104.079	67.781	20.695	7.256	5.061	3.507	13.671
1991	1.792	72.836	145.252	208.716	161.950	101.438	91.311	82.920	58.757	24.090	14.173	2.755	22.330
1992	2.914	45.769	199.651	189.212	177.132	109.523	62.419	67.781	58.384	44.782	9.301	4.070	15.942
1993	0.287	69.633	185.306	327.330	288.512	185.379	86.551	67.337	82.587	76.145	41.133	9.327	17.457
1994	5.665	145.422	348.825	290.641	367.749	232.389	135.432	86.698	99.882	80.962	36.013	22.302	14.625
1995	3.838	426.821	459.079	447.829	391.341	470.669	204.809	190.869	151.640	88.555	52.246	16.455	14.908
1996	0.465	92.673	639.954	634.993	533.768	457.572	436.529	208.439	140.109	67.719	42.043	44.663	20.621
1997	2.533	285.466	486.449	850.321	615.973	593.847	405.508	372.316	200.317	120.479	59.642	29.987	24.850
1998	26.421	183.404	485.409	706.672	1125.019	510.938	280.434	265.002	215.493	113.842	95.070	45.172	65.493
1999	9.210	116.452	433.400	656.249	651.804	714.112	336.562	226.801	193.497	138.519	97.623	45.054	45.696
2000	37.977	323.977	419.860	989.188	1021.208	780.437	738.105	311.870	160.636	141.488	59.631	29.301	30.751
2001	34.741	161.922	431.514	605.354	830.556	696.646	576.745	480.387	205.831	119.546	102.964	49.634	47.952
2002	25.189	213.284	306.307	462.780	569.670	741.606	514.862	355.018	276.601	106.444	87.934	48.450	61.888

Table D.7 Weight (kg) and size at age (cm) of striped bass estimated from a von Bertalanffy curve fit to state specific length at age data. von Bertalanffy parameters are: $L_{inf} = 158.4$, $k = 0.075$, $T_0 = -0.9855$.

Age	Weight (kg)	Length (cm)
0	0.078	11.29
1	0.156	21.92
2	0.756	31.78
3	1.274	40.93
4	2.079	49.41
5	2.719	57.29
6	3.66	64.6
7	4.79	71.37
8	5.657	77.66
9	6.528	83.50
10	7.912	88.91
11	9.116	93.93
12	10.24	98.59
13+	11.712	102.91

Table D.8. Catch-at-age of weakfish (thousands of fish) from 1982-2000 (Kahn, 2002a).

Year	Age					
	1	2	3	4	5	6+
1982	7893	11794	5419	2774	720	639
1983	6431	12100	5702	2775	567	424
1984	7533	13892	6437	3040	483	254
1985	12790	10690	3134	1165	212	55
1986	17032	15000	4815	1816	262	52
1987	14976	13533	4254	1478	144	11
1988	6952	15443	10456	6058	1042	69
1989	2246	4796	4307	2918	625	84
1990	8895	4537	2012	1200	590	89
1991	9104	5460	2686	1355	459	56
1992	4306	5682	2176	1252	527	65
1993	3769	5770	2126	1133	400	48
1994	3166	2876	3001	1362	199	38
1995	3471	3095	3379	1574	196	54
1996	1482	2053	4073	2955	1334	98
1997	970	1553	2563	5037	1469	397
1998	835	1709	3535	1904	2827	871
1999	805	1148	2076	3058	702	1123
2000	934	1046	1663	1754	1822	466

Table D.9. Weight (kg) and size (cm) at age for weakfish at the beginning of each year based on annual Von Bertalanffy growth curves and length-weight regressions (Kahn, 2002a).

Age	Weight (kg)	Length (cm)
0	0.027	5.3
1	0.111	17.3
2	0.255	26.0
3	0.480	33.3
4	0.755	39.6
5	1.057	44.9
6+	1.368	49.5

Table D.10. Regional densities (gm-2) of benthic invertebrate taxa provided in Wigley and Theroux (1981) and Theroux and Wigley (1998).

Taxon	Georges Bank/ Gulf of Maine (Area = 84,006 km ²)	Southern New England (Area = 14,805 km ²)	Mid-Atlantic (Area = 17,203 km ²)	Chesapeake Bay (Area = 7,913 km ²)	North Carolina (Area = 26,455 km ²)
Gammarids	5.9	5.51	4.7	4.7	4.7
Isopoda	0.94	0.95	0.94	0.95	0.35
Polychaetes	8.2	39.1	22.2	22.2	22.2
Total Biomass (000 Metric Tons)	1,263	674	479	220	720

Table D.11. Estimated total biomass (mt) of blue crabs based upon stock assessment documents.

