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Table 1A. R/M estimates of exploitation rates of  $\geq 28$  inch striped bass from tagging programs. Exploitation rate is the proportion of tagged fish that were harvested or killed (with reporting rate adjustment of 0.43, and hooking mortality rate adjustment of 0.08).

Year	NJDB	NYOHS**	NCCOOP	MA**	VA Rap	MDCB	DE/PA	NYHUD	MEAN
1987	*	*	*	*	*	*	*	*	
1988	*	0.05	0.06	*	*	0.07	*	0.05	<b>0.06</b>
1989	0.02	0.04	0.05	*	*	0.04	*	0.05	<b>0.04</b>
1990	0.04	0.07	0.09	*	0.26	0.08	*	0.07	<b>0.10</b>
1991	0.18	0.12	0.07	*	0.36	0.12	*	0.08	<b>0.16</b>
1992	0.02	0.11	0.14	0.04	0.37	0.12	*	0.10	<b>0.13</b>
1993	0.09	0.14	0.11	0.07	0.37	0.12	0.17	0.11	<b>0.15</b>
1994	0.05	0.08	0.10	0.03	0.25	0.11	0.12	0.08	<b>0.10</b>
1995	0.10	0.20	0.14	0.05	0.41	0.20	0.14	0.13	<b>0.17</b>
1996	0.20	0.14	0.12	0.08	0.18	0.17	0.31	0.16	<b>0.17</b>
1997	0.23	0.29	0.21	0.13	0.38	0.23	0.27	0.22	<b>0.24</b>
1998	0.35	0.17	0.20	0.07	0.45	0.20	0.28	0.17	<b>0.24</b>
1999	0.08	0.29	0.24	0.09	0.28	0.32	0.15	0.14	<b>0.20</b>
2000	0.14	0.18	0.06	0.13	0.25	0.17	0.30	0.09	<b>0.17</b>
2001	0.14	0.11	0.15	0.07	0.23	0.11	0.26	0.10	<b>0.15</b>
2002	0.11	0.23	0.12	0.08	0.29	0.10	0.24	0.08	<b>0.15</b>
2003	0.14	0.15	0.12	0.11	0.22	0.10	0.16	0.10	<b>0.14</b>
2004	0.16	0.15	0.12	0.09	0.08	0.08	0.21	0.18	<b>0.13</b>

\* Years when few or no striped bass were tagged and released.

\*\* NYOHS and MA have fall tagging programs, and recapture interval of terminal year (2003) is fall 2002 to fall 2003; NCCOOP is a winter tagging program (Jan./Feb.) with recapture interval of terminal year (2003) from January 2003 to January 2004; others are spring tagging programs with recapture interval of terminal year (2003) from spring 2003 to spring 2004.

Table 1B. R/M estimates of catch rates of  $\geq 28$  inch striped bass from tagging programs. Catch rate is the proportion of tagged striped bass that were caught, but may have been released (with reporting rate adjustment of 0.43).

Year	NJDB	NYOHS**	NCCOOP	MA**	VA Rap	MDCB	DE/PA	NYHUD	MEAN
1987	*	*	*	*	*	0.08	*	*	<b>0.08</b>
1988	*	0.26	0.22	*	*	0.11	*	0.15	<b>0.19</b>
1989	0.27	0.23	0.14	*	*	0.10	*	0.21	<b>0.19</b>
1990	0.52	0.21	0.18	*	0.49	0.18	*	0.27	<b>0.31</b>
1991	0.47	0.24	0.20	*	0.58	0.28	*	0.25	<b>0.34</b>
1992	0.20	0.33	0.27	0.11	0.58	0.24	*	0.24	<b>0.28</b>
1993	0.20	0.27	0.28	0.13	0.57	0.21	0.24	0.27	<b>0.27</b>
1994	0.21	0.21	0.22	0.10	0.36	0.22	0.20	0.21	<b>0.22</b>
1995	0.23	0.33	0.28	0.16	0.55	0.27	0.21	0.23	<b>0.28</b>
1996	0.33	0.31	0.16	0.18	0.21	0.25	0.41	0.27	<b>0.26</b>
1997	0.34	0.35	0.26	0.22	0.44	0.28	0.29	0.31	<b>0.31</b>
1998	0.38	0.17	0.26	0.15	0.60	0.23	0.34	0.25	<b>0.30</b>
1999	0.21	0.34	0.27	0.16	0.37	0.38	0.19	0.22	<b>0.27</b>
2000	0.22	0.33	0.13	0.14	0.39	0.20	0.36	0.20	<b>0.24</b>
2001	0.22	0.20	0.21	0.11	0.33	0.15	0.28	0.19	<b>0.21</b>
2002	0.18	0.38	0.15	0.16	0.36	0.13	0.24	0.18	<b>0.22</b>
2003	0.23	0.21	0.16	0.12	0.30	0.16	0.25	0.20	<b>0.20</b>
2004	0.26	0.26	0.17	0.11	0.13	0.11	0.25	0.27	<b>0.19</b>

\* Years when few or no striped bass were tagged and released.

\*\* See footnote in Table 11.

Table 1C. R/M estimates of exploitation rates of 18" fish from tagging programs.  
 Exploitation rate is the proportion of tagged fish that were harvested or killed  
 (with reporting rate adjustment of 0.43, and hooking mortality rate adjustment of 0.08).

Year	NJDB	NYOHS**	NCCOOP	MA**	VA Rap	MDCB	DE/PA	NYHUD	MEAN
1987	*	*	*	*	*	0.01	*	*	<b>0.01</b>
1988	*	0.02	0.04	*	*	0.01	*	0.10	<b>0.05</b>
1989	0.03	0.03	0.03	*	*	0.01	*	0.07	<b>0.04</b>
1990	0.07	0.04	0.07	*	0.17	0.07	*	0.11	<b>0.09</b>
1991	0.03	0.06	0.08	*	0.14	0.10	*	0.11	<b>0.09</b>
1992	0.03	0.04	0.15	0.04	0.31	0.13	*	0.13	<b>0.12</b>
1993	0.03	0.05	0.11	0.05	0.23	0.11	0.12	0.17	<b>0.11</b>
1994	0.03	0.04	0.10	0.03	0.25	0.12	0.12	0.12	<b>0.10</b>
1995	0.06	0.05	0.14	0.04	0.19	0.18	0.13	0.16	<b>0.12</b>
1996	0.09	0.03	0.12	0.06	0.14	0.17	0.16	0.23	<b>0.12</b>
1997	0.08	0.04	0.17	0.09	0.20	0.20	0.09	0.29	<b>0.14</b>
1998	0.12	0.03	0.17	0.08	0.15	0.19	0.14	0.22	<b>0.14</b>
1999	0.05	0.05	0.22	0.06	0.13	0.16	0.12	0.22	<b>0.13</b>
2000	0.07	0.03	0.10	0.08	0.13	0.13	0.14	0.13	<b>0.10</b>
2001	0.09	0.05	0.12	0.05	0.18	0.12	0.14	0.14	<b>0.11</b>
2002	0.06	0.06	0.12	0.09	0.16	0.12	0.14	0.19	<b>0.12</b>
2003	0.07	0.04	0.11	0.08	0.15	0.13	0.13	0.14	<b>0.11</b>
2004	0.12	0.04	0.12	0.09	0.07	0.10	0.12	0.04	<b>0.09</b>

\* Years when few or no striped bass were tagged and released.

\*\* NYOHS and MA have fall tagging programs, and recapture interval of terminal year (2003) is fall 2002 to fall 2003; NCCOOP is a winter tagging program (Jan./Feb.) with recapture interval of terminal year (2003) from January 2003 to January 2004; others are spring tagging programs with recapture interval of terminal year (2003) from spring 2003 to spring 2004.

Table 1D. R/M estimates of catch rates of 18" fish from tagging programs.  
 Catch rate is the proportion of tagged striped bass that were caught, but may have been released  
 (with reporting rate adjustment of 0.43).

Year	NJDB	NYOHS**	NCCOOP	MA**	VA Rap	MDCB	DE/PA	NYHUD	MEAN
1987	*	*	*	*	*	0.16	*	*	<b>0.16</b>
1988	*	0.17	0.21	*	*	0.10	*	0.21	<b>0.17</b>
1989	0.25	0.23	0.12	*	*	0.08	*	0.25	<b>0.19</b>
1990	0.38	0.20	0.18	*	0.38	0.15	*	0.32	<b>0.27</b>
1991	0.20	0.17	0.20	*	0.28	0.19	*	0.24	<b>0.21</b>
1992	0.18	0.19	0.28	0.13	0.54	0.25	*	0.30	<b>0.26</b>
1993	0.17	0.14	0.22	0.11	0.40	0.18	0.23	0.34	<b>0.22</b>
1994	0.17	0.17	0.21	0.11	0.37	0.22	0.25	0.26	<b>0.22</b>
1995	0.20	0.15	0.24	0.14	0.30	0.28	0.28	0.27	<b>0.23</b>
1996	0.24	0.17	0.16	0.18	0.25	0.27	0.26	0.32	<b>0.23</b>
1997	0.25	0.15	0.23	0.18	0.27	0.29	0.19	0.37	<b>0.24</b>
1998	0.27	0.15	0.32	0.15	0.24	0.28	0.26	0.29	<b>0.25</b>
1999	0.17	0.14	0.27	0.11	0.23	0.23	0.20	0.30	<b>0.21</b>
2000	0.20	0.14	0.17	0.10	0.23	0.23	0.24	0.21	<b>0.19</b>
2001	0.21	0.14	0.18	0.09	0.28	0.19	0.22	0.20	<b>0.19</b>
2002	0.13	0.18	0.18	0.16	0.25	0.17	0.19	0.24	<b>0.19</b>
2003	0.18	0.11	0.16	0.10	0.21	0.18	0.25	0.21	<b>0.18</b>
2004	0.25	0.14	0.17	0.11	0.11	0.16	0.18	0.22	<b>0.17</b>

\* Years when few or no striped bass were tagged and released.

\*\* See footnote in Table 13.

Table 2. Survival (S) and fishing mortality (F) rates of striped bass  $\geq 28$  inches, based on the assumption of constant natural mortality, adjusted for the bias due to live release of recaptured fish. Diagnostic statistics  $\hat{c}$  and bootstrap goodness of fit probability are presented for each dataset (see Methods).

Coast Programs

Massachusetts;  $\hat{c}$  = 1.17; bootstrap GOF probability = 0.68 for the fully parameterized model.

Year	S(unadj.)	F(unadj.)	Recovery Rate	% Live Release	Bias Live Release	S(adj.)	F(adj.)	95%LCL F(adj.)	95%UCL F(adj.)
1992	0.77	0.11	0.05	0.75	-0.08	0.84	<b>0.02</b>	-0.06	0.14
1993	0.77	0.11	0.07	0.57	-0.09	0.85	<b>0.01</b>	-0.07	0.12
1994	0.78	0.10	0.06	0.52	-0.07	0.83	<b>0.03</b>	-0.05	0.15
1995	0.73	0.16	0.06	0.38	-0.05	0.78	<b>0.10</b>	0.05	0.16
1996	0.73	0.16	0.09	0.26	-0.06	0.78	<b>0.10</b>	0.05	0.16
1997	0.73	0.16	0.07	0.22	-0.04	0.76	<b>0.12</b>	0.07	0.19
1998	0.73	0.17	0.09	0.28	-0.07	0.78	<b>0.10</b>	0.04	0.17
1999	0.73	0.17	0.08	0.28	-0.05	0.77	<b>0.11</b>	0.05	0.19
2000	0.74	0.15	0.07	0.21	-0.04	0.77	<b>0.11</b>	0.04	0.22
2001	0.74	0.15	0.05	0.33	-0.04	0.77	<b>0.11</b>	0.03	0.21
2002	0.74	0.14	0.07	0.32	-0.06	0.79	<b>0.09</b>	0.01	0.19
2003	0.75	0.14	0.05	0.18	-0.02	0.77	<b>0.12</b>	0.03	0.23
2004	0.76	0.12	0.05	0.22	-0.03	0.78	<b>0.10</b>	0.00	0.24

New York - Ocean Haul Seine

$\hat{c}$ -hat adjustment = 1.09; bootstrap GOF probability = 0.19 for the fully parameterized model.

