

**Appendix A13. Input Tagging Matrices for Program MARK/Catch Equation Method and Instantaneous Rates - Catch and Release Model, for Coastwide and Chesapeake Bay Tagging Assessments.**

**Appendix A13 Tables**

Table 1. Program MARK input matrices for the coastal tagging programs, for fish  $\geq 28''$ .

Massachusetts

Number of releases	Release year	Recaptures														
		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
329	1992	21	22	12	12	8	4	0	4	3	1	0	0	0	0	0
611	1993	35	32	26	29	17	17	11	2	2	2	2	2	1	0	0
462	1994	21	28	27	19	19	17	7	2	1	2	2	0	1	0	0
218	1995	15	12	10	4	5	3	1	1	1	1	1	0	0	1	1
274	1996	22	15	13	11	9	3	1	1	1	3	1	1	1	1	0
118	1997	17	6	3	1	2	0	1	1	1	2	0	1	0	1	1
219	1998	16	16	8	1	1	1	1	1	1	2	4	1	1	1	0
59	1999	6	3	1	1	1	1	1	1	1	1	0	0	0	0	0
163	2000	10	6	7	3	4	0	1	1	6	7	3	4	0	1	1
411	2001	21	23	16	9	11	3	3	21	21	23	16	9	11	3	3
353	2002	23	13	14	9	8	6	9	23	23	23	13	14	9	8	8
172	2003	9	3	6	31	24	13	25	9	9	9	9	3	6	6	6
615	2004	31	24	13	25	25	25	25	31	31	31	31	31	31	31	13
542	2005	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
510	2006	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33

Table 1 continued.

New York — Ocean Haul Seine

Number of releases	Release year	Recaptures																		
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
214	1988	25	14	14	9	5	6	1	3	1	1	0	2	0	0	0	0	0	0	0
342	1989	35	28	24	24	14	13	4	4	1	2	0	0	0	2	0	0	0	0	0
246	1990		23	17	10	6	3	0	0	2	1	0	0	0	0	0	0	0	0	0
281	1991			30	25	10	6	5	2	6	3	0	1	1	1	0	0	0	0	0
287	1992			41	24	24	28	17	6	6	6	0	1	1	1	0	0	1	0	1
236	1993							13	7	6	0	1	0	0	0	0	0	0	0	0
254	1994					24		20	20	20	6	5	1	3	2	1	0	0	0	0
353	1995							53	37	22	18	6	4	3	1	4	3	0	0	0
110	1996								15	5	14	5	1	0	0	1	1	1	1	0
67	1997									13	5	4	0	1	2	1	1	1	1	1
82	1998										6	4	3	1	1	1	1	0	0	0
85	1999											13	7	3	1	1	1	4	1	0
56	2000												8	6	2	4	2	0	0	0
93	2001													8	6	5	8	1	0	0
176	2002														29	11	5	0	3	3
145	2003															13	5	7	1	1
156	2004																17	4	3	3
64	2005																	9	3	3
57	2006																			5



Table 1 continued.

North Carolina – Cooperative Trawl Cruise

Number of releases	Release year	Recaptures																		
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
191	1988	18			3	10	4	5	0	0	0	1	0	0	0	0	0	0	0	0
411	1989	24	20	14	18	7	3	3	2	1	0	0	0	1	0	0	0	0	0	0
322	1990		25	16	19	8	3	3	2	2	3	2	1	0	0	0	0	0	0	0
856	1991			39	74	48	34	34	18	7	12	8	1	1	1	1	0	0	0	0
433	1992			46		29	14	14	14	8	10	6	3	0	0	0	0	0	0	0
142	1993					17	5	5	5	3	3	1	0	0	1	0	0	0	0	0
480	1994					41	25	25	25	9	6	6	1	3	1	2	2	0	0	0
372	1995						43	43	43	16	17	14	5	3	2	5	1	1	1	2
557	1996									35	20	15	6	5	4	4	0	3	1	1
869	1997										88	44	25	14	13	0	3	4	1	0
106	1998											12	11	0	2	1	1	0	0	1
179	1999											21	8	5	2	0	3	2	1	1
164	2000												9	6	2	3	3	2	1	1
515	2001												46	23	23	15	5	11	9	9
789	2002													51	51	43	22	18	10	10
1578	2003														107	65	38	25	25	25
784	2004															58	26	26	26	26
557	2005																			25
2113	2006																			153

Table 2. Program MARK input matrices for the producer area tagging programs, for fish  $\geq 28''$ .