Year	DE Bay	Chesapeake Bay	North Carolina	Total Biomass (mt)
1982	11,142.22	40,156.55	34,988.2	86287.0
1983	3,548.14	42,130.65	31,724.5	77403.3
1984	4,640.41	34,264.70	29,821.5	68726.6
1985	13,233.29	33,405.84	27,053.0	73692.2
1986	25,147.32	35,408.78	21,670.4	82226.5
1987	8,136.74	32,636.71	29,575.8	70349.3
1988	12,883.98	33,787.20	32,479.7	79150.9
1989	17,796.26	37,676.11	89,149.5	144621.9
1990	34,994.84	38,568.56	35,230.4	108793.8
1991	6,795.04	53,278.71	81,223.2	141297.0
1992	19,848.34	38,230.46	31,149.7	89228.5
1993	19,946.08	41,868.20	40,069.5	101883.8
1994	29,721.50	24,629.33	31,635.8	85986.6
1995	38,529.63	20,025.25	28,425.7	86980.6
1996	13,773.82	26,916.03	23,517.2	64207.0
1997	17,238.11	18,884.66	43,653.4	79776.2
1998	44,001.66	23,560.38	32,089.8	99651.8
1999	22,642.30	12,525.48	30,418.0	65585.8
2000	33,719.37	15,024.27	23,052.5	71796.1
2001	29,954.37	13,546.09	20,050.8	63551.2
2002	15,330.24	16,822.63	31,839.5	63992.4

Table D.12. Absolute abundance (millions) of recruit and postrecruit lobster in the Gulf of Maine.

Year	Recruits	Postrecruits	Total
1982	27.57	9.19	36.76
1983	32.28	13.86	46.14
1984	15.24	22.37	37.61
1985	31.89	15.5	47.39
1986	27.71	22.06	49.77
1987	14.01	23.99	38
1988	33.51	14.25	47.76
1989	37.04	20.98	58.02
1990	41.67	26.5	68.17
1991	30.18	29.02	59.2
1992	34.33	23.91	58.24
1993	38.76	27.4	66.16
1994	71.55	31.02	102.57
1995	44.85	54.45	99.3
1996	70.23	53.11	123.34
1997	54.49	59.54	114.03

Table D.13. Absolute abundance (millions) of recruit and postrecruit lobster in the Cape Cod and Long Island areas.

Year	Recruits	Postrecruits	Total
1982	1.58	1.998	3.578
1983	1.696	1.547	3.243
1984	2.54	1.309	3.849
1985	1.681	1.437	3.118
1986	3.481	0.969	4.45
1987	1.222	2.282	3.504
1988	1.855	1.511	3.366
1989	3.928	0.85	4.778
1990	3.914	1.536	5.45
1991	1.455	2.283	3.738
1992	3.383	1.743	5.126
1993	1.466	2.217	3.683
1994	2.791	0.672	3.463
1995	3.451	1.387	4.838
1996	6.171	2.719	8.89
1997	6.18	4.789	10.969

Table D.14. Estimated biomass (mt) of lobster recruits.

Year	Gulf of Maine	Cape Cod and LI	Total
1982	1,582.0	90.7	1,672.6
1983	1,852.2	97.3	1,949.5
1984	874.5	145.7	1,020.2
1985	1,829.8	96.5	1,926.3
1986	1,590.0	199.7	1,789.7
1987	803.9	70.1	874.0
1988	1,922.8	106.4	2,029.2
1989	2,125.4	225.4	2,350.7
1990	2,391.0	224.6	2,615.6
1991	1,731.7	83.5	1,815.2
1992	1,969.9	194.1	2,164.0
1993	2,224.0	84.1	2,308.2
1994	4,105.5	160.1	4,265.7
1995	2,573.5	198.0	2,771.5
1996	4,029.8	354.1	4,383.9
1997	3,126.6	354.6	3,481.2
average	2,170.8	167.8	2,338.6

Table D.15. Seasonal and regional trawl survey catch per tow reported in Stehlik *et al.* (1991).

Taxon	Georges Bank/ Gulf of Maine (Area = 84,006 km ²)	Southern New England (Area = 14,805 km ²)	Mid-Atlantic (Area = 17,203 km ²)	Chesapeake Bay (Area = 7,913 km ²)	North Carolina (Area = 26,455 km ²)
Rock Crab (Spring)	2.24	22.34	22.34	22.34	0
Rock Crab (Fall)	0.84	1.15	1.15	1.15	0
Jonah (Spring)	0.33	0.08	0.08	0	0
Jonah (Fall)	0.29	0.09	0.09	0	0

Table D.16. Annual landings (mt) summarized by clupeid species and total from sources identified in text. Abundance (mt) is estimated from total annual landings by dividing by F (0.05) as described in text.