Year	S(unadj.)	F(unadj.)	Recovery Rate	% Live Release	Bias Live Release	S(adj.)	F(adj.)	95%LCL F(adj.)	95%UCL F(adj.)
1988	0.81	0.06	0.12	0.90	-0.24	1.06	<b>-0.21</b>	-0.31	-0.05
1989	0.81	0.06	0.10	0.86	-0.19	1.01	<b>-0.16</b>	-0.25	0.00
1990	0.63	0.31	0.09	0.66	-0.14	0.73	<b>0.17</b>	0.12	0.22
1991	0.63	0.31	0.11	0.53	-0.15	0.74	<b>0.16</b>	0.11	0.21
1992	0.63	0.31	0.15	0.54	-0.20	0.79	<b>0.09</b>	0.04	0.14
1993	0.63	0.31	0.11	0.43	-0.12	0.71	<b>0.19</b>	0.14	0.25
1994	0.63	0.31	0.11	0.49	-0.13	0.73	<b>0.17</b>	0.12	0.22
1995	0.65	0.28	0.15	0.34	-0.14	0.76	<b>0.13</b>	0.07	0.19
1996	0.65	0.28	0.13	0.30	-0.11	0.73	<b>0.16</b>	0.11	0.23
1997	0.65	0.28	0.14	0.21	-0.09	0.71	<b>0.19</b>	0.13	0.25
1998	0.65	0.28	0.10	0.19	-0.05	0.68	<b>0.23</b>	0.17	0.29
1999	0.65	0.28	0.14	0.10	-0.04	0.68	<b>0.24</b>	0.18	0.30
2000	0.75	0.13	0.13	0.22	-0.08	0.82	<b>0.05</b>	-0.06	0.21
2001	0.75	0.13	0.10	0.24	-0.06	0.81	<b>0.07</b>	-0.04	0.23
2002	0.75	0.13	0.11	0.40	-0.12	0.85	<b>0.01</b>	-0.10	0.17
2003	0.76	0.13	0.08	0.21	-0.04	0.79	<b>0.09</b>	-0.03	0.26
2004	0.76	0.12	0.11	0.36	-0.10	0.85	<b>0.02</b>	-0.11	0.21

Table 2. Continued.

New Jersey - Delaware Bay

C-hat adjustment = 1.00 bootstrap GOF probability = 0.772 for the fully parameterized model.

Year	S(unadj.)	F(unadj.)	Recovery Rate	% Live Release	Bias Live Release	S(adj.)	F(adj.)	95%LCL F(adj)	95%UCL F(adj)
1989	0.89	-0.04	0.11	1.00	-0.23	1.16	<b>-0.29</b>	-0.37	-0.11
1990	0.67	0.25	0.12	0.50	-0.15	0.78	<b>0.10</b>	-0.12	0.49
1991	0.66	0.27	0.22	0.38	-0.27	0.90	<b>-0.04</b>	-0.22	0.23
1992	0.65	0.28	0.08	1.00	-0.17	0.78	<b>0.10</b>	-0.03	0.27
1993	0.64	0.29	0.10	0.77	-0.17	0.78	<b>0.10</b>	0.00	0.23
1994	0.63	0.31	0.10	0.79	-0.17	0.77	<b>0.12</b>	-0.03	0.31
1995	0.73	0.16	0.10	0.61	-0.15	0.86	<b>0.00</b>	-0.10	0.14
1996	0.70	0.21	0.13	0.42	-0.14	0.81	<b>0.06</b>	-0.01	0.15
1997	0.66	0.27	0.09	0.42	-0.10	0.73	<b>0.17</b>	0.11	0.22
1998	0.62	0.33	0.16	0.30	-0.14	0.72	<b>0.18</b>	0.10	0.27
1999	0.58	0.39	0.10	0.30	-0.08	0.63	<b>0.31</b>	0.16	0.49
2000	0.88	-0.02	0.10	0.30	-0.07	0.95	<b>-0.10</b>	-0.17	0.04
2001	0.80	0.07	0.10	0.29	-0.07	0.86	<b>0.00</b>	-0.06	0.09
2002	0.68	0.23	0.08	0.34	-0.06	0.73	<b>0.17</b>	0.08	0.27
2003	0.53	0.49	0.09	0.35	-0.08	0.58	<b>0.40</b>	0.17	0.72
2004	0.38	0.83	0.11	0.36	-0.10	0.42	<b>0.72</b>	0.24	1.40

North Carolina - Cooperative Trawl Cruise

C-hat adjustment = 1.187; bootstrap GOF probability = 0.032 for the fully parameterized model.

Year	S(unadj.)	F(unadj.)	Recovery Rate	% Live Release	Bias Live Release	S(adj.)	F(adj.)	95%LCL F(adj)	95%UCL F(adj)
1988	0.72	0.17	0.09	0.76	-0.16	0.87	-0.01	<b>-0.16</b>	0.26
1989	0.69	0.23	0.06	0.73	-0.10	0.76	0.12	<b>-0.01</b>	0.31
1990	0.70	0.21	0.08	0.60	-0.11	0.78	0.10	<b>0.03</b>	0.18
1991	0.70	0.21	0.09	0.68	-0.14	0.81	0.06	<b>0.00</b>	0.14
1992	0.71	0.19	0.11	0.45	-0.12	0.81	0.07	<b>-0.01</b>	0.16
1993	0.70	0.21	0.09	0.53	-0.12	0.80	0.08	<b>0.01</b>	0.16
1994	0.69	0.22	0.08	0.49	-0.10	0.77	0.12	<b>0.03</b>	0.21
1995	0.67	0.25	0.11	0.35	-0.09	0.74	0.15	<b>0.05</b>	0.27
1996	0.65	0.28	0.06	0.20	-0.03	0.67	0.25	<b>0.18</b>	0.33
1997	0.64	0.29	0.10	0.20	-0.05	0.68	0.24	<b>0.16</b>	0.33
1998	0.65	0.28	0.11	0.26	-0.08	0.70	0.20	<b>0.12</b>	0.30
1999	0.65	0.28	0.10	0.24	-0.06	0.70	0.21	<b>0.11</b>	0.35
2000	0.64	0.30	0.05	0.36	-0.04	0.67	0.25	<b>0.13</b>	0.40
2001	0.64	0.29	0.09	0.23	-0.05	0.68	0.24	<b>0.14</b>	0.36
2002	0.65	0.28	0.07	0.20	-0.03	0.67	0.25	<b>0.14</b>	0.38
2003	0.63	0.31	0.07	0.27	-0.05	0.66	0.26	<b>0.13</b>	0.42
2004	0.64	0.30	0.07	0.23	-0.04	0.66	0.26	<b>0.13</b>	0.43

Table 2. Continued.

Producer Area Programs

Delaware / Pennsylvania - Delaware River

C-hat = 1.00; bootstrap GOF probability = 0.384 for the fully parameterized model.

Year	S(unadj.)	F(unadj.)	Recovery Rate	% Live Release	Bias Live Release	S(adj.)	F(adj.)	95%LCL F(adj)	95%UCL F(adj)
1993	0.84	0.06	0.106	0.33	-0.090	0.92	<b>-0.07</b>	-0.34	0.30
1994	0.83	0.07	0.108	0.29	-0.081	0.91	<b>-0.05</b>	-0.33	0.34
1995	0.59	0.38	0.117	0.35	-0.107	0.65	<b>0.27</b>	0.18	0.37
1996	0.59	0.38	0.138	0.28	-0.109	0.66	<b>0.26</b>	0.17	0.36
1997	0.59	0.38	0.108	0.28	-0.079	0.64	<b>0.30</b>	0.22	0.39
1998	0.59	0.38	0.145	0.17	-0.074	0.63	<b>0.31</b>	0.22	0.40
1999	0.59	0.38	0.079	0.21	-0.042	0.61	<b>0.34</b>	0.26	0.43
2000	0.59	0.38	0.136	0.17	-0.068	0.63	<b>0.31</b>	0.23	0.41
2001	0.59	0.38	0.117	0.12	-0.040	0.61	<b>0.34</b>	0.26	0.44
2002	0.59	0.38	0.100	0.18	-0.048	0.62	<b>0.34</b>	0.25	0.43
2003	0.59	0.39	0.108	0.32	-0.090	0.64	<b>0.29</b>	0.18	0.41
2004	0.59	0.38	0.108	0.22	-0.064	0.63	<b>0.31</b>	0.16	0.47

Maryland - Chesapeake Bay Spring Spawning Stock

C-hat = 1.0; bootstrap GOF probability = 0.83 for the fully parameterized model.

Year	S(unadj.)	F(unadj.)	Recovery Rate	% Live Release	Bias Live Release	S(adj.)	F(adj.)	95%LCL F(adj)	95%UCL F(adj)
1987	0.97	-0.12	0.03		0.00	0.97	<b>-0.12</b>	-0.14	-0.04
1988	0.96	-0.11	0.04	0.67	-0.06	1.02	<b>-0.17</b>	-0.19	-0.14
1989	0.95	-0.10	0.05	0.79	-0.09	1.04	<b>-0.19</b>	-0.21	-0.16
1990	0.53	0.49	0.07	0.57	-0.09	0.58	<b>0.39</b>	0.26	0.54
1991	0.59	0.38	0.12	0.59	-0.18	0.72	<b>0.18</b>	0.11	0.26
1992	0.65	0.29	0.11	0.51	-0.14	0.75	<b>0.13</b>	0.08	0.19
1993	0.70	0.21	0.10	0.46	-0.11	0.79	<b>0.09</b>	0.03	0.16
1994	0.75	0.14	0.09	0.47	-0.11	0.84	<b>0.03</b>	-0.05	0.13
1995	0.65	0.29	0.12	0.26	-0.08	0.70	<b>0.20</b>	0.12	0.29
1996	0.64	0.29	0.10	0.28	-0.07	0.69	<b>0.22</b>	0.16	0.29
1997	0.64	0.30	0.11	0.22	-0.07	0.68	<b>0.24</b>	0.19	0.29
1998	0.63	0.31	0.10	0.19	-0.05	0.66	<b>0.26</b>	0.22	0.31
1999	0.63	0.32	0.12	0.18	-0.06	0.67	<b>0.26</b>	0.20	0.31
2000	0.62	0.33	0.08	0.19	-0.04	0.65	<b>0.29</b>	0.22	0.37
2001	0.61	0.34	0.07	0.25	-0.05	0.64	<b>0.29</b>	0.20	0.39
2002	0.61	0.34	0.06	0.36	-0.05	0.64	<b>0.29</b>	0.18	0.43
2003	0.60	0.35	0.07	0.20	-0.03	0.63	<b>0.32</b>	0.18	0.49
2004	0.60	0.36	0.05	0.17	-0.02	0.61	<b>0.34</b>	0.19	0.55

Table 2. Continued.

Virginia - Rappahannock River

C-hat adjustment = 1.289; bootstrap GOF probability = 0.17 for the fully parameterized model.

