

## Appendix A. Georges Bank Atlantic cod

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Appendix A. Table A1a. USA Western GB commercial landings at age (thousands of fish; metric tons) and mean weight (kg) and mean length (cm) at age of Atlantic cod, 1978-2007.

Year	Age																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
<u>USA Western Georges Bank Commercial Landings in Numbers (000's) at Age</u>																	
1978	0	2420	44757	12479	4832	119	1085	0	167	0	0	0	0	0	0	0	65858
1979	446	11762	3927	29906	6053	2600	795	2389	0	199	76	0	0	0	0	0	58153
1980	991	27575	40830	2202	15313	6194	3112	463	1016	0	0	0	0	0	0	0	97696
1981	280	22100	26729	12750	725	6858	2012	349	1004	208	69	0	0	0	0	0	73083
1982	4189	60994	22453	13481	8064	861	2730	425	301	168	175	41	6	11	0	0	113899
1983	811	30197	44466	9118	5905	4651	548	964	220	115	71	82	65	13	0	0	97227
1984	610	11025	25222	18232	2683	1921	1814	177	865	127	92	126	56	7	0	0	62957
1985	1218	33734	11473	7479	8751	1904	1216	899	71	371	62	24	20	8	0	0	67231
1986	1300	9266	22568	2697	1852	1713	256	243	274	25	75	26	15	5	0	0	40315
1987	187	37643	5653	9809	1365	1111	940	182	122	112	4	11	4	0	0	0	57144
1988	0	16050	39917	3542	6069	803	422	367	82	86	51	0	0	0	0	0	67388
1989	0	14326	21689	22508	1635	1812	282	147	58	0	0	0	0	0	0	0	62457
1990	0	43914	23420	9495	8676	697	627	105	60	29	0	13	0	0	0	0	87035
1991	376	9564	24991	12324	5115	2981	273	222	71	13	6	7	0	0	0	0	55943
1992	0	16627	8835	5993	6030	1481	793	120	88	5	7	0	8	0	0	0	39986
1993	0	5878	24097	3255	1822	1725	482	482	99	4	0	0	0	0	0	0	37844
1994	0	2022	9831	11956	1598	522	855	238	107	0	29	0	0	0	0	0	27158
1995	0	3231	9293	5353	2604	212	166	174	38	6	6	0	0	0	0	0	21083
1996	0	1986	6884	8310	1675	1148	53	81	88	0	0	0	0	0	0	0	20225
1997	0	3849	5120	6328	4922	601	511	79	55	17	5	0	0	0	0	0	21488
1998	81	6770	9287	3094	2122	1449	186	41	8	0	0	0	0	0	0	0	23037
1999	0	2369	15126	4815	1600	581	842	85	9	0	0	0	0	0	0	0	25427
2000	88	7013	5831	7303	1530	449	221	251	16	0	0	0	0	0	0	0	22702
2001	5	4961	20580	5200	2809	702	214	74	73	4	1	0	0	0	0	0	34623
2002	0	290	9032	9958	2432	2059	517	90	51	26	8	1	0	0	0	0	24464
2003	0	723	2186	5058	4635	671	480	82	24	12	1	0	0	0	0	0	13872
2004	0	284	2383	834	1469	1003	178	156	42	13	5	4	2	0	0	0	6374
2005	0	223	943	3425	866	714	442	66	36	11	9	1	0	0	0	0	6735
2006	0	117	4343	1232	1679	216	121	112	13	11	3	1	0	1	0	0	7850
2007	0	1289	1652	7207	410	484	50	33	22	2	4	0	0	0	0	0	11152

Appendix A. Table A1a.continued. USA Western GB commercial landings at age (thousands of fish; metric tons) and mean weight (kg) and mean length (cm) at age of Atlantic cod, 1978-2007.