Year	HERRING, ATLANTIC	HERRING, ATLANTIC THREAD	SARDINE, SPANISH	SCADS	Grand Total	Abundance
1982	44447.8	38.2			44486.0	889719.8
1983	33229.9	1370.0			34599.9	691998.0
1984	46659.7	1526.4	8.3		48194.4	963888.3
1985	33352.3	1529.1			34881.4	697628.0
1986	40219.4	108.6	1.7	36.4	40366.1	807322.8
1987	49957.2	421.1	1.6	95.3	50475.2	1009503.0
1988	53617.4	563.8	2.1	161.6	54345.0	1086899.3
1989	55842.1	1.5	13.2	125.7	55982.5	1119649.4
1990	55573.5	2584.2	65.9	49.0	58272.6	1165452.3
1991	80165.4	1726.6	14.3	0.1	81906.3	1638126.9
1992	92748.5	2168.8	81.1		94998.4	1899968.5
1993	77056.3	3101.1	48.0	5.4	80210.9	1604217.2
1994	64255.6	3557.3	55.9	3.3	67872.2	1357443.1
1995	106304.9	3961.0	32.9	10.4	110309.2	2206183.1
1996	119118.7	2997.7	90.9	31.5	122238.8	2444775.1
1997	111144.1	6305.0	151.9	55.9	117656.8	2353136.1
1998	99510.0	1397.4	150.2	52.8	101110.5	2022209.1
1999	110265.2	381.3	168.6	42.5	110857.6	2217151.6
2000	106173.1	1931.2	3.2	0.1	108107.6	2162152.8
2001	124260.0	268.5	12.3	0.1	124540.9	2490818.6
2002	93123.9	1249.5	7.5	0.3	94381.2	1887624.3
2003	103781.1	14.4	27.7		103823.2	2076463.4
2004	87324.2				87324.2	1746483.2
Grand Total	1788130.4	37202.6	937.3	670.4	1826940.7	

Table D.17. Seasonal landings (mt) summarized by species and overall proportion by season. Season define by 3-month periods (Jan-Mar, Apr-Jun, Jul-Sep, Oct-Dec).

Season	HERRING, ATLANTIC	HERRING, ATLANTIC THREAD	SARDINE, SPANISH	SCADS	Grand Total	Proportion
1	305798.19	177.4	19	4.1	305998.7	0.168
2	284549.13	514.8	73	36.6	285173.5	0.156
3	733470.37	35296.1	113.4	9	768888.9	0.421
4	464312.71	21.2	2.5	0.8	464337.2	0.255
Grand Total	1788130.4	36009.5	207.9	50.5	1824398.3	1.000

Table D.18. Length composition of Atlantic herring summarized from data for 1982-2004 (pers. comm., Matthew Cieri, Maine DMR).

Total Length (mm)	Frequency	Proportion
<230	253	0.001
230-250	10131	0.040
250-270	40524	0.160
270-290	73449	0.290
290-310	78515	0.310
310-330	37991	0.150
330-350	10131	0.040
350-370	1266	0.005
370-390	253	0.001
Total	252514	1.00

Table D.19. Length and age composition of Atlantic thread herring summarized from data collected between 1982-2002 (pers.comm., Joe W. Smith, SEFSC).

Fork Length (mm)	Frequency	Proportion
120-129	1	0.001
130-139	11	0.011
140-149	95	0.096
150-159	225	0.227
160-169	296	0.299
170-179	249	0.252
180-189	100	0.101
190-199	11	0.011
200-209	2	0.002
Total	990	1.000

Age (yr)	Frequency	Proportion
1	1	0.002
2	11	0.018
3	95	0.151
4	225	0.358
5	296	0.471
	628	0.634

Table D.20. Time series of bay anchovy biomass estimates (mt) for Atlantic coast estuaries and coastal waters and combined during season 2 (spring) and 3 (summer).