Year	S(unadj.)	F(unadj.)	Recovery Rate	% Live Release	Bias Live Release	S(adj.)	F(adj.)	95%LCL F(adj)	95%UCL F(adj)
1990	0.62	0.32	0.09	0.58	-0.13	0.72	<b>0.19</b>	0.12	0.26
1991	0.62	0.32	0.09	0.56	-0.13	0.72	<b>0.18</b>	0.12	0.25
1992	0.62	0.32	0.12	0.53	-0.17	0.75	<b>0.13</b>	0.07	0.20
1993	0.62	0.32	0.10	0.35	-0.09	0.69	<b>0.22</b>	0.16	0.30
1994	0.62	0.32	0.08	0.32	-0.07	0.67	<b>0.25</b>	0.18	0.32
1995	0.61	0.34	0.13	0.20	-0.08	0.66	<b>0.26</b>	0.19	0.35
1996	0.61	0.34	0.05	0.13	-0.02	0.62	<b>0.33</b>	0.25	0.41
1997	0.61	0.34	0.08	0.17	-0.04	0.63	<b>0.31</b>	0.23	0.39
1998	0.61	0.34	0.13	0.22	-0.09	0.67	<b>0.26</b>	0.18	0.34
1999	0.61	0.35	0.10	0.20	-0.06	0.65	<b>0.29</b>	0.21	0.38
2000	0.63	0.31	0.08	0.35	-0.07	0.68	<b>0.24</b>	0.15	0.34
2001	0.63	0.31	0.07	0.30	-0.05	0.67	<b>0.26</b>	0.17	0.36
2002	0.63	0.31	0.09	0.30	-0.08	0.68	<b>0.23</b>	0.14	0.33
2003	0.63	0.31	0.09	0.25	-0.06	0.67	<b>0.25</b>	0.16	0.36
2004	0.64	0.30	0.06	0.29	-0.04	0.67	<b>0.25</b>	0.15	0.38

Hudson River

C-hat adjustment = 1.223; bootstrap GOF probability = 0.206 for the fully parameterized model.

Year	S(unadj.)	F(unadj.)	Recovery Rate	% Live Release	Bias Live Release	S(adj.)	F(adj.)	95%LCL F(adj)	95%UCL F(adj)
1988	0.72	0.18	0.09	0.56	-0.12	0.82	<b>0.05</b>	-0.06	0.24
1989	0.72	0.18	0.11	0.74	-0.19	0.88	<b>-0.03</b>	-0.14	0.17
1990	0.63	0.31	0.13	0.66	-0.21	0.80	<b>0.08</b>	0.02	0.12
1991	0.63	0.31	0.10	0.50	-0.13	0.72	<b>0.17</b>	0.12	0.21
1992	0.63	0.31	0.13	0.58	-0.19	0.78	<b>0.09</b>	0.05	0.14
1993	0.63	0.30	0.13	0.49	-0.16	0.76	<b>0.13</b>	0.08	0.17
1994	0.64	0.30	0.12	0.52	-0.16	0.76	<b>0.13</b>	0.08	0.18
1995	0.65	0.28	0.11	0.38	-0.11	0.73	<b>0.16</b>	0.13	0.21
1996	0.65	0.28	0.13	0.25	-0.09	0.71	<b>0.19</b>	0.16	0.23
1997	0.65	0.28	0.16	0.32	-0.14	0.75	<b>0.13</b>	0.10	0.18
1998	0.65	0.29	0.13	0.23	-0.08	0.70	<b>0.20</b>	0.16	0.24
1999	0.64	0.29	0.13	0.31	-0.11	0.73	<b>0.17</b>	0.13	0.21
2000	0.68	0.24	0.08	0.36	-0.07	0.73	<b>0.16</b>	0.11	0.26
2001	0.66	0.26	0.07	0.26	-0.05	0.70	<b>0.21</b>	0.14	0.29
2002	0.65	0.28	0.11	0.35	-0.09	0.72	<b>0.18</b>	0.09	0.24
2003	0.63	0.31	0.10	0.33	-0.08	0.68	<b>0.23</b>	0.10	0.28
2004	0.61	0.35	0.12	0.25	-0.08	0.66	<b>0.27</b>	0.10	0.31

Table 3. Akaike weights based on the statistical fit of the tag-recapture data to the various models in the suite. These weights are used to obtain the weighted model-averaged estimates of survival. Results are for striped bass tagged at  $\geq 28$  inches.

Coast Programs

Model	MADFW	NYOHS	NJDEL	NCCOOP
{S(.)r(.)}	0.0002	0.00528	0.0023	0
{S(.)r(p)}	0.0002	0.00693	0.0004	<b>0.1252</b>
{S(.)r(t)}	<b>0.1330</b>	0.00013	<b>0.3707</b>	0.01188
{S(p)r(p)}	0.0329	<b>0.15060</b>	0.0004	<b>0.36732</b>
{S(p)r(t)}	<b>0.1921</b>	0.01215	<b>0.1559</b>	0.01759
{S(d)r(p)}	0.0361	<b>0.14352</b>	0.0003	<b>0.13588</b>
{S(v)r(p)}	0.0188	<b>0.17721</b>	0.0022	<b>0.16327</b>
{S(Tp)r(t)}	<b>0.1610</b>	0.00387	0.0818	0.02038
{S(Tp)r(Tp)}	0.0161	<b>0.40906</b>	0.0387	0.07094
{S(Tp)r(p)}	0.0165	0.06350	0.0230	0.03688
{S(t)r(p)}	<b>0.3924</b>	0.00531	<b>0.3049</b>	0.00103
{S(t)r(t)}	0.0006	0.02244	0.0194	0.04963

Producer Area Programs

Model	DE/PA	HUDSON	MDCB	VARAP
{S(.)r(.)}	0.088	0.0000	0	0.02657
{S(.)r(p)}	0.039	<b>0.1842</b>	0	<b>0.55075</b>
{S(.)r(t)}	0.000	0.0008	0	0.00044
{S(p)r(p)}	<b>0.430</b>	<b>0.2088</b>	0.01861	<b>0.23871</b>
{S(p)r(t)}	0.000	0.0004	0.0006	0.00011
{S(d)r(p)}	<b>0.184</b>	<b>0.1251</b>	0.0368	<b>0.11287</b>
{S(v)r(p)}	<b>0.158</b>	<b>0.1115</b>	0.00733	0.04137
S(Va)r(va)	NA	NA	NA	0.00701
{S(Tp)r(t)}	0.000	0.0009	<b>0.72424</b>	0.00002
{S(Tp)r(Tp)}	0.039	0.0878	<b>0.20179</b>	0.00183
{S(Tp)r(p)}	0.061	<b>0.2691</b>	0.00564	0.02027
{S(t)r(p)}	0.000	0.0115	0.00467	0.00004
{S(t)r(t)}	0.000	0.0000	0.00031	0

Model Descriptions

S(.) r(.)	Constant survival and reporting
S(t) r(t)	Time specific survival and reporting
S(.) r(t)	Constant survival and time specific reporting
S(p) r(t)	Regulatory period based survival and time specific reporting
S(p) r(p)	Regulatory period based survival and reporting
S(.) r(p)	Constant survival and regulatory period based reporting
S(t) r(p)	Time specific survival and regulatory period based reporting
S(d) r(p)	Regulatory period survival with terminal year unique and regulatory period reporting
S(v) r(p)	Regulatory period survival with 2 terminal years unique and regulatory period reporting
S(Tp) r(Tp)	Linear trend within regulatory period on both survival and reporting
S(Tp) r(p)	Linear trend within regulatory period survival and regulatory period reporting (no trend)
S(Tp) r(t)	Linear trend within regulatory period survival and time specific reporting (no trend)
S(Va)r(Va)	Three period model for VA program (90-92, 93-94, 95-04)

Table 4. Summary table, based on the assumption of constant natural mortality, with estimates of annual instantaneous fishing mortality, F, of striped bass  $\geq 28$  inches by individual program, averaged over all coastal programs, with a weighted average over producer areas and with an overall coastwide estimate. Estimates of coastwide abundance of age 7+ striped bass from 1987 - 2004 also provided.

**Coast Programs**

Year	MADFW	NYOHS	NJDEL	NCCOOP	Unweighted average	lower 95% CI	upper 95% CI
1988				-0.01	<b>-0.01</b>		
1989			-0.29	0.12	<b>-0.09</b>		
1990		0.17	0.10	0.10	<b>0.12</b>		
1991		0.16	-0.04	0.06	<b>0.06</b>		
1992	0.02	0.09	0.10	0.07	<b>0.07</b>	0.00	0.17
1993	0.01	0.19	0.10	0.08	<b>0.10</b>	0.00	0.28
1994	0.03	0.17	0.12	0.12	<b>0.11</b>	0.01	0.31
1995	0.10	0.13	0.00	0.15	<b>0.10</b>	0.05	0.21
1996	0.10	0.16	0.06	0.25	<b>0.14</b>	0.08	0.31
1997	0.12	0.19	0.17	0.24	<b>0.18</b>	0.11	0.42
1998	0.10	0.23	0.18	0.20	<b>0.18</b>	0.01	0.44
1999	0.11	0.24	0.31	0.21	<b>0.22</b>	0.12	0.28
2000	0.11	0.05	-0.10	0.25	<b>0.08</b>	0.09	0.50
2001	0.11	0.07	0.00	0.24	<b>0.10</b>	0.04	0.41
2002	0.09	0.01	0.17	0.25	<b>0.13</b>	0.02	0.29
2003	0.12	0.09	0.40	0.26	<b>0.22</b>	0.02	0.29
2004	0.10	0.02	0.72	0.26	<b>0.27</b>	0.03	0.33

**Producer Area Programs**

Year	HUDSON	DE/PA	MDCB	VARAP	Weighted average*	lower 95% CI	upper 95% CI
1987			-0.12		<b>-0.12</b>		
1988	0.05		-0.17		<b>-0.17</b>		
1989	-0.03		-0.19		<b>-0.19</b>		
1990	0.08		0.39	0.19	<b>0.26</b>		
1991	0.17		0.18	0.18	<b>0.17</b>		
1992	0.09		0.13	0.13	<b>0.12</b>		
1993	0.13	-0.07	0.09	0.22	<b>0.11</b>	0.06	0.23
1994	0.13	-0.05	0.03	0.25	<b>0.09</b>	0.03	0.22
1995	0.16	0.27	0.20	0.26	<b>0.22</b>	0.13	0.29
1996	0.19	0.26	0.22	0.33	<b>0.25</b>	0.18	0.32
1997	0.13	0.30	0.24	0.31	<b>0.25</b>	0.19	0.32
1998	0.20	0.31	0.26	0.26	<b>0.26</b>	0.20	0.32
1999	0.17	0.34	0.26	0.29	<b>0.26</b>	0.20	0.35
2000	0.16	0.31	0.29	0.24	<b>0.26</b>	0.20	0.38
2001	0.21	0.34	0.29	0.26	<b>0.28</b>	0.20	0.42
2002	0.18	0.34	0.29	0.23	<b>0.27</b>	0.17	0.44
2003	0.23	0.29	0.32	0.25	<b>0.29</b>	0.17	0.50
2004	0.27	0.31	0.34	0.25	<b>0.31</b>	0.17	0.50

\* Weighting Scheme: Hudson (0.13); Delaware (0.09); Chesapeake Bay (0.78), where MD (0.67) and VA (0.33).

Table 4, continued: Constant M coastwide fishing mortality rates and total abundance estimates.

Unweighted average F estimate of coastal and producer area estimates and estimated total abundance of age 7+ Atlantic striped bass based on F estimates that assume constant natural mortality.

Year	Fishing Mortality	Age 7+ CAA Thousands	Total number of age 7+, Thousands.
1987	-0.12	45.5	-383
1988	-0.09	101.4	-1133
1989	-0.14	95	-680
1990	0.19	222.3	1,163
1991	0.11	296.4	2,636
1992	0.09	262.7	2,843
1993	0.10	380.6	3,626
1994	0.10	475.9	4,758
1995	0.16	740	4,716
1996	0.20	965.3	4,908
1997	0.21	1371.1	6,457
1998	0.22	1080.5	5,000
1999	0.24	1146.8	4,800
2000	0.17	1471.8	8,652
2001	0.19	1583.2	8,355
2002	0.20	2075.4	10,532
2003	0.25	2163.1	8,599
2004	0.29	2376.2	8,187

Table 5. Estimates of fishing mortality for 28 inch striped bass based on Baranov's catch equation without assuming constant natural mortality, based on the exploitation rates (Table 1) and the bias-adjusted estimates of survival (Table 3). The tables also present annual estimates of instantaneous natural mortality, M. Column headings are S: annual bias-corrected survival rate, Z: total instantaneous mortality, A: annual percentage mortality expressed as a proportion, U: annual exploitation rate, F: instantaneous fishing mortality rate and M: instantaneous natural mortality rate.