New York – Hudson River

Number of releases	Release year	Recaptures																		
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
277	1988	25								4	1	1	1	0	0	1	0	0	0	0
387	1989	42	31	18	11	10	5	4	1	0	0	0	0	1	0	0	1	0	0	0
297	1990		42	29	17	9	6	9	4	0	0	0	0	0	2	0	0	0	0	0
364	1991			42	22	16	12	7	2	1	3	0	0	0	0	0	0	0	0	0
702	1992				38	31	13	10	9	5	5	2	0	1	0	0	1	0	1	1
539	1993				90	58	58	34	22	14	13	10	5	2	1	0	0	1	0	0
383	1994					77	36	23	21	15	7	8	0	1	0	0	0	0	1	0
462	1995						43	34	27	10	6	6	5	4	2	0	2	1	1	0
684	1996							52	34	30	21	11	4	1	2	1	1	1	1	0
184	1997								92	68	33	18	3	9	4	2	4	3	1	1
530	1998									29	11	12	6	3	2	2	0	1	1	1
503	1999										67	45	18	9	20	6	0	1	2	2
486	2000											65	22	27	12	14	7	3	4	4
577	2001												45	25	23	18	13	6	3	3
196	2002													49	39	14	6	6	10	10
677	2003														20	11	9	4	7	7
648	2004															63	44	35	17	17
576	2005																76	34	34	34
707	2006																	59	44	44
																				61

Table 2 continued.

Delaware/Pennsylvania – Delaware River

Number of releases	Release year	Recaptures													
		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
57	1993	6	8	1	4	3	2	0	1	0	0	0	0	0	0
82	1994		7	10	6	1	2	1	0	0	0	0	0	0	0
174	1995			21	12	8	6	3	3	1	0	0	0	0	0
112	1996				17	5	6	1	2	2	1	1	1	0	0
113	1997					15	7	5	0	3	0	0	0	0	0
204	1998						30	10	5	4	5	3	1	1	1
108	1999							9	11	2	1	3	1	0	0
150	2000								24	12	4	3	1	3	0
222	2001									31	14	9	6	3	4
138	2002										13	11	4	4	1
286	2003											32	21	8	7
167	2004												18	10	7
110	2005													10	10
181	2006														20



Table 2 continued.

Virginia – Rappahannock River

Number of releases	Release year	Recaptures																
		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
301	1990	26		9	15	2	4	6	1	0	2	1	1	0	1	0	0	0
390	1991		41	24	16	11	3	3	2	2	1	2	0	0	1	0	0	0
40	1992			4	3	2	2	2	0	0	0	1	0	0	0	0	0	0
212	1993				22	18	7	7	4	7	0	0	1	0	0	0	0	0
123	1994				9	9	7	7	5	1	2	0	0	0	0	0	0	0
210	1995						29	11	11	8	3	3	2	3	0	1	0	1
67	1996							1	1	3	1	0	0	1	0	0	0	0
212	1997									15	13	8	3	0	1	2	1	0
158	1998									24	24	13	2	3	2	0	0	0
162	1999										17	17	6	2	2	0	0	0
365	2000												28	19	14	9	4	3
269	2001													19	14	4	6	2
122	2002														10	6	7	1
400	2003															35	24	7
686	2004																39	12
284	2005																	16
175	2006																	



Table 3. Instantaneous Rates – Catch and Release Model input matrices for the coastal tagging programs, for fish  $\geq 28''$ . The first matrix contains all harvested recaptures and the second matrix contains released fish with their tag removed.

Massachusetts

Number of releases	Release year	Harvested Recaptures														
		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
327	1992	6	10	7	11	8	4	0	3	3	1	0	0	0	0	0
610	1993	17	18	15	25	16	14	9	1	2	2	2	2	1	0	0
461	1994	8	23	23	15	13	7	2	2	0	2	2	0	0	1	0
218	1995	4	8	9	3	3	3	1	1	1	1	1	0	0	0	1
273	1996	10	10	11	9	7	0	3	1	1	1	0	1	1	1	0
118	1997	8	4	2	3	1	1	0	1	1	0	0	1	0	1	0
217	1998	9	11	6	6	2	3	1	0	0	0	0	0	0	0	0
59	1999	3	3	3	1	1	1	0	0	0	0	0	0	0	0	0
162	2000	9	4	4	9	4	4	3	1	4	4	3	3	0	1	1
408	2001	15	18	10	7	10	3	15	18	10	7	10	7	10	3	3
350	2002	11	11	11	11	11	11	11	11	11	11	11	11	5	5	5
171	2003	8	8	2	3	1	1	0	0	0	0	0	0	0	0	4
615	2004	25	17	9	20	16	20	16	20	16	20	16	20	16	20	9
540	2005	16	16	16	16	16	16	16	16	16	16	16	16	16	16	9
509	2006	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20