Season 2				Season 3			
Year	Estuaries	Coast	Total	Year	Estuaries	Coast	Total
1982	45,754.0	136,810.2	182,564.2	1982	198,930.6	555,016.7	753,947.3
1983	48,283.4	136,810.2	185,093.6	1983	209,927.8	555,016.7	764,944.5
1984	50,454.2	136,810.2	187,264.3	1984	219,366.0	555,016.7	774,382.7
1985	61,795.4	136,810.2	198,605.6	1985	268,675.8	555,016.7	823,692.5
1986	58,527.7	136,810.2	195,337.9	1986	254,468.2	555,016.7	809,484.9
1987	50,706.5	136,810.2	187,516.6	1987	220,462.9	555,016.7	775,479.6
1988	33,382.2	136,810.2	170,192.3	1988	145,139.8	555,016.7	700,156.6
1989	70,142.2	103,160.9	173,303.1	1989	304,966.1	418,507.0	723,473.1
1990	41,061.1	124,354.2	165,415.3	1990	178,526.4	504,484.9	683,011.4
1991	67,817.3	98,229.5	166,046.8	1991	294,857.8	398,501.1	693,358.9
1992	70,667.3	133,228.6	203,895.9	1992	307,249.2	540,486.9	847,736.2
1993	62,564.6	136,810.2	199,374.8	1993	272,020.2	555,016.7	827,036.9
1994	48,157.1	89,310.4	137,467.6	1994	209,378.8	362,318.0	571,696.8
1995	50,924.8	120,611.6	171,536.5	1995	221,412.2	489,301.9	710,714.1
1996	36,013.9	109,687.8	145,701.7	1996	156,582.0	444,985.8	601,567.8
1997	43,518.0	90,873.9	134,391.9	1997	189,208.9	368,660.7	557,869.6
1998	42,997.8	73,458.3	116,456.1	1998	186,946.9	298,008.6	484,955.5
1999	49,790.1	92,748.7	142,538.7	1999	216,478.5	376,266.3	592,744.8
2000	59,745.8	88,964.0	148,709.8	2000	259,764.5	360,912.5	620,677.0
2001	36,354.7	68,741.1	105,095.8	2001	158,064.0	278,871.6	436,935.6
2002	29,202.1	80,801.1	110,003.2	2002	126,965.5	327,796.9	454,762.4
Mean	50,374.3	112,792.9	163,167.2	Mean	219,018.7	457,582.7	676,601.3

Table D.21. References for regional diet composition data for striped bass.

Reference	Region	Age Classes	Seasons
Hartman & Brandt 1995a	Chesapeake Bay	0, 1-2, 3-5	1-4
Walter & Austin 2003	Chesapeake Bay	6+	1-4
Walter <i>et al.</i> 2003	Chesapeake Bay	1-3, 4-7, 8+	1-4
Cooper 1998	North Carolina	0	3-4
Walter <i>et al.</i> 2003	North Carolina	1-3, 4-7, 8+	1-4
NEFSC-Food Habits Database	North Carolina	4-7, 8+	2
NEFSC-Food Habits Database	Mid-Atlantic	1-3, 4-7	2
Walter <i>et al.</i> 2003	New England	1-3, 4-7, 8+	1-4
NEFSC-Food Habits Database	New England	1-3, 4-7, 8+	2,4
Nelson et al. 2003	Gulf of Maine	4-7, 8+	3

Table D.22. Quantitative electivity values for striped bass in Chesapeake Bay.

Age Class	Season	Anch.	Invert.	Crust.	Macro-zooplankton	Med. Forage	Menhaden	Sciaenids
Age 0	1	0.0000	0.9896	0.0000	0.0104	0.0000		0.0000
Age 0	2	0.0000	0.9896	0.0000	0.0104	0.0000	0.0000	0.0000
Age 0	3	0.0181	0.0283	0.0272	0.1265	0.7999	0.0000	0.0000
Age 0	4	0.4020	0.0279	0.1870	0.3831	0.0000	0.0000	0.0000
Age 1-2	1	0.0378	0.3401	0.0000	0.0811	0.4066		0.1345
Age 1-2	2	0.0070	0.0421	0.0324	0.0406	0.2807	0.0000	0.5972
Age 1-2	3	0.0355	0.0067	0.7533	0.1437	0.0000	0.0447	0.0161
Age 1-2	4	0.0230	0.0026	0.0582	0.0764	0.0000	0.4669	0.3728
Age 3-5	1	0.0017	0.0002	0.0000	0.0000	0.9765		0.0216
Age 3-5	2	0.0018	0.0658	0.0302	0.0004	0.4388	0.0082	0.4547
Age 3-5	3	0.0404	0.2180	0.0769	0.0000	0.4682	0.1965	0.0000
Age 3-5	4	0.0005	0.0000	0.0191	0.0027	0.0982	0.8796	0.0000
Age 6-7	1	0.0016	0.0007	0.0021	0.0000	0.9748		0.0208
Age 6-7	2	0.0000	0.0005	0.0323	0.0000	0.9319	0.0096	0.0257
Age 6-7	3	0.0043	0.0036	0.9653	0.0000	0.0143	0.0125	0.0000
Age 6-7	4	0.0020	0.0012	0.0089	0.0000	0.4021	0.0423	0.5434
Age 8+	1	0.0000	0.0000	0.0004	0.0000	0.9996		0.0000
Age 8+	2	0.0000	0.0000	0.0239	0.0000	0.9475	0.0067	0.0218
Age 8+	3	0.0000	0.0000	0.0047	0.0000	0.9301	0.0652	0.0000
Age 8+	4	0.0114	0.0058	0.0175	0.0000	0.4505	0.0744	0.4403

Table D.23. Ranked type preference values for Striped Bass used as inputs in the MSVPA-X application.