Producer areas

Maryland - Chesapeake Bay Spring Spawning Stock						Virginia - Rappahannock River Spring Spawning Stock					
<u>Year</u>	<u>Z</u>	<u>A</u>	<u>U</u>	<u>F</u>	<u>M</u>	<u>Year</u>	<u>Z</u>	<u>A</u>	<u>U</u>	<u>F</u>	<u>M</u>
1988	-0.02	-0.02	0.07	0.07	-0.10	1988					
1989	-0.04	-0.04	0.04	0.04	-0.08	1989					
1990	0.54	0.42	0.08	0.11	0.43	1990	0.34	0.28	0.26	0.31	0.03
1991	0.33	0.28	0.12	0.15	0.19	1991	0.33	0.28	0.36	0.43	-0.10
1992	0.28	0.25	0.12	0.14	0.14	1992	0.28	0.25	0.37	0.42	-0.14
1993	0.24	0.21	0.12	0.13	0.10	1993	0.37	0.31	0.37	0.44	-0.07
1994	0.18	0.16	0.11	0.12	0.06	1994	0.40	0.33	0.25	0.31	0.09
1995	0.35	0.30	0.20	0.24	0.11	1995	0.41	0.34	0.41	0.50	-0.09
1996	0.37	0.31	0.17	0.20	0.17	1996	0.48	0.38	0.18	0.22	0.26
1997	0.39	0.32	0.23	0.28	0.10	1997	0.46	0.37	0.38	0.47	-0.01
1998	0.41	0.34	0.20	0.24	0.17	1998	0.41	0.33	0.45	0.55	-0.15
1999	0.41	0.33	0.32	0.39	0.01	1999	0.44	0.35	0.28	0.35	0.09
2000	0.44	0.35	0.17	0.21	0.23	2000	0.39	0.32	0.25	0.31	0.08
2001	0.44	0.36	0.11	0.13	0.31	2001	0.41	0.33	0.23	0.27	0.13
2002	0.44	0.36	0.10	0.12	0.32	2002	0.38	0.32	0.29	0.35	0.03
2003	0.47	0.37	0.10	0.13	0.34	2003	0.40	0.33	0.22	0.26	0.14
2004	0.49	0.39	0.08	0.11	0.39	2004	0.40	0.33	0.08	0.09	0.31
Average	0.34	0.28	0.14	0.17	0.17	Average	0.39	0.32	0.29	0.35	0.04

  

Delaware River, Delaware, New Jersey, Pennsylvania Spring Spawning Stock						Hudson River Spring Spawning Stock					
<u>Year</u>	<u>Z</u>	<u>A</u>	<u>U</u>	<u>F</u>	<u>M</u>	<u>Year</u>	<u>Z</u>	<u>A</u>	<u>U</u>	<u>F</u>	<u>M</u>
1988						1988	0.20	0.18	0.10	0.11	0.09
1989						1989	0.12	0.11	0.07	0.07	0.05
1990						1990	0.23	0.20	0.11	0.12	0.11
1991						1991	0.32	0.27	0.11	0.13	0.19
1992						1992	0.24	0.21	0.13	0.15	0.09
1993	0.08	0.11	0.17	0.18	-0.06	1993	0.27	0.24	0.17	0.19	0.08
1994	0.10	0.12	0.12	0.12	0.01	1994	0.28	0.24	0.12	0.13	0.14
1995	0.42	0.34	0.14	0.17	0.25	1995	0.31	0.26	0.16	0.18	0.13
1996	0.41	0.33	0.31	0.38	0.02	1996	0.34	0.29	0.23	0.27	0.07
1997	0.45	0.36	0.27	0.33	0.12	1997	0.28	0.25	0.29	0.33	-0.05
1998	0.46	0.37	0.28	0.34	0.12	1998	0.35	0.29	0.22	0.26	0.09
1999	0.49	0.39	0.15	0.19	0.30	1999	0.32	0.27	0.22	0.25	0.07
2000	0.46	0.37	0.30	0.37	0.09	2000	0.31	0.27	0.13	0.15	0.16
2001	0.49	0.39	0.26	0.33	0.16	2001	0.36	0.30	0.14	0.16	0.20
2002	0.48	0.38	0.24	0.30	0.18	2002	0.33	0.28	0.19	0.23	0.11
2003	0.44	0.36	0.16	0.20	0.25	2003	0.38	0.32	0.13	0.16	0.22
2004	0.46	0.37	0.21	0.26	0.20	2004	0.42	0.34	0.18	0.22	0.19
Average	0.40	0.33	0.22	0.26	0.14	Average	0.30	0.26	0.16	0.18	0.11

Table 5, continued.

Coastal Programs

Massachusetts Fall Tagging						New York Ocean Haul Seine Fall Tagging					
<u>Year</u>	<u>Z</u>	<u>A</u>	<u>U</u>	<u>F</u>	<u>M</u>	<u>Year</u>	<u>Z</u>	<u>A</u>	<u>U</u>	<u>F</u>	<u>M</u>
1988						1988	-0.06	0.19	0.05	-0.02	-0.04
1989						1989	-0.01	0.19	0.04	0.00	-0.01
1990						1990	0.32	0.37	0.07	0.06	0.26
1991						1991	0.31	0.37	0.12	0.10	0.21
1992	0.17	0.16	0.04	0.04	0.14	1992	0.24	0.37	0.11	0.07	0.17
1993	0.16	0.15	0.07	0.07	0.09	1993	0.34	0.37	0.14	0.12	0.22
1994	0.18	0.17	0.03	0.03	0.15	1994	0.32	0.37	0.08	0.07	0.25
1995	0.25	0.22	0.05	0.06	0.19	1995	0.28	0.35	0.20	0.16	0.12
1996	0.25	0.22	0.08	0.10	0.16	1996	0.31	0.35	0.14	0.12	0.19
1997	0.27	0.24	0.13	0.14	0.13	1997	0.34	0.35	0.29	0.28	0.05
1998	0.25	0.22	0.07	0.08	0.17	1998	0.38	0.35	0.17	0.18	0.20
1999	0.26	0.23	0.09	0.10	0.17	1999	0.39	0.35	0.29	0.33	0.06
2000	0.26	0.23	0.13	0.15	0.12	2000	0.20	0.25	0.18	0.14	0.06
2001	0.26	0.23	0.07	0.08	0.18	2001	0.22	0.25	0.11	0.09	0.12
2002	0.24	0.21	0.08	0.09	0.15	2002	0.16	0.25	0.23	0.14	0.01
2003	0.27	0.23	0.11	0.12	0.14	2003	0.24	0.24	0.15	0.14	0.09
2004	0.25	0.22	0.09	0.10	0.14	2004	0.17	0.24	0.15	0.10	0.07
Average	0.24	0.21	0.08	0.09	0.15	Average	0.24	0.31	0.15	0.12	0.12

  

New Jersey Delaware Bay February-April						North Carolina Co-op Winter Cruise					
<u>Year</u>	<u>Z</u>	<u>A</u>	<u>U</u>	<u>F</u>	<u>M</u>	<u>Year</u>	<u>Z</u>	<u>A</u>	<u>U</u>	<u>F</u>	<u>M</u>
1988						1988	-0.14	0.13	0.06	0.07	0.08
1989	-0.14	-0.16	0.02	0.02	-0.16	1989	0.27	0.24	0.05	0.05	0.22
1990	0.25	0.22	0.04	0.05	0.20	1990	0.25	0.22	0.09	0.10	0.15
1991	0.11	0.10	0.18	0.19	-0.08	1991	0.21	0.19	0.07	0.08	0.13
1992	0.25	0.22	0.02	0.02	0.23	1992	0.22	0.19	0.14	0.16	0.06
1993	0.25	0.22	0.09	0.10	0.15	1993	0.23	0.20	0.11	0.13	0.10
1994	0.27	0.23	0.05	0.06	0.21	1994	0.27	0.23	0.10	0.12	0.15
1995	0.15	0.14	0.10	0.11	0.04	1995	0.30	0.26	0.14	0.17	0.14
1996	0.21	0.19	0.20	0.22	-0.01	1996	0.40	0.33	0.12	0.15	0.25
1997	0.32	0.27	0.23	0.27	0.05	1997	0.39	0.32	0.21	0.25	0.14
1998	0.33	0.28	0.35	0.41	-0.08	1998	0.35	0.30	0.20	0.24	0.11
1999	0.46	0.37	0.08	0.10	0.36	1999	0.36	0.30	0.24	0.28	0.08
2000	0.05	0.05	0.14	0.14	-0.09	2000	0.40	0.33	0.06	0.08	0.33
2001	0.15	0.14	0.14	0.15	0.00	2001	0.39	0.32	0.15	0.18	0.21
2002	0.32	0.27	0.11	0.13	0.19	2002	0.40	0.33	0.12	0.14	0.26
2003	0.55	0.42	0.14	0.18	0.37	2003	0.41	0.34	0.12	0.15	0.26
2004	0.87	0.58	0.16	0.23	0.63	2004	0.41	0.34	0.12	0.15	0.26
Average	0.27	0.22	0.13	0.15	0.13	Average	0.32	0.27	0.12	0.15	0.17

Table 6. Summary table of F estimates based on Baranov's catch equation without assuming constant natural mortality of striped bass  $\geq 28$  inches by individual program, averaged over all coastal programs, with a weighted average over producer areas and with an overall coastwide estimate. Estimates of coastwide abundance of age 7+ striped bass from 1987 - 2004 also provided.

**Coast Programs**

Year	MADFW	NYOHS	NJDEL	NCCOOP	Unweighted average
1988		-0.02		0.07	0.03
1989		0.00	0.02	0.05	0.02
1990		0.06	0.05	0.10	0.07
1991		0.10	0.19	0.08	0.12
1992	0.02	0.07	0.02	0.16	0.07
1993	0.01	0.12	0.10	0.13	0.09
1994	0.03	0.07	0.06	0.12	0.07
1995	0.10	0.16	0.11	0.17	0.13
1996	0.10	0.12	0.22	0.15	0.15
1997	0.12	0.28	0.27	0.25	0.23
1998	0.10	0.18	0.41	0.24	0.23
1999	0.11	0.33	0.10	0.28	0.21
2000	0.11	0.14	0.14	0.08	0.12
2001	0.11	0.09	0.15	0.18	0.13
2002	0.09	0.14	0.13	0.14	0.13
2003	0.12	0.14	0.18	0.15	0.15
2004	0.10	0.10	0.23	0.15	0.15

**Producer Area Programs**

Year	HUDSON	DE/PA	MDCB	VARAP	Weighted average*
1987					
1988	0.05		0.07		0.05
1989	0.05		0.04		0.03
1990	0.08		0.11	0.31	0.15
1991	0.10		0.15	0.43	0.20
1992	0.11		0.14	0.42	0.20
1993	0.13	0.18	0.13	0.44	0.22
1994	0.10	0.12	0.12	0.31	0.17
1995	0.15	0.17	0.24	0.50	0.29
1996	0.19	0.38	0.20	0.22	0.22
1997	0.25	0.33	0.28	0.47	0.33
1998	0.21	0.34	0.24	0.55	0.33
1999	0.17	0.19	0.39	0.35	0.33
2000	0.11	0.37	0.21	0.31	0.24
2001	0.12	0.33	0.13	0.27	0.19
2002	0.10	0.30	0.12	0.35	0.19
2003	0.12	0.20	0.13	0.26	0.17
2004	0.22	0.26	0.11	0.09	0.13

\* Weighting Scheme: Hudson (0.13); Delaware (0.09); Chesapeake Bay (0.78), where MD (0.67) and VA (0.33).