  

Number of releases	Release year	Released with Tag Removed														
		1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
327	1992	14	11	5	1	0	0	0	1	0	0	0	0	0	0	0
610	1993	18	13	11	4	1	3	2	1	0	0	0	0	0	0	0
461	1994	12	5	4	4	4	4	0	0	1	0	0	0	0	0	0
218	1995	11	4	1	1	1	2	2	2	0	0	0	0	0	0	0
273	1996	12	4	2	2	2	2	2	2	1	0	0	0	0	0	0
118	1997	9	2	1	0	0	1	0	0	0	1	0	0	0	0	0
217	1998	6	5	3	2	0	0	0	0	0	0	0	0	1	0	0
59	1999	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
162	2000	1	2	2	2	2	2	2	2	2	2	2	2	2	2	2
408	2001	6	4	5	1	1	1	1	6	4	4	5	1	2	0	0
350	2002	11	11	11	11	11	11	11	11	11	11	11	2	2	3	3
171	2003	0	0	0	0	0	0	0	0	0	0	0	0	1	2	2
615	2004	6	7	4	4	4	4	4	6	7	4	4	6	7	4	4
540	2005	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
509	2006	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10

Table 3 continued – New York – Ocean Haul Seine

Number of releases	Release year	Harvested Recaptures																			
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	
221	1988	3			5	7	3	3	0	2	1	1	0	2	0	0	0	0	0	0	
342	1989	4	10	9	9	10	10	3	4	1	1	2	0	0	0	2	0	0	0	0	
249	1990		6	8	6	3	3	0	1	1	1	2	0	0	0	0	0	0	0	0	
280	1991			13	12	6	3	4	1	4	2	0	0	1	1	0	0	0	0	0	
285	1992				12	12	6	13	4	3	4	0	1	1	1	0	0	1	0	1	
235	1993					13	9	10	5	5	0	1	0	0	0	0	0	0	0	0	
258	1994						8	13	17	15	5	4	1	3	1	1	1	0	0	0	
352	1995							30	26	16	16	5	4	3	1	4	1	0	0	0	
109	1996								6	5	7	5	1	0	0	0	1	1	0	0	
69	1997									10	5	4	0	1	1	1	0	0	1	1	
82	1998										6	4	3	0	0	1	0	0	0	0	
85	1999											11	6	2	1	0	4	1	0	0	
56	2000												4	5	2	3	1	0	0	0	
94	2001													4	5	4	6	1	0	0	
175	2002														16	10	3	0	3	3	
146	2003															9	4	7	1	1	
154	2004																9	2	2	2	
64	2005																			3	
56	2006																			3	

Number of releases	Release year	Released with Tag Removed																			
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	
221	1988	0	10	9	2	2	3	1	1	0	0	0	0	0	0	0	0	0	0	0	
342	1989		29	16	12	5	2	4	0	0	0	0	0	0	0	0	0	0	0	0	
249	1990			16	9	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	
280	1991				16	11	2	3	0	1	2	1	0	0	0	0	0	0	0	0	
285	1992					25	9	8	4	2	0	2	0	0	0	0	0	0	0	0	
235	1993						14	3	3	2	0	0	0	0	0	0	0	0	0	0	
258	1994							15	7	3	5	1	1	0	0	1	0	0	0	0	
352	1995								21	9	5	1	1	0	0	0	0	2	0	0	
109	1996									8	0	6	0	0	0	0	1	0	0	0	
69	1997										2	0	0	0	0	1	0	0	0	0	
82	1998											0	0	0	1	1	0	0	0	0	
85	1999												2	1	1	0	1	0	0	0	
56	2000													4	1	0	1	1	0	0	
94	2001														4	1	1	2	0	0	
175	2002															12	1	2	0	0	
146	2003																4	1	0	0	
154	2004																	8	2	1	
64	2005																			0	
56	2006																			1	