Age	Anchovies	Inverts.	Crust.	Herrings	Macro - zooplankton	Medium Forage	Menhaden	Sciaenids
0	0	1	0	0	2	0	0	0
1	7	5	1	0	6	4	3	2
2	7	5	1	0	6	4	3	2
3	6	3	4	0	7	1	2	5
4	7	5	3	6	8	1	2	4
5	6	5	3	8	7	1	2	4
6	5	8	3	7	6	1	2	4
7	6	7	2	5	0	1	4	3
8	6	7	2	5	0	1	4	3
9	6	7	2	4	0	1	5	3
10	6	7	2	4	0	1	5	3
11	6	7	2	3	0	1	5	4
12	6	7	2	3	0	1	5	4
13+	6	7	2	3	0	1	5	4

Table D.24. Available references for diet information for weakfish.

Reference	Region	Age Classes	Seasons
Hartman & Brandt 1995a	Chesapeake Bay	0, 1, 2-3	2-4
Merriner 1975	North Carolina	0-5	3-4
NEFSC-Food Habits Database	North Carolina	1-2, 3+	2, 4
NEFSC-Food Habits Database	Mid-Atlantic	1-2, 3+	4
NEFSC-Food Habits Database	New England	1-2, 3+	4

Table D.25. Type preference ranks derived from available diet information for weakfish.

Age	Anchovies	Inverts.	Crust.	Herrings	Macro - zooplankton	Medium Forage	Menhaden	Sciaenids
0	3	2	0	0	1	0	0	0
1	2	7	6	0	5	4	1	3
2	4	6	5	0	7	3	1	2
3	6	8	5	2	7	4	3	1
4	6	8	4	2	7	5	3	1
5	6	8	4	2	7	5	1	3
6+	5	8	4	2	7	6	3	1

Table D.26. Available references for diet information for bluefish.

Reference	Region	Size Classes	Seasons
Hartman & Brandt 1993a	Chesapeake Bay	1-3	3
NEFSC-Food Habits Database	North Carolina	1-3	2, 4
NEFSC-Food Habits Database	Mid-Atlantic	1-3	2,4
NEFSC-Food Habits Database	New England	1-3	2,4
Buckel and Conover 1999	New England	1	3
Juanes <i>et al.</i> 2001	New England	1	3
NEFSC-Food Habits Database	Gulf of Maine	1-3	2,4

Table D.27. Type preference ranks derived from available diet information for bluefish.

Size	Anchovies	Inverts.	Crust.	Herrings	Macro - zooplankton	Medium Forage	Menhaden	Sciaenids
1	2	6	5	7	8	1	4	3
2	7	8	6	2	5	1	4	3
3	6	7	4	3	8	1	5	2

Table D.28. Surface area and states included in strata used for spatial analyses.

Region	Area (km²)	States
North Carolina	26,455	North Carolina
Chesapeake Bay	7,912	Virginia and Maryland
Mid-Atlantic	17,202	Offshore VA and MD, New Jersey, Delaware
Southern New England	14,805	New York, Connecticut, Rhode Island
Gulf of Maine	84,006	Massachusetts, Maine

Table D.29. Seasonal spatial overlap values for weakfish.