Table 6, continued

Coastwide Average Fishing Mortality Rate - Unweighted average of producer and coastal program mean fishing mortality rates obtained via the catch equation. Estimated total abundance of Atlantic coast striped bass ages 7+ obtained via the equation,  $\text{Total Kill} = F * \text{Total Abundance}$ , solving for total abundance.

<u>Year</u>	Fishing Mortality	Age 7+ CAA, Thousands	Total Abundance ages 7+, Thousands
1988	<b>0.04</b>	101.4	2,849
1989	<b>0.02</b>	95	3,827
1990	<b>0.11</b>	222.3	2,075
1991	<b>0.16</b>	296.4	1,844
1992	<b>0.13</b>	262.7	1,994
1993	<b>0.15</b>	380.6	2,486
1994	<b>0.12</b>	475.9	4,027
1995	<b>0.21</b>	740	3,486
1996	<b>0.19</b>	965.3	5,201
1997	<b>0.28</b>	1371.1	4,893
1998	<b>0.28</b>	1080.5	3,877
1999	<b>0.27</b>	1146.8	4,256
2000	<b>0.18</b>	1471.8	8,280
2001	<b>0.16</b>	1583.2	9,907
2002	<b>0.16</b>	2075.4	13,066
2003	<b>0.16</b>	2163.1	13,672
2004	<b>0.14</b>	2376.2	17,099

Table 7. Survival (S) and fishing mortality (F) rates of striped bass  $\geq$  18 inches assuming constant natural mortality, adjusted bias due to live release of recaptured fish. Diagnostic statistics c-hat and bootstrap Goodness-of-fit are provided for each program.

Producer Area Programs

Hudson River

C-hat adjustment = 1.236; bootstrap GOF probability = 0.302 for the full parameterized model.

Year	S(unadj.)	F(unadj.)	Recovery Rate	% Live Release	Bias Live Release	S(adj.)	F(adj.)	95%LCL F(adj)	95%UCL F(adj)
1988	0.74	0.15	0.07	0.75	-0.11	0.83	<b>0.04</b>	-0.06	0.15
1989	0.72	0.18	0.09	0.79	-0.16	0.85	<b>0.01</b>	-0.08	0.17
1990	0.62	0.32	0.11	0.73	-0.19	0.77	<b>0.11</b>	0.04	0.16
1991	0.64	0.30	0.10	0.62	-0.15	0.75	<b>0.14</b>	0.08	0.18
1992	0.64	0.30	0.10	0.65	-0.16	0.76	<b>0.13</b>	0.08	0.17
1993	0.64	0.29	0.11	0.57	-0.14	0.75	<b>0.14</b>	0.10	0.19
1994	0.65	0.28	0.10	0.60	-0.13	0.75	<b>0.14</b>	0.09	0.20
1995	0.67	0.25	0.09	0.44	-0.10	0.75	<b>0.14</b>	0.09	0.21
1996	0.66	0.26	0.11	0.34	-0.10	0.73	<b>0.16</b>	0.13	0.21
1997	0.65	0.27	0.13	0.38	-0.12	0.75	<b>0.14</b>	0.09	0.21
1998	0.65	0.27	0.11	0.28	-0.08	0.72	<b>0.19</b>	0.14	0.23
1999	0.65	0.27	0.10	0.35	-0.09	0.72	<b>0.18</b>	0.12	0.22
2000	0.68	0.23	0.08	0.46	-0.09	0.75	<b>0.14</b>	0.09	0.22
2001	0.67	0.25	0.07	0.37	-0.06	0.71	<b>0.19</b>	0.13	0.25
2002	0.65	0.29	0.07	0.43	-0.08	0.70	<b>0.21</b>	0.10	0.31
2003	0.63	0.30	0.09	0.46	-0.10	0.70	<b>0.20</b>	0.08	0.28
2004	0.61	0.34	0.09	0.38	-0.09	0.67	<b>0.25</b>	-0.01	0.56

Delaware River; C-hat = 1.00; bootstrap GOF probability = 0.76 for the full parameterized model.

Year	S(unadj.)	F(unadj.)	Recovery Rate	% Live Release	Bias Live Release	S(adj.)	F(adj.)	95%LCL F(adj)	95%UCL F(adj)
1993	0.64	0.3	0.099	0.39	-0.0909	0.71	<b>0.2</b>	0.05	0.37
1994	0.63	0.31	0.106	0.55	-0.142	0.73	<b>0.16</b>	0.03	0.31
1995	0.61	0.34	0.118	0.5	-0.148	0.72	<b>0.18</b>	0.12	0.25
1996	0.61	0.35	0.121	0.44	-0.137	0.7	<b>0.2</b>	0.14	0.27
1997	0.61	0.34	0.078	0.52	-0.096	0.68	<b>0.24</b>	0.17	0.3
1998	0.62	0.36	0.104	0.48	-0.12	0.69	<b>0.23</b>	0.16	0.3
1999	0.61	0.354	0.087	0.47	-0.1	0.68	<b>0.24</b>	0.18	0.31
2000	0.6	0.37	0.098	0.46	-0.11	0.67	<b>0.25</b>	0.18	0.33
2001	0.6	0.37	0.072	0.56	-0.09	0.66	<b>0.27</b>	0.2	0.34
2002	0.6	0.36	0.08	0.35	-0.07	0.65	<b>0.29</b>	0.22	0.37
2003	0.59	0.38	0.107	0.46	-0.12	0.67	<b>0.25</b>	0.14	0.37
2004	0.6	0.36	0.077	0.38	-0.02	0.65	<b>0.29</b>	0.2	0.39

Table 7, cont.

## Maryland - Chesapeake Bay Spring Spawning Stock

C-hat adjustment = 1.157; bootstrap GOF probability = 0.05 for the full parameterized model.

Year	S(unadj.)	F(unadj.)	Recovery Rate	% Live Release	Bias Live Release	S(adj.)	F(adj.)	95%LCL F(adj)	95%UCL F(adj)
1987	0.81	0.06	0.07	0.95	-0.15	0.95	<b>-0.10</b>	0.05	-0.18
1988	0.84	0.02	0.04	0.84	-0.08	0.91	<b>-0.06</b>	0.00	-0.10
1989	0.87	-0.01	0.03	0.93	-0.07	0.94	<b>-0.08</b>	0.03	-0.15
1990	0.64	0.30	0.06	0.58	-0.07	0.69	<b>0.22</b>	0.29	0.16
1991	0.64	0.30	0.08	0.45	-0.09	0.70	<b>0.21</b>	0.26	0.17
1992	0.63	0.31	0.11	0.43	-0.12	0.71	<b>0.19</b>	0.22	0.15
1993	0.62	0.32	0.09	0.38	-0.08	0.68	<b>0.23</b>	0.28	0.19
1994	0.62	0.33	0.10	0.43	-0.11	0.69	<b>0.22</b>	0.29	0.15
1995	0.63	0.31	0.12	0.32	-0.10	0.70	<b>0.20</b>	0.32	0.10
1996	0.61	0.35	0.11	0.35	-0.10	0.67	<b>0.25</b>	0.31	0.18
1997	0.58	0.40	0.11	0.27	-0.08	0.63	<b>0.31</b>	0.36	0.26
1998	0.55	0.46	0.11	0.25	-0.07	0.59	<b>0.38</b>	0.48	0.29
1999	0.52	0.51	0.11	0.21	-0.06	0.55	<b>0.44</b>	0.62	0.29
2000	0.48	0.59	0.10	0.36	-0.09	0.52	<b>0.50</b>	0.69	0.34
2001	0.50	0.55	0.08	0.33	-0.06	0.53	<b>0.48</b>	0.59	0.38
2002	0.53	0.49	0.07	0.32	-0.06	0.56	<b>0.43</b>	0.59	0.29
2003	0.55	0.45	0.08	0.24	-0.05	0.58	<b>0.40</b>	0.67	0.19
2004	0.58	0.40	0.07	0.25	-0.04	0.60	<b>0.36</b>	0.75	0.11

## Virginia - Rappahannock River

C-hat adjustment = 1.49; bootstrap GOF probability = 0.092 for the full parameterized model.

Year	S(unadj.)	F(unadj.)	Recovery Rate	% Live Release	Bias Live Release	S(adj.)	F(adj.)	95%LCL F(adj)	95%UCL F(adj)
1990	0.80	0.07	0.111	0.481	-0.14	0.93	<b>-0.08</b>	-0.231	0.296
1991	0.30	1.06	0.063	0.524	-0.08	0.32	<b>0.98</b>	0.560	1.489
1992	0.79	0.09	0.124	0.408	-0.14	0.92	<b>-0.06</b>	-0.267	0.791
1993	0.60	0.36	0.088	0.456	-0.11	0.67	<b>0.25</b>	-0.048	0.799
1994	0.57	0.41	0.086	0.381	-0.09	0.62	<b>0.32</b>	0.006	0.874
1995	0.69	0.22	0.077	0.262	-0.05	0.73	<b>0.17</b>	-0.080	0.716
1996	0.62	0.32	0.056	0.274	-0.04	0.65	<b>0.28</b>	0.004	0.807
1997	0.56	0.43	0.068	0.330	-0.06	0.59	<b>0.37</b>	0.091	0.809
1998	0.41	0.74	0.064	0.362	-0.06	0.44	<b>0.68</b>	0.362	1.086
1999	0.37	0.84	0.078	0.286	-0.06	0.40	<b>0.78</b>	0.472	1.154
2000	0.42	0.72	0.067	0.436	-0.07	0.45	<b>0.64</b>	0.371	0.972
2001	0.46	0.63	0.072	0.367	-0.07	0.49	<b>0.55</b>	0.211	1.044
2002	0.64	0.29	0.067	0.368	-0.06	0.69	<b>0.22</b>	-0.068	0.847
2003	0.72	0.18	0.068	0.271	-0.05	0.76	<b>0.13</b>	-0.116	0.797
2004	0.78	0.10	0.054	0.268	-0.04	0.81	<b>0.06</b>	-0.100	0.437

Table 7, continued

Coastal Programs

North Carolina - Cooperative Trawl Cruise

C-hat adjustment = 2.214; bootstrap GOF probability < 0.001 for the full parameterized model.

Year	S(unadj.)	F(unadj.)	Recovery Rate	% Live Release	Bias Live Release	S(adj.)	F(adj.)	95%LCL F(adj)	95%UCL F(adj)
1988	0.907	-0.259	0.095	0.875	-0.186	1.115	<b>-0.26</b>	-0.281	-0.230
1989	0.605	0.262	0.046	0.858	-0.086	0.662	<b>0.26</b>	0.089	0.499
1990	0.564	0.311	0.070	0.665	-0.106	0.631	<b>0.31</b>	0.130	0.548
1991	0.611	0.210	0.091	0.574	-0.125	0.698	<b>0.21</b>	0.053	0.418
1992	0.770	-0.017	0.107	0.453	-0.121	0.875	<b>-0.02</b>	-0.186	0.373
1993	0.765	0.008	0.093	0.451	-0.103	0.853	<b>0.01</b>	-0.154	0.357
1994	0.560	0.316	0.083	0.544	-0.107	0.627	<b>0.32</b>	0.039	0.748
1995	0.846	-0.089	0.100	0.402	-0.101	0.941	<b>-0.09</b>	-0.214	0.315
1996	0.575	0.369	0.057	0.254	-0.035	0.595	<b>0.37</b>	0.177	0.628
1997	0.522	0.446	0.087	0.240	-0.053	0.551	<b>0.45</b>	0.182	0.818
1998	0.621	0.241	0.110	0.283	-0.082	0.676	<b>0.24</b>	0.023	0.582
1999	0.865	-0.076	0.097	0.274	-0.069	0.929	<b>-0.08</b>	-0.174	0.187
2000	0.343	0.855	0.066	0.413	-0.064	0.366	<b>0.85</b>	0.630	1.110
2001	0.514	0.446	0.078	0.354	-0.067	0.551	<b>0.45</b>	0.248	0.696
2002	0.592	0.315	0.074	0.317	-0.057	0.628	<b>0.32</b>	0.108	0.612
2003	0.494	0.506	0.071	0.272	-0.047	0.519	<b>0.51</b>	0.205	0.936
2004	0.685	0.177	0.074	0.280	-0.051	0.721	<b>0.18</b>	0.001	0.461

New Jersey - Delaware Bay

C-hat adjustment = 1.00; bootstrap GOF probability = 0.496 for the full parameterized model.