Table 3 continued – New Jersey – Delaware Bay

Number of releases	Release year	Harvested Recaptures																	
		1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
38	1989	0	2	4	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
9	1990	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16	1991		2	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
84	1992			2	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
91	1993				3	1	2	2	2	3	0	1	0	0	0	0	0	0	0
308	1994					5	9	9	10	11	8	4	3	2	1	1	0	0	0
552	1995						23	30	30	18	16	10	5	3	3	4	2	1	2
600	1996							49	18	30	13	6	5	3	3	6	2	0	0
96	1997								9	2	2	2	1	4	0	0	0	0	0
128	1998									19	5	5	2	0	4	1	1	0	0
106	1999										5	5	5	1	0	1	3	1	0
233	2000											13	15	8	9	6	4	0	0
522	2001												33	26	21	13	6	4	0
359	2002													17	10	11	9	2	0
564	2003														34	12	18	5	0
847	2004															55	31	17	4
180	2005																12	4	0
225	2006																		13

Number of releases	Release year	Released with Tag Removed																	
		1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
38	1989	3	1	3	2	0	0	0	0	1	0	0	0	0	0	0	0	0	0
9	1990		2	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
16	1991			2	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
84	1992				7	6	5	0	0	1	0	0	0	0	0	0	0	0	0
91	1993					5	3	3	0	0	0	0	0	0	1	0	0	0	0
308	1994						26	15	7	5	2	0	0	0	0	1	0	0	0
552	1995							29	21	13	11	4	0	2	0	0	1	0	0
600	1996								35	17	15	1	4	1	1	2	0	0	0
96	1997									6	0	0	0	0	0	0	0	0	0
128	1998										2	5	1	1	0	0	0	0	0
106	1999											7	3	1	4	2	0	0	0
233	2000												9	3	3	2	1	1	0
522	2001													19	9	2	2	2	0
359	2002														9	10	3	2	0
564	2003															23	12	5	4
847	2004																42	17	4
180	2005																	10	5
225	2006																		10

Table 3 continued – North Carolina – Cooperative Trawl Cruise

Number of releases	Release year	Harvested Recaptures																		
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
191	1988	4																		
411	1989		3	4	0	6	3	2	0	0	1	0	0	0	0	0	0	0	0	0
322	1990		6	7	7	11	4	2	2	1	1	0	0	1	0	0	0	0	0	0
856	1991			11	6	11	5	1	2	2	2	2	1	0	0	0	0	0	0	0
433	1992				23	19	23	20	16	5	11	7	1	1	1	1	0	0	0	0
142	1993					22	11	7	10	7	6	7	5	2	0	0	0	0	0	0
480	1994						6	3	5	3	2	1	0	0	1	0	0	0	0	0
372	1995							14	16	7	6	5	6	1	3	1	2	2	0	0
557	1996								21	13	16	11	5	2	2	5	1	1	2	0
869	1997									26	17	12	3	3	4	0	3	1	1	1
106	1998										67	31	16	9	11	0	3	3	1	0
179	1999											9	7	0	2	1	1	0	0	0
164	2000												18	5	5	2	0	2	2	1
515	2001													4	6	1	2	3	2	1
789	2002														32	18	11	3	9	6
1578	2003															39	31	20	13	7
784	2004																75	53	29	16
557	2005																	40	18	15
2113	2006																		17	16
																				107

  

Number of releases	Release year	Released with Tag Removed																		
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
191	1988	13																		
411	1989		8	5	2	3	1	3	0	0	0	0	1	0	0	0	0	0	0	0
322	1990		17	13	11	3	3	1	0	0	0	0	0	0	0	0	0	0	0	0
856	1991			14	11	5	3	1	0	0	0	0	0	0	0	0	0	0	0	0
433	1992				45	18	23	14	2	2	1	1	0	0	0	0	0	0	0	0
142	1993					23	17	7	4	1	2	3	0	1	0	0	0	0	0	0
480	1994						8	2	0	0	1	0	0	0	0	0	0	0	0	0
372	1995							26	8	1	4	1	0	0	0	0	0	0	0	0
557	1996								22	2	1	3	0	1	0	0	0	0	0	0
869	1997									8	3	3	2	2	1	0	0	0	0	0
106	1998										18	13	9	5	1	0	0	1	0	0
179	1999											3	4	0	0	0	0	0	0	1
164	2000												3	3	0	0	0	1	0	0
515	2001													4	0	1	1	0	0	0
789	2002														11	3	4	1	2	2
1578	2003															12	11	1	5	3
784	2004																27	12	8	9
557	2005																	17	8	10
2113	2006																		8	5
																				44