Season	Prey	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6+
1	Menhaden	0.9282	0.9631	0.9725	0.9733	0.8853	0.9091
1	Anchovy	0.3718	0.3369	0.3275	0.3267	0.4147	0.3909
1	Crustaceans	0.4617	0.4267	0.4173	0.4165	0.4781	0.4480
1	Inverts	0.2808	0.2515	0.2421	0.2413	0.3293	0.3055
1	Herrings	0.0965	0.0792	0.0698	0.0690	0.1570	0.1332
1	Macrozooplankton	0.2291	0.2128	0.2034	0.2027	0.2906	0.2669
1	Medium Forage Fish	0.4083	0.3734	0.3640	0.3632	0.4512	0.4274
1	Sciaenids	0.9742	0.9370	0.9237	0.9208	0.9296	0.9171
2	Menhaden	0.8512	0.7579	0.5577	0.5275	0.2941	0.2162
2	Anchovy	0.6476	0.8507	0.6712	0.6461	0.4321	0.3543
2	Crustaceans	0.5811	0.8129	0.6999	0.6577	0.4245	0.3467
2	Inverts	0.3132	0.4238	0.4365	0.4537	0.3749	0.3888
2	Herrings	0.1418	0.2378	0.2505	0.2677	0.3495	0.3690
2	Macrozooplankton	0.2744	0.3439	0.3567	0.3738	0.3197	0.3172
2	Medium Forage Fish	0.3394	0.4997	0.4909	0.5030	0.3699	0.3282
2	Sciaenids	0.9109	0.5792	0.3878	0.3506	0.1825	0.1046
3	Menhaden	0.8709	0.6039	0.4012	0.3656	0.2282	0.1750
3	Anchovy	0.5898	0.7067	0.5040	0.4899	0.3525	0.2993
3	Crustaceans	0.5234	0.6805	0.5216	0.4823	0.3449	0.2916
3	Inverts	0.2554	0.3265	0.3266	0.3514	0.3899	0.3872
3	Herrings	0.0001	0.0018	0.0023	0.0028	0.0048	0.0054
3	Macrozooplankton	0.2425	0.2853	0.2854	0.3103	0.2859	0.2621
3	Medium Forage Fish	0.2864	0.3987	0.3988	0.4236	0.4155	0.3623
3	Sciaenids	0.9456	0.5902	0.3643	0.3244	0.1851	0.1312
4	Menhaden	0.7381	0.7341	0.5476	0.5082	0.2459	0.1814
4	Anchovy	0.7310	0.8516	0.6965	0.6757	0.4299	0.3654
4	Crustaceans	0.6646	0.8923	0.7239	0.6846	0.4222	0.3577
4	Inverts	0.3278	0.4239	0.4378	0.4564	0.4072	0.4151
4	Herrings	0.0001	0.0012	0.0018	0.0019	0.0020	0.0021
4	Macrozooplankton	0.2762	0.3440	0.3580	0.3765	0.3376	0.3282
4	Medium Forage Fish	0.3501	0.4874	0.5013	0.5199	0.4794	0.4284
4	Sciaenids	0.6308	0.6817	0.5344	0.4950	0.2325	0.1680

Table D.30. Seasonal spatial overlap values for bluefish.

Season	Prey	Size1	Size2	Size3
1	Menhaden	0.9939	0.6707	0.9125
1	Anchovy	0.3062	0.5934	0.3875
1	Crustaceans	0.3960	0.7119	0.4773
1	Inverts	0.2208	0.4361	0.3021
1	Herrings	0.0484	0.2501	0.1298
1	Macrozooplankton	0.1821	0.3563	0.2635
1	Medium Forage Fish	0.3427	0.5871	0.4240
1	Sciaenids	0.9052	0.7520	0.9249
2	Menhaden	0.3910	0.2996	0.4760
2	Anchovy	0.4258	0.4874	0.6796
2	Crustaceans	0.4965	0.4639	0.6678
2	Inverts	0.3404	0.5770	0.6676
2	Herrings	0.1681	0.5635	0.4816
2	Macrozooplankton	0.3017	0.4333	0.5063
2	Medium Forage Fish	0.4623	0.4836	0.6801
2	Sciaenids	0.1731	0.1880	0.2381
3	Menhaden	0.3968	0.1972	0.1755
3	Anchovy	0.4183	0.3430	0.3213
3	Crustaceans	0.3820	0.3195	0.2780
3	Inverts	0.3788	0.4477	0.6644
3	Herrings	0.0000	0.0674	0.3035
3	Macrozooplankton	0.2633	0.3170	0.5337
3	Medium Forage Fish	0.3381	0.4172	0.6339
3	Sciaenids	0.3665	0.1285	0.1068
4	Menhaden	0.6096	0.1629	0.1110
4	Anchovy	0.5065	0.3637	0.3325
4	Crustaceans	0.5601	0.3560	0.3090
4	Inverts	0.4608	0.4572	0.5456
4	Herrings	0.0000	0.0410	0.1767
4	Macrozooplankton	0.3067	0.3265	0.4149
4	Medium Forage Fish	0.4114	0.4267	0.5151
4	Sciaenids	0.5966	0.1373	0.0854

Table D.31. Seasonal spatial overlap values for striped bass.