Year	S(unadj.)	F(unadj.)	Recovery	% Released bias		S(adj.)	F(adj.)	LCLM (F)	UCLM (F)
1989	0.88	-0.02	0.11	0.92	-0.22	1.12	<b>-0.27</b>	-0.24	0.64
1990	0.83	0.04	0.11	0.83	-0.21	1.04	<b>-0.19</b>	-0.21	0.72
1991	0.58	0.39	0.08	0.77	-0.14	0.68	<b>0.24</b>	0.17	0.56
1992	0.64	0.30	0.07	0.88	-0.13	0.74	<b>0.16</b>	0.17	0.34
1993	0.55	0.45	0.08	0.84	-0.15	0.64	<b>0.29</b>	0.32	0.43
1994	0.68	0.23	0.08	0.86	-0.15	0.80	<b>0.07</b>	0.13	0.18
1995	0.78	0.10	0.09	0.66	-0.13	0.90	<b>-0.05</b>	0.02	0.07
1996	0.75	0.14	0.11	0.60	-0.16	0.90	<b>-0.04</b>	-0.02	0.18
1997	0.53	0.48	0.09	0.50	-0.11	0.59	<b>0.37</b>	0.33	0.60
1998	0.72	0.18	0.12	0.47	-0.14	0.84	<b>0.02</b>	0.05	0.20
1999	0.65	0.27	0.08	0.50	-0.09	0.72	<b>0.18</b>	0.22	0.31
2000	0.70	0.20	0.09	0.50	-0.10	0.78	<b>0.09</b>	0.14	0.23
2001	0.78	0.10	0.09	0.46	-0.10	0.87	<b>-0.01</b>	0.02	0.19
2002	0.57	0.41	0.06	0.42	-0.06	0.61	<b>0.34</b>	0.35	0.52
2003	0.48	0.59	0.09	0.48	-0.10	0.53	<b>0.48</b>	0.46	0.68
2004	0.39	0.80	0.11	0.43	-0.11	0.44	<b>0.68</b>	0.58	0.97

Table 7, Continued

Massachusetts fall tagging program  
 C-hat = 1.13, bootstrap GOF = 0.62

Year	S(unadj.)	F(unadj.)	Recovery	% Live	Bias Live	S(adj.)	F(adj.)	95%LCL	95%UCL
			Rate	Release	Release			F(adj.)	F(adj.)
1992	0.77	0.11	0.05	0.76	-0.09	0.85	<b>0.02</b>	-0.04	0.09
1993	0.77	0.11	0.06	0.59	-0.08	0.84	<b>0.03</b>	-0.03	0.10
1994	0.77	0.11	0.05	0.58	-0.07	0.83	<b>0.04</b>	-0.02	0.11
1995	0.75	0.14	0.06	0.47	-0.06	0.80	<b>0.08</b>	0.03	0.12
1996	0.75	0.14	0.09	0.43	-0.09	0.83	<b>0.04</b>	0.00	0.09
1997	0.75	0.14	0.06	0.28	-0.04	0.78	<b>0.10</b>	0.06	0.15
1998	0.75	0.14	0.08	0.33	-0.07	0.80	<b>0.07</b>	0.03	0.12
1999	0.75	0.14	0.06	0.32	-0.04	0.78	<b>0.10</b>	0.06	0.15
2000	0.76	0.13	0.05	0.24	-0.03	0.78	<b>0.10</b>	0.05	0.16
2001	0.76	0.13	0.04	0.35	-0.03	0.78	<b>0.09</b>	0.04	0.16
2002	0.76	0.13	0.06	0.29	-0.04	0.79	<b>0.08</b>	0.03	0.15
2003	0.76	0.13	0.04	0.23	-0.02	0.78	<b>0.10</b>	0.04	0.18
2004	0.76	0.12	0.05	0.22	-0.02	0.78	<b>0.10</b>	0.03	0.18

New York Ocean Haul Seine

C-hat adjustment = 1.82; bootstrap GOF probability = 0 for the full parameterized model.

Year	S(unadj.)	F(unadj.)	Recovery	% Release	bias	S(adj.)	F(adj.)	LCLM (F)	UCLM (F)
1988	0.550	0.45	0.077	0.94	-0.16	0.653	<b>0.28</b>	0.123	0.464
1989	0.908	-0.05	0.092	0.93	-0.19	1.120	<b>-0.26</b>	-0.279	-0.245
1990	0.551	0.45	0.073	0.82	-0.13	0.636	<b>0.30</b>	0.137	0.510
1991	0.756	0.13	0.080	0.69	-0.13	0.866	<b>-0.01</b>	-0.149	0.250
1992	0.932	-0.08	0.069	0.72	-0.11	1.050	<b>-0.20</b>	-0.212	-0.183
1993	0.492	0.56	0.055	0.62	-0.08	0.533	<b>0.48</b>	0.311	0.680
1994	0.680	0.24	0.062	0.71	-0.10	0.755	<b>0.13</b>	-0.008	0.329
1995	0.938	-0.09	0.063	0.55	-0.08	1.020	<b>-0.17</b>	-0.180	-0.156
1996	0.792	0.08	0.058	0.61	-0.08	0.861	<b>0.00</b>	-0.142	0.307
1997	0.600	0.36	0.051	0.56	-0.07	0.642	<b>0.29</b>	0.087	0.594
1998	0.489	0.57	0.054	0.57	-0.07	0.526	<b>0.49</b>	0.267	0.782
1999	0.676	0.24	0.056	0.49	-0.06	0.722	<b>0.18</b>	-0.027	0.529
2000	0.588	0.38	0.047	0.59	-0.06	0.626	<b>0.32</b>	0.091	0.653
2001	0.593	0.37	0.053	0.51	-0.06	0.632	<b>0.31</b>	0.072	0.672
2002	0.890	-0.03	0.065	0.52	-0.08	0.965	<b>-0.11</b>	-0.227	1.326
2003	0.428	0.70	0.044	0.43	-0.04	0.447	<b>0.65</b>	0.248	1.243
2004	0.595	0.37	0.061	0.48	-0.07	0.639	<b>0.30</b>	0.147	0.491

Table 8. Akaike weights based on the statistical fit of the tag-recapture data to the various models in the suite. These weights are used to obtain the weighted model-averaged estimates of survival. Results are for striped bass tagged at  $\geq 18$  inches.

Producer Area Programs

Model	HUDSON	DE/PA	MDCB	VARAP
{S(.)r(.)}	0.0000	0	0	0
{S(.)r(p)}	0.0323	0.000	0	0.000
{S(.)r(t)}	0.0028	<b>0.581</b>	0	0
{S(p)r(p)}	<b>0.1671</b>	0.000	0	0.000
{S(p)r(t)}	0.0013	<b>0.273</b>	<b>0.19661</b>	0
{S(d)r(p)}	<b>0.1364</b>	0.000	0	0.000
{S(v)r(p)}	0.0978	0.002	0	0.000
S(Va)r(va)	NA	NA	0	0.000
{S(Tp)r(t)}	0.0086	0.059	<b>0.77902</b>	0.064
{S(Tp)r(Tp)}	0.0891	0.000	0	0.005
{S(Tp)r(p)}	<b>0.3054</b>	0.000	0	0.000
{S(t)r(p)}	<b>0.1582</b>	0.083	0.00034	0
<u>{S(t)r(t)}</u>	0.0011	0.001	0.02403	<b>0.930</b>

Coastal Programs

Model	MA FALL	NY LI OHS	NJ DB FEB-APR	NC COOP
{S(.)r(.)}	0	0.00	0.000	0.000
{S(.)r(p)}	<b>0.558</b>	0.00	0.000	0.000
{S(.)r(t)}	0.053	0.00	0.000	0.000
{S(p)r(p)}	<b>0.174</b>	0.00	0.000	0.000
{S(p)r(t)}	0.026	0.00	0.000	0.000
{S(d)r(p)}	0.080	0.00	0.000	0.000
{S(v)r(p)}	0.077	0.00	0.000	0.000
{S(Tp)r(t)}	0.003	***	0.0469	0.014
{S(Tp)r(Tp)}	0.002	***	0.00	<b>0.157</b>
{S(Tp)r(p)}	0.014	0.00	0.00	0.000
{S(t)r(p)}	0.013	***	0.00	0.000
<u>{S(t)r(t)}</u>	0.000	<b>1.00</b>	<b>0.95</b>	<b>0.829</b>

Table 4. Summary table, based on the assumption of constant natural mortality, with estimates of annual instantaneous fishing mortality, F, of striped bass  $\geq 18$  inches by individual program, averaged over all coastal programs, with a weighted average over producer areas and with an overall coastwide estimate. Estimates of coastwide abundance of age 3+ striped bass from 1987 - 2004 are also provided.

**Producer Area Programs\***

Year	HUDSON	DE/PA	MDCB	VARAP	Weighted Average
1987			-0.10		<b>-0.05</b>
1988	0.04		-0.06		<b>-0.02</b>
1989	0.01		-0.08		<b>-0.04</b>
1990	0.11		0.22	-0.08	<b>0.11</b>
1991	0.14		0.21	0.98	<b>0.38</b>
1992	0.13		0.19	-0.06	<b>0.10</b>
1993	0.14	0.20	0.23	0.25	<b>0.22</b>
1994	0.14	0.16	0.22	0.32	<b>0.23</b>
1995	0.14	0.18	0.20	0.17	<b>0.18</b>
1996	0.16	0.20	0.25	0.28	<b>0.24</b>
1997	0.14	0.24	0.31	0.37	<b>0.30</b>
1998	0.19	0.23	0.38	0.68	<b>0.42</b>
1999	0.18	0.24	0.44	0.78	<b>0.48</b>
2000	0.14	0.25	0.50	0.64	<b>0.47</b>
2001	0.19	0.27	0.48	0.55	<b>0.44</b>
2002	0.21	0.29	0.43	0.22	<b>0.34</b>
2003	0.20	0.25	0.40	0.13	<b>0.29</b>
2004	0.25	0.29	0.36	0.06	<b>0.26</b>

\* Weighting Scheme: Hudson (0.13); Delaware (0.09); Chesapeake Bay (0.78), where MD (0.67) and VA (0.33).

**Coast Programs**

Year	MADFW	NYOHS	NJDEL	NCCOOP	Unweighted average	lower 95% CI	upper 95% CI
1987							
1988		0.28		-0.26	<b>0.01</b>		
1989		-0.26	-0.27	0.26	<b>-0.09</b>		
1990		0.30	-0.19	0.31	<b>0.14</b>		
1991		-0.01	0.24	0.21	<b>0.15</b>		
1992	0.02	-0.20	0.16	-0.02	<b>-0.01</b>		
1993	0.03	0.48	0.29	0.01	<b>0.20</b>		
1994	0.04	0.13	0.07	0.32	<b>0.14</b>		
1995	0.08	-0.17	-0.05	-0.09	<b>-0.06</b>		
1996	0.04	0.00	-0.04	0.37	<b>0.09</b>		
1997	0.10	0.29	0.37	0.45	<b>0.30</b>		
1998	0.07	0.49	0.02	0.24	<b>0.21</b>		
1999	0.10	0.18	0.18	-0.08	<b>0.09</b>		
2000	0.10	0.32	0.09	0.85	<b>0.34</b>		
2001	0.09	0.31	-0.01	0.45	<b>0.21</b>		
2002	0.08	-0.11	0.34	0.32	<b>0.16</b>		
2003	0.10	0.65	0.48	0.51	<b>0.44</b>		
2004	0.10	0.30	0.68	0.18	<b>0.31</b>		

Table 9, continued

Unweighted average F estimate of coastal and producer area estimates and estimated total abundance of age 3+ Atlantic striped bass based on F estimates that assume constant natural mortality.