Table 4. Instantaneous Rates – Catch and Release Model input matrices for the producer area tagging programs, for fish  $\geq 28''$ . The first matrix contains all harvested recaptures and the second matrix contains released fish with their tag removed

New York – Hudson River

Number of releases	Release year	Released with Tag Removed																		
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
261	1988	14			2	4	2	2	0	0	1	0	0	0	0	1	0	0	0	0
380	1989		21			5	1	2	0	0	0	0	0	0	0	0	0	0	0	0
291	1990		33	16	7	7	4	3	0	0	0	0	0	2	0	0	0	0	0	0
361	1991			29	9	17	5	4	0	3	0	0	1	0	0	0	0	0	0	0
693	1992				23	54	30	18	11	2	3	2	2	0	0	0	0	0	0	0
527	1993						42	20	13	4	5	2	2	0	0	0	0	0	0	0
379	1994							26	8	5	2	0	2	1	0	0	0	0	0	0
457	1995								23	11	10	3	1	3	0	1	0	0	0	0
678	1996									27	24	6	6	1	2	2	0	1	2	0
183	1997										7	4	4	1	0	0	1	0	0	0
523	1998											19	16	4	2	7	1	1	0	0
499	1999												20	9	6	3	2	3	1	1
479	2000													18	6	9	10	5	0	0
570	2001														16	16	2	1	1	2
191	2002															4	3	2	2	2
667	2003																25	9	10	7
645	2004																19	9	10	10
569	2005																	19	9	15
699	2006																		19	17

Table 4 continued (New York – Hudson River)

Number of releases	Release year	Harvested Recaptures																		
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
261	1988	11	10	7	9	6	3	2	1	4	0	1	1	0	0	0	0	0	0	0
380	1989	9	9	13	10	4	5	7	4	0	0	0	0	1	0	0	1	0	0	0
291	1990		13	13	13	9	8	4	2	1	3	0	0	0	0	0	0	0	0	0
361	1991				15	14	8	6	9	5	2	2	0	0	0	0	1	0	1	1
693	1992					35	27	16	11	12	10	7	3	2	1	0	0	1	0	0
527	1993						35	16	10	17	10	5	6	0	1	0	0	0	1	0
379	1994					17			25	21	8	6	4	4	4	2	0	2	1	0
457	1995								27	23	20	18	10	1	1	1	1	1	1	1
678	1996								65	44	44	27	12	2	7	2	2	3	1	1
183	1997									22	7	8	8	5	3	2	1	0	1	1
523	1998										48	29	14	7	13	5	5	0	1	2
499	1999											45	13	21	9	12	4	4	2	3
479	2000												27	19	13	8	8	6	3	3
570	2001													33	23	12	5	5	5	8
191	2002														16	8	7	2	5	5
667	2003															38	35	25	10	10
645	2004																57	25	24	24
569	2005																	40	29	29
699	2006																			44

Table 4 continued.

Delaware/Pennsylvania – Delaware River

Number of Release releases	Release year	Harvested Recaptures													
		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
57	1993	3				2	2	0	0	0	0	0	0	0	0
82	1994		4	6	4	1	2	1	0	0	0	0	0	0	0
174	1995			11	7	5	6	2	3	1	0	0	0	0	0
112	1996				14	3	3	2	2	2	1	1	1	0	0
113	1997					13	6	4	0	4	0	0	0	0	0
204	1998						24	9	4	3	4	3	1	1	1
108	1999							7	10	2	1	3	1	0	0
150	2000								20	10	2	2	1	2	0
222	2001									28	10	9	6	3	4
138	2002										13	5	2	3	1
286	2003											19	13	7	7
167	2004												14	7	5
110	2005													6	7
181	2006														16

Number of Release releases	Release year	Released with Tag Removed													
		1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
57	1993	2				0	0	0	0	0	0	0	0	0	0
82	1994		3	4	2	0	0	0	0	0	0	0	0	0	0
174	1995			2	5	2	0	1	0	0	0	0	0	0	0
112	1996				4	3	4	0	2	0	0	0	0	0	0
113	1997					2	1	1	0	0	0	0	0	0	0
204	1998						6	2	1	1	0	0	0	0	0
108	1999							2	1	0	0	0	0	0	0
150	2000								4	2	2	1	0	1	0
222	2001									3	4	0	0	0	0
138	2002										0	6	2	1	0
286	2003											13	8	1	0
167	2004												3	3	2
110	2005													4	3
181	2006														4