Season	Prey	Age 1	Age 2	Age 3	Age 4	Age 5	Age 6	Age 7	Age 8	Age 9	Age 10	Age 11	Age 12	Age 13+
1	Menhaden	0.0000	0.0000	0.0000	0.0162	0.0000	0.0069	0.0528	0.1593	0.4259	0.6320	0.5773	0.4656	0.4241
1	Anchovy	0.4504	0.4504	0.5084	0.5340	0.5140	0.5140	0.5500	0.6725	0.7392	0.6680	0.7227	0.7326	0.7210
1	Crustaceans	0.3840	0.3840	0.4420	0.4675	0.4476	0.4476	0.4835	0.6061	0.7626	0.7550	0.7542	0.7560	0.7444
1	Inverts	0.1160	0.1160	0.1740	0.1996	0.1796	0.1796	0.2156	0.3381	0.3194	0.3117	0.3110	0.3128	0.3012
1	Herrings	0.1040	0.1040	0.1620	0.1876	0.1676	0.1676	0.1931	0.2091	0.1351	0.1274	0.1267	0.1285	0.1169
1	Macrozooplankton	0.1031	0.1031	0.1611	0.1835	0.1666	0.1667	0.2026	0.3251	0.2678	0.2601	0.2593	0.2611	0.2496
1	Medium Forage Fish	0.1422	0.1422	0.2002	0.2258	0.2058	0.2058	0.2418	0.3643	0.4675	0.4598	0.4591	0.4609	0.4493
1	Sciaenids	0.0976	0.0976	0.0976	0.1138	0.0976	0.1045	0.1504	0.2569	0.5235	0.7296	0.6749	0.5632	0.5217
2	Menhaden	0.6901	0.6901	0.5251	0.4473	0.3716	0.3035	0.3072	0.2578	0.3707	0.4219	0.3480	0.3176	0.3371
2	Anchovy	0.6000	0.6000	0.6568	0.6351	0.5594	0.4913	0.4922	0.4305	0.4772	0.5397	0.4276	0.3919	0.4114
2	Crustaceans	0.5622	0.5622	0.6032	0.6117	0.5360	0.4506	0.4401	0.3785	0.4252	0.4876	0.3755	0.3399	0.3593
2	Inverts	0.2082	0.2082	0.2869	0.4569	0.5314	0.6669	0.6466	0.7828	0.7346	0.8981	0.8413	0.7959	0.7781
2	Herrings	0.1945	0.1945	0.2732	0.4432	0.6270	0.7927	0.7757	0.8799	0.8279	0.7862	0.8586	0.8848	0.7930
2	Macrozooplankton	0.1671	0.1671	0.2458	0.4157	0.3877	0.5233	0.5029	0.6392	0.6149	0.8174	0.7706	0.6966	0.7571
2	Medium Forage Fish	0.2490	0.2490	0.3277	0.4791	0.4380	0.5735	0.5532	0.6794	0.6266	0.7951	0.7048	0.6594	0.6416
2	Sciaenids	0.6695	0.6695	0.4325	0.3357	0.2600	0.1919	0.1956	0.1462	0.2591	0.3093	0.2364	0.2117	0.2522
3	Menhaden	0.7783	0.7783	0.6347	0.4725	0.3655	0.2758	0.2707	0.2198	0.2628	0.2920	0.2218	0.2054	0.2211
3	Anchovy	0.6000	0.6000	0.6636	0.6183	0.4559	0.3188	0.3137	0.2628	0.3058	0.3350	0.2648	0.2484	0.2641
3	Crustaceans	0.5555	0.5555	0.6100	0.5949	0.4038	0.2667	0.2616	0.2107	0.2538	0.2829	0.2127	0.1964	0.2121
3	Inverts	0.2082	0.2082	0.3893	0.6619	0.6113	0.7169	0.6756	0.7202	0.7236	0.7719	0.7242	0.7036	0.6968
3	Herrings	0.0001	0.0001	0.1694	0.3111	0.2040	0.3666	0.3285	0.4800	0.3749	0.5615	0.5533	0.5049	0.5994
3	Macrozooplankton	0.1671	0.1671	0.3482	0.5771	0.4676	0.6015	0.5601	0.7066	0.6081	0.8388	0.7840	0.7149	0.7636
3	Medium Forage Fish	0.2804	0.2804	0.4615	0.7212	0.5726	0.6762	0.6349	0.6765	0.6829	0.7394	0.6785	0.6621	0.6643
3	Sciaenids	0.8413	0.8413	0.5809	0.4038	0.2968	0.2188	0.2137	0.1628	0.2058	0.2350	0.1648	0.1484	0.1641
4	Menhaden	0.4607	0.4607	0.4720	0.4916	0.4857	0.4752	0.4785	0.4310	0.6106	0.7224	0.6433	0.5938	0.6866
4	Anchovy	0.6000	0.6000	0.6113	0.6762	0.6673	0.6912	0.6895	0.6525	0.7811	0.8607	0.8013	0.7394	0.7935
4	Crustaceans	0.5622	0.5622	0.5736	0.6023	0.5933	0.6121	0.6253	0.6291	0.7140	0.8582	0.7492	0.6873	0.6750
4	Inverts	0.2082	0.2082	0.2195	0.2844	0.4264	0.4556	0.4637	0.5235	0.6320	0.6125	0.6975	0.6579	0.6499
4	Herrings	0.0001	0.0001	0.0097	0.0222	0.0191	0.0464	0.0413	0.0733	0.0465	0.0660	0.0816	0.0787	0.0948
4	Macrozooplankton	0.1671	0.1671	0.1784	0.2433	0.2828	0.3120	0.3200	0.3798	0.4860	0.5055	0.5212	0.5182	0.5126
4	Medium Forage Fish	0.2804	0.2804	0.2917	0.3566	0.4269	0.4561	0.4642	0.5240	0.6030	0.6587	0.6481	0.6172	0.6124
4	Sciaenids	0.3526	0.3526	0.3527	0.3587	0.3527	0.3546	0.3678	0.3956	0.5509	0.6967	0.6176	0.5432	0.5536

Table D.32. Single-species feeding parameter input for the biomass predator bluefish by size class. The proportion of biomass attributed to each size class is also presented.