Year	Fishing Mortality	Total Kill inc. discards	Total Stock Size ( 3 + yrs. old) Thousands
1987	-0.05		
1988	-0.01		
1989	-0.07		
1990	0.13	921	7,358
1991	0.26	988	3,747
1992	0.04	987	22,865
1993	0.21	1,437	6,780
1994	0.18	1,867	10,161
1995	0.06	3,000	47,743
1996	0.17	3,376	20,346
1997	0.30	4,580	15,251
1998	0.31	4,118	13,188
1999	0.29	3,704	12,981
2000	0.40	5,044	12,466
2001	0.33	4,344	13,317
2002	0.25	3,890	15,793
2003	0.36	4,836	13,339
2004	0.29	<u>5,185</u>	18,037

Table 10. Estimates of fishing mortality for 18 inch plus striped bass based on Baranov's catch equation without assuming constant natural mortality, based on the exploitation rates (Table 1) and the bias-adjusted estimates of survival (Table 3). The tables also present annual estimates of instantaneous natural mortality, M. Column headings are S: annual bias-corrected survival rate, Z: total instantaneous mortality, A: annual percentage mortality expressed as a proportion, U: annual exploitation rate, F: instantaneous fishing mortality rate and M: instantaneous natural mortality rate.

Producer Areas

Maryland Chesapeake Bay Spring Spawning Stock						Virginia Rappahanock River Spring Spawning Stock Survey					
Year	Z	A	U	F	M	Year	Z	A	U	F	M
1987	0.05	0.05	0.01	0.01	0.05						
1988	0.09	0.09	0.01	0.01	0.08	1988					
1989	0.07	0.06	0.01	0.01	0.06	1989					
1990	0.37	0.31	0.07	0.08	0.29	1990	0.07	0.07	0.17	0.18	-0.11
1991	0.36	0.30	0.10	0.12	0.24	1991	1.13	0.68	0.14	0.23	0.90
1992	0.34	0.29	0.13	0.15	0.18	1992	0.09	0.08	0.31	0.32	-0.23
1993	0.38	0.32	0.11	0.13	0.25	1993	0.40	0.33	0.23	0.28	0.12
1994	0.37	0.31	0.12	0.14	0.23	1994	0.47	0.38	0.25	0.31	0.16
1995	0.35	0.30	0.18	0.22	0.13	1995	0.32	0.27	0.19	0.22	0.09
1996	0.40	0.33	0.17	0.20	0.20	1996	0.43	0.35	0.14	0.17	0.26
1997	0.46	0.37	0.20	0.25	0.21	1997	0.52	0.41	0.20	0.25	0.27
1998	0.53	0.41	0.19	0.25	0.28	1998	0.83	0.56	0.15	0.23	0.60
1999	0.59	0.45	0.16	0.22	0.38	1999	0.93	0.60	0.13	0.20	0.73
2000	0.65	0.48	0.13	0.18	0.47	2000	0.79	0.55	0.13	0.18	0.60
2001	0.63	0.47	0.12	0.16	0.47	2001	0.70	0.51	0.18	0.25	0.46
2002	0.58	0.44	0.12	0.15	0.43	2002	0.37	0.31	0.16	0.19	0.19
2003	0.55	0.42	0.13	0.17	0.38	2003	0.28	0.24	0.15	0.17	0.11
0.509924 2004	0.51	0.40	0.10	0.13	0.38	2004	0.21	0.19	0.07	0.08	0.13
Average	0.40	0.32	0.11	0.14	0.28	Average	0.50	0.37	0.17	0.22	0.29

Delaware River: Delaware, Pennsylvania, New Jersey. Spring Spawning Stock

Year	Z	A	U	F	M
1988					
1989					
1990					
1991					
1992					
1993	0.35	0.29	0.12	0.15	0.20
1994	0.31	0.27	0.12	0.14	0.17
1995	0.33	0.28	0.13	0.16	0.17
1996	0.36	0.30	0.16	0.19	0.17
1997	0.39	0.32	0.09	0.11	0.27
1998	0.37	0.31	0.14	0.17	0.20
1999	0.39	0.32	0.12	0.14	0.25
2000	0.40	0.33	0.14	0.17	0.23
2001	0.42	0.34	0.14	0.17	0.25
2002	0.43	0.35	0.14	0.18	0.25
2003	0.40	0.33	0.13	0.16	0.24
2004	0.43	0.35	0.12	0.15	0.28
Average	0.38	0.32	0.13	0.16	0.22

Hudson River Spring Spawning Stock Survey

Year	Z	A	U	F	M
1988	0.19	0.17	0.05	0.05	0.13
1989	0.16	0.15	0.05	0.05	0.11
1990	0.26	0.23	0.07	0.08	0.17
1991	0.29	0.25	0.08	0.10	0.19
1992	0.27	0.24	0.10	0.11	0.16
1993	0.29	0.25	0.11	0.13	0.16
1994	0.29	0.25	0.08	0.10	0.19
1995	0.29	0.25	0.13	0.15	0.14
1996	0.31	0.27	0.16	0.19	0.12
1997	0.29	0.25	0.22	0.25	0.04
1998	0.33	0.28	0.17	0.20	0.13
1999	0.33	0.28	0.14	0.17	0.16
2000	0.29	0.25	0.09	0.11	0.18
2001	0.34	0.29	0.10	0.12	0.22
2002	0.36	0.30	0.08	0.10	0.26
2003	0.35	0.30	0.10	0.12	0.24
2004	0.40	0.33	0.04	0.05	0.35
Average	0.30	0.26	0.15	0.17	0.12

Table 10, continued

Coastal Areas

Massachusetts Fall Tagging

<u>Year</u>	<u>Z</u>	<u>A</u>	<u>U</u>	<u>F</u>	<u>M</u>
1992	0.17	0.15	0.04	<b>0.04</b>	0.13
1993	0.18	0.16	0.05	<b>0.06</b>	0.12
1994	0.19	0.17	0.03	<b>0.04</b>	0.15
1995	0.23	0.20	0.04	<b>0.04</b>	0.18
1996	0.19	0.17	0.06	<b>0.07</b>	0.12
1997	0.25	0.22	0.09	<b>0.10</b>	0.15
1998	0.22	0.20	0.08	<b>0.09</b>	0.13
1999	0.25	0.22	0.06	<b>0.07</b>	0.18
2000	0.25	0.22	0.08	<b>0.10</b>	0.15
2001	0.24	0.22	0.05	<b>0.06</b>	0.19
2002	0.23	0.21	0.09	<b>0.10</b>	0.13
2003	0.25	0.22	0.08	<b>0.09</b>	0.16
2004	0.25	0.22	0.09	<b>0.10</b>	0.15
Average	0.22	0.20	0.06	<b>0.07</b>	0.15

New York Ocean Haul Seine Fall Tagging

<u>Year</u>	<u>Z</u>	<u>A</u>	<u>U</u>	<u>F</u>	<u>M</u>
1988	0.43	0.35	0.02	<b>0.03</b>	0.40
1989	-0.11	-0.12	0.03	<b>0.03</b>	-0.14
1990	0.45	0.36	0.04	<b>0.05</b>	0.40
1991	0.14	0.13	0.06	<b>0.06</b>	0.08
1992	-0.05	-0.05	0.04	<b>0.04</b>	-0.09
1993	0.63	0.47	0.05	<b>0.06</b>	0.56
1994	0.28	0.25	0.04	<b>0.04</b>	0.24
1995	-0.02	-0.02	0.05	<b>0.05</b>	-0.07
1996	0.15	0.14	0.03	<b>0.03</b>	0.12
1997	0.44	0.36	0.04	<b>0.04</b>	0.40
1998	0.64	0.47	0.03	<b>0.04</b>	0.60
1999	0.33	0.28	0.05	<b>0.06</b>	0.27
2000	0.47	0.37	0.03	<b>0.04</b>	0.43
2001	0.46	0.37	0.05	<b>0.06</b>	0.40
2002	0.04	0.04	0.06	<b>0.07</b>	-0.03
2003	0.80	0.55	0.04	<b>0.05</b>	0.75
2004	0.45	0.36	0.04	<b>0.05</b>	0.40
Average	0.33	0.25	0.04	<b>0.05</b>	0.28

North Carolina Co-operative Winter Cruise

<u>Year</u>	<u>Z</u>	<u>A</u>	<u>U</u>	<u>F</u>	<u>M</u>
1988	-0.11	-0.11	0.04	<b>0.04</b>	-0.15
1989	0.41	0.34	0.03	<b>0.04</b>	0.37
1990	0.46	0.37	0.07	<b>0.09</b>	0.37
1991	0.36	0.30	0.08	<b>0.10</b>	0.26
1992	0.13	0.12	0.15	<b>0.16</b>	-0.03
1993	0.16	0.15	0.11	<b>0.12</b>	0.04
1994	0.47	0.37	0.10	<b>0.12</b>	0.35
1995	0.06	0.06	0.14	<b>0.15</b>	-0.09
1996	0.52	0.40	0.12	<b>0.15</b>	0.37
1997	0.60	0.45	0.17	<b>0.23</b>	0.37
1998	0.39	0.32	0.17	<b>0.20</b>	0.19
1999	0.07	0.07	0.22	<b>0.23</b>	-0.15
2000	1.00	0.63	0.10	<b>0.16</b>	0.85
2001	0.60	0.45	0.12	<b>0.15</b>	0.44
2002	0.47	0.37	0.12	<b>0.15</b>	0.31
2003	0.66	0.48	0.11	<b>0.16</b>	0.50
2004	0.33	0.28	0.12	<b>0.14</b>	0.19

New Jersey Delaware Bay February-April

<u>Year</u>	<u>Z</u>	<u>A</u>	<u>U</u>	<u>F</u>	<u>M</u>
1988	0.43	0.35	0.02	<b>0.03</b>	0.40
1989	-0.11	-0.12	0.03	<b>0.03</b>	-0.14
1990	0.45	0.36	0.04	<b>0.05</b>	0.40
1991	0.14	0.13	0.06	<b>0.06</b>	0.08
1992	-0.05	-0.05	0.04	<b>0.04</b>	-0.09
1993	0.63	0.47	0.05	<b>0.06</b>	0.56
1994	0.28	0.25	0.04	<b>0.04</b>	0.24
1995	-0.02	-0.02	0.05	<b>0.05</b>	-0.07
1996	0.15	0.14	0.03	<b>0.03</b>	0.12
1997	0.44	0.36	0.04	<b>0.04</b>	0.40
1998	0.64	0.47	0.03	<b>0.04</b>	0.60
1999	0.33	0.28	0.05	<b>0.06</b>	0.27
2000	0.47	0.37	0.03	<b>0.04</b>	0.43
2001	0.46	0.37	0.05	<b>0.06</b>	0.40
2002	0.04	0.04	0.06	<b>0.07</b>	-0.03
2003	0.80	0.55	0.04	<b>0.05</b>	0.75
2004	0.45	0.36	0.04	<b>0.05</b>	0.40

Table 11. Summaries of tag-based estimates of annual instantaneous fishing mortality of striped bass  $\geq 18"$  based on the catch equation without assuming constant natural mortality. The table also provides estimates of stock size coastwide of striped bass ages 3+ by solving the equation  $Kill = F \cdot (\text{average stock size})$ . Estimates are adjusted for bias caused by live release of recaptured fish.