Table 4 continued – Maryland – Chesapeake Bay

Number of releases	Release year	Harvested Recaptures																			
		1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
28	1987	0	0	0	0	0	2	1	0	0	0	1	0	0	0	0	0	0	0	0	0
124	1988	2	1	3	7	2	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
216	1989		3	7	3	3	2	1	5	2	0	0	0	0	0	0	0	0	0	0	0
303	1990			10	8	5	3	1	3	0	3	1	0	0	0	0	0	0	0	0	0
390	1991				47	24	20	5	9	3	5	1	0	2	0	0	0	0	0	0	0
431	1992					21	15	11	14	4	8	6	3	2	1	0	0	0	0	0	0
621	1993					30			25	30	13	14	7	8	1	3	2	0	0	0	0
543	1994							24													
527	1995								45	24	18	12	4	5	2	2	2	3	0	0	2
859	1996									59	35	36	14	6	7	2	1	1	0	0	0
335	1997										33	19	15	1	2	1	1	0	0	0	0
263	1998											22	13	2	3	2	0	0	0	0	0
117	1999												16	5	6	2	1	2	1	0	0
248	2000													18	12	0	4	4	1	0	0
467	2001														21	10	10	5	2	3	0
323	2002															13	18	5	6	0	0
322	2003																14	9	8	5	0
366	2004																	13	7	9	0
333	2005																		15	10	0
275	2006																			13	0

  

Number of releases	Release year	Released with Tag Removed																			
		1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
28	1987	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
124	1988		0	7	4	5	1	1	2	0	0	0	0	0	0	0	0	0	0	0	0
216	1989			5	9	13	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0
303	1990				13	7	6	2	1	1	0	0	1	0	0	0	0	0	0	0	0
390	1991					25	10	7	0	2	0	1	0	0	0	0	0	0	0	0	0
431	1992						22	12	6	2	3	2	0	2	0	0	0	0	0	0	0
621	1993							24	16	9	2	2	1	1	0	0	0	0	0	0	0
543	1994								25	15	4	0	4	1	0	1	0	0	0	1	0
527	1995									16	6	6	3	3	1	0	0	0	0	0	0
859	1996										30	19	7	3	2	0	0	0	0	0	0
335	1997											7	7	2	1	0	0	0	0	1	0
263	1998												4	3	0	2	0	0	0	0	0
117	1999													3	3	2	1	0	0	0	0
248	2000														3	4	4	1	0	0	0
467	2001															8	9	1	1	1	0
323	2002																5	1	1	1	2
322	2003																	6	1	1	2
366	2004																		4	2	1
333	2005																			4	0
275	2006																				1



Table 4 continued – Virginia – Rappahannock River

Number of releases	Release year	Harvested Recaptures																
		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
297	1990	10																
386	1991	19	6	1	3	5	1	0	0	1	0	1	0	0	1	0	0	0
40	1992	2	10	12	9	2	1	2	0	2	0	0	0	0	1	0	0	0
209	1993		2	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
123	1994			11	11	5	2	3	0	0	0	0	0	0	0	0	0	0
205	1995				4	4	4	1	0	0	0	0	0	0	0	0	0	0
67	1996					18	6	5	2	1	1	2	0	0	1	0	0	0
210	1997						1	3	1	0	0	1	0	0	0	0	0	0
156	1998						11	12	6	6	2	0	1	1	1	1	0	0
159	1999						16	9	16	9	1	3	1	0	0	0	0	0
362	2000							13	13	13	2	1	2	1	2	1	0	0
268	2001										13	11	6	5	3	3	0	0
122	2002											9	8	2	6	1	0	0
392	2003												7	3	5	1	0	0
680	2004													23	13	3	1	0
281	2005														21	8	8	0
175	2006															12	7	10

  

Number of releases	Release year	Released with Tag Removed																
		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
297	1990	15																
386	1991	20	6	7	0	0	1	0	0	1	0	0	0	0	0	0	0	0
40	1992		10	10	4	2	1	0	0	0	0	0	0	0	0	0	0	0
209	1993		2		1	1	0	0	0	0	0	0	0	0	0	0	0	0
123	1994				10	7	1	0	0	0	0	0	0	0	0	0	0	0
205	1995					5	1	0	0	1	0	0	0	0	0	0	0	0
67	1996						5	2	2	1	0	0	0	0	0	0	0	0
210	1997						1	0	0	0	0	0	0	0	0	0	0	0
156	1998						2	1	1	1	0	0	0	0	0	0	0	0
159	1999							6	3	2	3	0	1	0	0	0	0	0
362	2000								2	1	0	0	1	0	0	0	0	0
268	2001									2	1	0	1	0	0	0	0	0
122	2002										9	6	4	2	0	0	0	0
392	2003											7	4	2	0	0	0	0
680	2004												2	2	0	0	0	0
281	2005													8	6	2	0	0
175	2006														11	2	5	4

Table 5. Program MARK input matrices for the Chesapeake Bay specific tagging programs, for male fish 18 - 28".