Parameter\Size Class	10-30cm	30-60cm	60-90cm
Evacuation α	0.004	0.004	0.004
Evacuation β	0.115	0.115	0.115
Size Preference α	8.65	8.65	8
Size Preference β	25	25	25
Proportion of Biomass	0.025	0.265	0.71

Table D.33. Annual temperatures by season used in base run configuration in the MSVPA.

Year	Season 1	Season 2	Season 3	Season 4
1982	12.04	15.6	21.69	13.77
1983	12.04	15.87	21.65	13.73
1984	12.04	15.87	21.78	13.75
1985	12.1	16.13	22.3	14
1986	12.12	16.34	22.25	14.36
1987	12.2	15.87	22.59	13.48
1988	12.02	16.19	21.61	13.83
1989	12.39	16.28	22.42	13.4
1990	12.56	16.08	22.56	14.9
1991	12.83	17.53	22.73	14.16
1992	12.47	14.36	21.25	13.65
1993	12.22	16.32	22.24	13.39
1994	12.1	15.62	21.38	14.62
1995	12.44	15.9	22.57	13.66
1996	11.58	15.23	21.64	13.26
1997	12.54	14.53	21.85	13.73
1998	12.91	15.88	22.54	14.73
1999	12.47	15.67	22.63	14.71
2000	12.5	15.57	21.78	13.89
2001	12.19	15.98	22.31	14.82
2002	12.95	16.2	23.19	14.14

Table D.34. Base run configuration for ‘Other Prey’ minimum and maximum length and size (α and β) parameters.

Other Prey	Min Length (cm)	Max Length (cm)	α	β
Bay Anchovy	2	11	12.45	9.69
Benthic Crust	1	21	6.54	3.35
Benthic Invert	1	6	3.29	3.32
Clupeids	7	39	4.87	3.46
Macrozoopl.	1	4	4.74	2.73
Med. For. Fish	1	27	1.15	2.52
Sciaenids	9	24	13.1	5.84

Table D.35. Quantitative prey preference rankings for weakfish by age as used in the base run configuration of the MSVPA-X model.

	Age-0	Age-1	Age-2	Age-3	Age-4	Age-5	Age-6
Striped Bass	0	0	0	0	0	0	0
Weakfish	0	0	0	0	0	0	0
Menhaden	4	1	1	3	3	1	3
Bay Anchovy	3	2	4	6	6	6	5
Benthic Crust.	0	6	5	5	4	4	4
Benthic Invert.	2	7	6	8	8	8	8
Clupeids	0	0	0	2	2	2	2
Macrozoopl.	1	5	7	7	7	7	7
Medium Forage	0	4	3	4	5	5	6
Sciaenids	0	3	2	1	1	3	1

Table D.36. Spatial overlap indices for weakfish by age as used in the base run configuration of the MSVPA-X model.

	Age-0	Age-1	Age-2	Age-3	Age-4	Age-5	Age-6
Striped Bass	0	0	0	0	0	0	0
Weakfish	0	0	0	0	0	0	0
Menhaden	0.9282	0.9282	0.9631	0.9725	0.9733	0.8853	0.9091
Bay Anchovy	0.3718	0.3718	0.3369	0.3275	0.3267	0.4147	0.3909
Benthic Crust.	0.4617	0.4617	0.4267	0.4173	0.4165	0.4781	0.448
Benthic Invert.	0.2808	0.2808	0.2515	0.2421	0.2413	0.3293	0.3055
Clupeids	0.0965	0.0965	0.0792	0.0698	0.069	0.157	0.1332
Macrozoopl.	0.2291	0.2291	0.2128	0.2034	0.2027	0.2906	0.2669
Medium Forage	0.4083	0.4083	0.3734	0.364	0.3632	0.4512	0.4274
Scianieds	0.9742	0.9742	0.937	0.9237	0.9208	0.9296	0.9171

Table D.37. Predator evacuation and prey size preference parameter values for the base run.

Species (ages)	Evacuation α	Evacuation β	Size Preference α	Size Preference β
Striped Bass (0-4)	0.004	0.115	2.98	11.244
Striped Bass (5-9)	0.004	0.115	9.1	35.2
Striped Bass (10-13+)	0.004	0.115	13.9	51.2
Weakfish	0.004	0.115	10.1	25.5
Bluefish	0.004	0.115	10.1	25.5