**Producer Area Programs\***

Year	HUDSON	DE/PA	MDCB	VARAP	Average
1987					
1988	0.05		0.01		<b>0.01</b>
1989	0.05		0.01		<b>0.01</b>
1990	0.08		0.01	0.18	<b>0.06</b>
1991	0.10		0.08	0.23	<b>0.11</b>
1992	0.11		0.12	0.32	<b>0.16</b>
1993	0.13	0.15	0.15	0.28	<b>0.18</b>
1994	0.10	0.14	0.13	0.31	<b>0.17</b>
1995	0.15	0.16	0.14	0.22	<b>0.16</b>
1996	0.19	0.19	0.22	0.17	<b>0.20</b>
1997	0.25	0.11	0.20	0.25	<b>0.21</b>
1998	0.20	0.17	0.25	0.23	<b>0.23</b>
1999	0.17	0.14	0.25	0.20	<b>0.22</b>
2000	0.11	0.17	0.22	0.18	<b>0.19</b>
2001	0.12	0.17	0.18	0.25	<b>0.19</b>
2002	0.10	0.18	0.16	0.19	<b>0.16</b>
2003	0.12	0.16	0.15	0.17	<b>0.15</b>
2004	0.05	0.15	0.17	0.08	<b>0.13</b>

\* Weighting Scheme: Hudson (0.13); Delaware (0.09); Chesapeake Bay (0.78), where MD (0.67) and VA (0.33).

**Coast Programs**

Year	MADFW	NYOHS	NJDEL	NCCOOP	Unweighted average
1987					
1988		0.03		0.04	<b>0.03</b>
1989		0.03	0.03	0.04	<b>0.03</b>
1990		0.05	0.05	0.09	<b>0.06</b>
1991		0.06	0.06	0.10	<b>0.07</b>
1992	0.04	0.04	0.04	0.16	<b>0.07</b>
1993	0.06	0.06	0.06	0.12	<b>0.08</b>
1994	0.04	0.04	0.04	0.12	<b>0.06</b>
1995	0.04	0.05	0.05	0.15	<b>0.07</b>
1996	0.07	0.03	0.03	0.15	<b>0.07</b>
1997	0.10	0.04	0.04	0.23	<b>0.10</b>
1998	0.09	0.04	0.04	0.20	<b>0.09</b>
1999	0.07	0.06	0.06	0.23	<b>0.10</b>
2000	0.10	0.04	0.04	0.16	<b>0.08</b>
2001	0.06	0.06	0.06	0.15	<b>0.08</b>
2002	0.10	0.07	0.07	0.15	<b>0.10</b>
2003	0.09	0.05	0.05	0.16	<b>0.09</b>
2004	0.10	0.05	0.05	0.14	<b>0.08</b>

Table 11, continued

Coastwide Average Fishing Mortality Rate - Unweighted average of producer and coastal program mean fishing mortality rates obtained via the catch equation. Estimated total abundance of Atlantic coast striped bass ages 7+ obtained via the equation,  $\text{Total Kill} = F * \text{Total Abundance}$ , solving for total abundance.

Year	Fishing Mortality	Total Loss includes discards	Stock Size ( 3 + yrs. old) Thousands
1987			
1988	0.02	445	19,189
1989	0.02	480	20,071
1990	0.06	921	14,978
1991	0.09	988	10,566
1992	0.12	987	8,561
1993	0.13	1,437	11,114
1994	0.12	1,867	15,944
1995	0.12	3,000	25,345
1996	0.14	3,376	24,945
1997	0.16	4,580	28,873
1998	0.16	4,118	25,607
1999	0.16	3,704	23,423
2000	0.14	5,044	36,980
2001	0.14	4,344	32,154
2002	0.13	3,890	30,305
2003	0.12	4,836	40,036
2004	0.11	5,185	48,485

Table 12. Total length frequencies of fish tagged in 2004 by program.

TL	Coast Programs				Producer Area Programs			
	MADFW	NYOHS	NJDEP	NCCOOP	DE/PA	MDCB	VARAP	HUDSON
199								
249		0	0					
299		0	0					
349		0	0	20		23		
399		14	0	180		47		
449		219	0	340	63	122		1
499		342	7	505	51	113	155	88
549		351	50	408	63	63	212	119
599		251	129	242	47	65	220	118
649	3	150	279	178	38	39	153	150
699	26	42	449	195	21	43	46	120
749	93	24	433	262	16	38	43	109
799	167	17	281	196	22	49	179	136
849	153	15	169	103	29	86	198	124
899	98	5	69	43	40	76	109	115
949	54	6	15	24	26	60	82	60
999	24	2	3	6	16	34	41	65
1049	15	2	1	2	8	15	22	30
1099	15	1	0	1	8	13	13	17
>1099	7	2	0	2	4	7	4	5
Total	655	1443	1885	2707	452	893	1477	1257

Table 13. Age frequencies of tagged fish recaptured in 2004 by program.

AGE	Coast Programs			Producer Area Programs			
	MADFW	NYOHS	NJDEP	DE/PA	MDCB	VARAP	HUDSON
1							
2		1				0	
3		16	3	4		0	
4		15	53	4		0	13
5	1	14	186	4		0	24
6	1	13	151	7		0	18
7	7	29	76	6		1	13
8	8	16	33	13		1	18
9	7	11	12	14		0	10
10	4	19		16		2	18
11	6	4	1	19		4	6
12	7	2		7		0	8
13	3	2		3		3	7
14	2	3		2		3	2
15	2	3		5		6	
16	1	2		1		0	
17		2				1	2
18		1				0	
19		3				1	
20	1					0	
21							
22							
Total	50	156	515	105	22	139	

Table 14. Distribution of tag recaptures by state (program) and month.

Coast Programs

Massachusetts (recaptures in 2004 from fish tagged and released during 1992-2004)

State	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
ME													0
NH													0
MA						4	10	7	5				26
RI						1		1		1			3
CT													0
NY					3	4				2	2	1	12
NJ			1	2	2	2			1	1	7		16
DE													0
MD			1	2	3						1		7
VA	2		2								4	3	11
NC	1	2		1							1	1	6
<b>Total</b>	<b>3</b>	<b>2</b>	<b>4</b>	<b>5</b>	<b>8</b>	<b>11</b>	<b>10</b>	<b>8</b>	<b>6</b>	<b>4</b>	<b>15</b>	<b>5</b>	<b>81</b>

New York - Ocean Haul Seine (recaptures in 2004 from fish tagged/release during 1988-2004)

State	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
ME								1	1	1			3
NH							3	1	1				5
MA					7	14	6	6	1				34
RI					2	4	3	2		4			15
CT					1	3	2	1	1	2			10
NY			1	6	10	11	2	3	2	1	8		44
NJ			1	3	6					3	1	2	16
PA													0
DE					1						1	1	3
MD					5	1							6
VA	2		1	1							2	4	10
NC	2	1	1							1	1	1	7
<b>Total</b>	<b>4</b>	<b>1</b>	<b>4</b>	<b>15</b>	<b>28</b>	<b>35</b>	<b>14</b>	<b>14</b>	<b>5</b>	<b>12</b>	<b>13</b>	<b>8</b>	<b>153</b>

Table 14. Continued.

New Jersey - Delaware Bay (recaptures in 2004 from fish tagged/release during 1989-2004)

State	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
ME						4	7	3	3			1	18
NH						2	1	3					6
MA					11	41	44	34	17	4			151
RI					6	12	3	6	2	2			31
CT					7	4	5	1	3	3			23
NY				1	18	15	11	13	9	21	19	2	109
NJ		1		9	34	6	5		1	10	31	7	104
PA					1								1
DE				2	1					2	2	1	8
MD				8	7					1	2		18
VA	3	4	1	1							2	3	14
NC	6	2			1						1	6	16
<b>Total</b>	<b>9</b>	<b>7</b>	<b>1</b>	<b>21</b>	<b>86</b>	<b>84</b>	<b>76</b>	<b>60</b>	<b>35</b>	<b>43</b>	<b>57</b>	<b>20</b>	<b>499</b>

North Carolina - Cooperative Trawl Cruise  
(recaptures in 2004 from fish tagged and released during 1992-2004)

State	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
ME							1						1
NH					1	1							2
MA					6	16	23	10	7	1			63
RI					2	5	6	2					15
CT					2	5	3			1			11
NY					5	4		4	5	8			26
NJ					8	7	6	1		1	6		29
PA													0
DE						1	1			1	1		4
MD			4	1	11	20	36	21	15	13	7	5	134
VA	8	3	5	2	13	6	3			16	17	18	91
NC	9	8	8					1		2		6	34
<b>Total</b>	<b>17</b>	<b>15</b>	<b>14</b>	<b>13</b>	<b>57</b>	<b>82</b>	<b>63</b>	<b>33</b>	<b>25</b>	<b>37</b>	<b>29</b>	<b>25</b>	<b>410</b>

Table 14. Continued.

**Producer Area Programs**

## Delaware / Pennsylvania - Delaware River

(recaptures in 2004 from fish tagged and released during 1992-2004)

State	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	
ME						1		1					2	
NH													0	
MA							4	4	6	3			17	
RI										1	1		2	
CT													0	
NY						1	3	1	1			1	7	
NJ				2		7	11	5	1	1	7	12	1	47
PA						2							2	
DE					1	2				1	3	4	11	
MD					4		3			2		4	13	
VA													2	2
NC		4	1	1		1							7	
<b>Total</b>	<b>4</b>	<b>1</b>	<b>3</b>	<b>5</b>	<b>14</b>	<b>21</b>	<b>11</b>	<b>8</b>	<b>8</b>	<b>11</b>	<b>21</b>	<b>3</b>	<b>110</b>	

## Maryland - Chesapeake Bay Spring Spawning Stock

(recaptures in 2004 from fish tagged and released during 1992-2004)

State	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
ME													0
NH													0
MA					1	2	7	6	3	1			20
RI								2					2
CT						2	1						3
NY						2		3		1			6
NJ				1	1					1	1		4
PA													0
DE						1		1			1		3
MD	1	1	1	1	8	12	13	6	9	10	6	1	69
VA		1	2		1	2	1	1	1	5	5	7	26
NC	5		1									1	7
<b>Total</b>	<b>6</b>	<b>2</b>	<b>4</b>	<b>2</b>	<b>11</b>	<b>21</b>	<b>22</b>	<b>19</b>	<b>13</b>	<b>18</b>	<b>13</b>	<b>9</b>	<b>140</b>

Table 14. Continued.

Virginia - Rappahannock River (recaptures in 2004 from fish tagged and released during 1992-2004)

State	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
NH						1							1
MA					2	3	8	2	1				16
RI						1	2	1	1				5
CT							1		1				2
NY					4	4	2	1	2	4	2		19
NJ					2	1	1				2		6
DE						2				1	1		4
MD				1	5	12	6			2			26
VA				11	9	9	3	1		7	8	8	56
NC												2	2
<u>Total</u>	0	0	0	12	22	33	23	5	5	14	13	10	137

Hudson River

(recaptures in 2004 from fish tagged and released during 1992-2004)

State	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	
ME								1	2		1		4	
NH													0	
MA						1	7	13	14	4	1	1	41	
RI							6	5	3	3	1	1	19	
CT				1	1	1	7	6	4	2	2	1	24	
NY					5	37	15	16	10	11	19	10	1	124
NJ						2	13	3			4	20	4	46
PA													0	
DE												1	1	
MD							1			1			2	
VA	1	1											5	7
NC	3								1				5	9
<u>Total</u>	4	1	0	6	41	49	43	33	22	28	35	15	277	

Figure 1. Year-to-year variation in F estimates for 28 inch Fish & Wildlife generated with the constant M method. Labels refer to the year that estimates were reported. Note variation in the vertical axis among charts.