Virginia

Number of releases	Release year	Recaptures																
		1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
189	1990	20	7	2	1	0	1	0	0	0	0	0	0	0	0	0	0	0
107	1991	18	18	6	2	1	1	0	0	0	0	0	0	0	0	0	0	0
31	1992		4	4	0	2	1	0	0	0	0	0	0	0	0	0	0	0
166	1993			12	8	3	1	1	1	0	0	0	0	0	0	0	0	0
38	1994				1	3	0	0	0	0	0	0	0	0	0	0	0	0
361	1995					37	10	10	2	0	0	0	0	0	0	0	0	0
258	1996						20	12	4	3	0	0	0	0	0	0	0	0
458	1997							27	9	4	0	0	0	0	0	0	0	0
601	1998								26	12	0	0	0	1	1	0	0	0
666	1999									48	15	6	2	1	1	0	0	0
1352	2000										113	30	7	7	1	1	1	0
496	2001											50	8	9	0	0	0	1
189	2002												12	2	7	0	1	1
443	2003													24	11	2	2	2
757	2004														38	6	0	0
597	2005															26	15	15
461	2006																	33



Table 6. Instantaneous Rates – Catch and Release Model input matrices for the Chesapeake Bay specific tagging programs, for male fish 18-28". The first matrix contains all harvested recaptures and the second matrix contains released fish with their tag removed.

Virginia

Number of releases	Release year	Harvested Recaptures																		
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
615	1988	4																		
217	1989		0	9	5	5	5	1	1	0	0	0	0	0	0	0	0	0	0	0
186	1990		0	3	0	3	0	0	2	0	0	0	0	0	0	0	0	0	0	0
106	1991			1	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
31	1992				3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
165	1993					3	0	0	1	0	0	0	0	0	0	0	0	0	0	0
37	1994						2	3	3	1	0	0	0	0	0	0	0	0	0	0
344	1995							0	0	3	0	0	0	0	0	0	0	0	0	0
256	1996								6	5	4	2	0	0	0	0	0	0	0	0
452	1997									2	6	2	2	1	0	1	0	0	1	0
596	1998										12	5	3	0	0	0	0	0	0	0
660	1999											11	7	0	0	0	0	0	0	0
1326	2000												16	4	3	0	0	0	0	0
484	2001													29	12	5	2	0	1	1
184	2002														23	6	1	1	0	0
438	2003															3	1	1	0	1
756	2004																9	7	2	2
595	2005																	22	6	0
456	2006																		14	10
																				15

Number of releases	Release year	Released with tag removed																		
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
615	1988	3																		
217	1989		4	7	17	6	4	2	1	0	0	0	0	0	0	0	0	0	0	0
186	1990			4	6	2	3	3	0	1	0	0	0	0	0	0	0	0	0	0
106	1991				8	3	1	1	0	0	0	0	0	0	0	0	0	0	0	0
31	1992					10	0	1	1	0	0	0	0	0	0	0	0	0	0	0
165	1993						1	0	1	0	0	0	0	0	0	0	0	0	0	0
37	1994								5	4	0	0	0	0	0	0	0	0	0	0
344	1995									0	0	0	0	0	0	0	0	0	0	0
256	1996										7	1	4	0	0	0	0	0	0	0
452	1997											6	4	2	0	0	0	0	0	0
596	1998												6	3	1	0	0	0	0	0
660	1999													13	2	0	0	0	0	0
1326	2000														15	5	1	1	0	0
484	2001															28	12	2	1	0
184	2002																10	2	1	0
438	2003																	4	1	2
756	2004																		3	2
595	2005																			10
456	2006																			8
																				4
																				13

Table 6 continued (Virginia)

Number of releases	Release year	Harvested Recaptures																		
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
615	1988	4																		
217	1989		0																	
186	1990			3		0	3	0	2	0	0	0	0	0	0	0	0	0	0	0
106	1991			1		2	0	0	0	1	0	0	0	0	0	0	0	0	0	0
31	1992				3		5	0	0	0	0	0	0	0	0	0	0	0	0	0
165	1993					3		0	0	1	0	0	0	0	0	0	0	0	0	0
37	1994						2	3	3	1	1	0	0	0	0	0	0	0	0	0
344	1995							0	6	5	4	2	0	0	0	0	0	0	0	0
256	1996									2	6	2	2	1	0	1	0	0	0	0
452	1997										12	5	3	0	0	0	0	0	0	0
596	1998											11	7	0	0	0	0	0	0	0
660	1999												16	4	3	0	1	0	0	0
1326	2000													29	12	5	2	0	1	1
484	2001														23	6	1	1	0	0
184	2002															3	1	1	0	1
438	2003																9	7	2	2
756	2004																	22	6	0
595	2005																		14	10
456	2006																			15

  

Number of releases	Release year	Released with tag removed																		
		1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
615	1988	3																		
217	1989		4																	
186	1990			6		2	3	3	0	1	0	0	0	0	0	0	0	0	0	0
106	1991				8		1	1	0	0	0	0	0	0	0	0	0	0	0	0
31	1992						10	0	1	1	0	0	0	0	0	0	0	0	0	0
165	1993							1	0	1	0	0	0	0	0	0	0	0	0	0
37	1994								5	4	0	0	1	0	0	0	0	0	0	0
344	1995									0	0	0	0	0	0	0	0	0	0	0
256	1996										7	1	4	0	0	0	0	0	0	0
452	1997											6	4	2	0	0	0	0	0	0
596	1998												6	3	1	0	0	0	0	0
660	1999													13	2	0	0	1	0	0
1326	2000														15	5	1	1	0	0
484	2001															28	12	2	1	0
184	2002																10	2	1	0
438	2003																	4	1	2
756	2004																		3	2
595	2005																			10
456	2006																			8
																				4
																				13

Table 6 continued.

Maryland

Number of releases	Release year	Harvested Recaptures																		
		1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1293	1987	1	6	0	18	19	21	17	6	7	4	2	2	0	0	0	0	0	0	0
1802	1988	4	2	23	26	37	23	10	12	6	6	6	0	0	0	0	0	0	0	0
1830	1989		1	39	51	57	30	19	9	6	3	0	0	1	0	0	0	0	0	0
831	1990			21	27	26	11	10	3	3	6	2	2	0	0	0	0	0	0	0
974	1991			31	38	29	9	10	4	5	3	0	1	0	0	0	0	0	0	0
1107	1992				59	41	26	8	4	2	0	2	0	2	0	0	0	0	0	0
1458	1993				63	51	17	15	10	2	0	0	0	0	0	0	0	0	0	0
1204	1994					54	60	19	16	15	8	3	1	0	0	0	0	0	0	0
769	1995						55	26	13	5	5	2	1	0	1	0	0	0	0	0
720	1996							44	25	22	4	4	1	0	0	0	0	0	0	0
488	1997								33	20	7	5	0	0	0	0	0	0	0	0
668	1998									52	15	6	4	2	1	1	0	0	0	0
406	1999										22	16	4	1	0	0	0	0	0	0
676	2000																			
617	2001																			
806	2002																			
454	2003																			
311	2004																			
537	2005																			
282	2006																			

Number of releases	Release year	Released with Tag Removed																		
		1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
1293	1987	28	2	11	15	14	17	6	1	0	0	0	0	0	0	0	0	0	0	0
1802	1988	13	32	31	21	15	10	5	3	1	1	0	0	0	0	0	0	0	0	0
1830	1989		40	37	19	17	7	6	4	2	1	0	0	0	0	0	0	0	0	0
831	1990			21	14	14	5	1	1	1	0	0	0	0	0	0	0	0	0	0
974	1991				24	25	9	9	4	0	0	0	0	0	0	0	0	0	0	0
1107	1992				48	17	10	12	4	3	0	0	0	0	0	0	0	0	0	0
1458	1993					32	34	16	10	5	3	0	0	0	0	0	0	0	0	0
1204	1994						47	25	12	4	2	2	0	1	0	0	0	0	0	0
769	1995							33	18	3	3	1	0	2	0	0	0	0	0	0
720	1996								37	12	4	0	0	0	0	0	0	0	0	0
488	1997									20	6	1	0	0	0	0	0	0	0	0
668	1998										29	8	6	0	0	0	0	0	0	0
406	1999											10	8	2	2	2	0	0	0	0
676	2000																			
617	2001																			
806	2002																			
454	2003																			
311	2004																			
537	2005																			
282	2006																			