Year	Age																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
<u>USA Western Georges Bank Commercial Landings in Weight (Tons) at Age</u>																	
1978	0	313	11740	4838	1968	71	817	0	210	0	0	0	0	0	0	0	19954
1979	38	1686	926	13959	3141	1928	781	2508	0	287	83	0	0	0	0	0	25348
1980	82	4174	10210	895	8980	4309	2676	431	897	0	0	0	0	0	0	0	32610
1981	31	3448	6843	4830	434	5130	1795	374	1513	403	155	0	0	0	0	0	24937
1982	277	8798	6338	5152	4514	563	2811	451	421	245	253	62	15	25	0	0	29878
1983	87	4420	10967	3343	3023	3102	504	1068	256	165	128	139	139	27	0	0	27362
1984	61	1762	6358	7000	1486	1410	1655	199	953	149	139	200	100	15	0	0	21486
1985	114	4802	2593	3154	4745	1274	1002	967	99	485	105	38	41	20	0	0	19454
1986	123	1387	5382	1072	1172	1339	253	262	374	34	108	42	35	12	0	0	11579
1987	16	5334	1465	4070	806	913	806	192	152	171	9	24	9	0	0	0	13961
1988	0	2432	9522	1358	3353	615	394	381	110	127	100	0	0	0	0	0	18388
1989	0	2403	4958	8808	889	1323	273	136	75	0	0	0	0	0	0	0	18873
1990	0	6731	5755	3545	4416	448	551	130	72	39	0	20	0	0	0	0	21696
1991	44	1471	6203	4777	2849	1960	215	209	95	24	13	17	0	0	0	0	17867
1992	0	2489	2122	2465	2861	1001	626	120	102	8	14	0	18	0	0	0	11819
1993	0	909	5347	1242	1068	1055	392	454	92	12	0	0	0	0	0	0	10563
1994	0	273	2070	4155	811	387	598	221	110	0	55	0	0	0	0	0	8668
1995	0	487	1862	2035	1395	190	152	217	49	9	15	0	0	0	0	0	6406
1996	0	303	1687	2690	810	773	63	84	99	0	0	0	0	0	0	0	6508
1997	0	609	1212	2269	1939	355	392	64	62	20	7	0	0	0	0	0	6926
1998	4	998	2105	1117	1052	829	154	32	13	0	0	0	0	0	0	0	6300
1999	0	369	3260	1624	780	360	593	86	13	0	0	0	0	0	0	0	7083
2000	10	1198	1450	2663	778	281	183	218	14	0	0	0	0	0	0	0	6788
2001	0	766	4769	1577	1368	414	153	67	72	5	3	0	0	0	0	0	9191
2002	0	55	1980	3028	969	1112	343	72	55	33	10	1	0	0	0	0	7652
2003	0	149	535	1553	1945	357	311	62	23	14	2	0	0	0	0	0	4951
2004	0	58	677	310	631	520	112	124	38	15	8	5	3	0	0	0	2500
2005	0	40	243	1182	366	365	265	56	36	12	13	1	0	0	0	0	2580
2006	0	24	1097	448	691	113	76	82	12	12	3	1	1	1	0	0	2559
2007	0	262	418	2330	166	219	26	23	15	2	3	0	0	0	0	0	3462

Appendix A. Table A1a.continued. USA Western GB commercial landings at age (thousands of fish; metric tons) and mean weight (kg) and mean length (cm) at age of Atlantic cod, 1978-2007.

Year	Age																Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
<u>USA Western Georges Bank Commercial Landings Mean Weight (kg) at Age</u>																	
1978	0	1.296	2.623	3.877	4.071	5.998	7.533	0	12.614	0	0	0	0	0	0	0	3.03
1979	0.861	1.434	2.357	4.668	5.19	7.416	9.823	10.498	0	14.414	10.939	0	0	0	0	0	4.359
1980	0.824	1.514	2.501	4.068	5.864	6.956	8.601	9.295	8.827	0	0	0	0	0	0	0	3.338
1981	1.091	1.56	2.56	3.788	5.988	7.481	8.925	10.718	15.072	19.393	22.4	0	0	0	0	0	3.412
1982	0.661	1.442	2.823	3.821	5.598	6.535	10.299	10.607	14.013	14.641	14.449	15.268	24.028	22.4	0	0	2.623
1983	1.069	1.464	2.466	3.666	5.119	6.669	9.207	11.076	11.668	14.33	17.884	17.004	21.173	20.494	0	0	2.814
1984	1.003	1.598	2.521	3.839	5.54	7.339	9.122	11.287	11.019	11.737	15.143	15.831	17.803	22.4	0	0	3.413
1985	0.935	1.423	2.26	4.216	5.423	6.689	8.244	10.755	13.879	13.065	17.14	15.654	20.181	23.879	0	0	2.894
1986	0.946	1.497	2.385	3.974	6.325	7.816	9.893	10.785	13.615	13.844	14.34	15.939	24.183	23.344	0	0	2.872
1987	0.857	1.417	2.591	4.15	5.91	8.217	8.58	10.528	12.424	15.203	22.4	21.887	20.847	0	0	0	2.443
1988	0	1.515	2.385	3.835	5.524	7.661	9.332	10.398	13.492	14.734	19.77	0	0	0	0	0	2.729
1989	0	1.677	2.286	3.913	5.438	7.3	9.669	9.271	12.956	0	0	0	0	0	0	0	3.022
1990	0	1.533	2.457	3.733	5.09	6.431	8.785	12.371	12.173	13.391	0	15.36	0	0	0	0	2.493
1991	1.158	1.538	2.482	3.876	5.569	6.573	7.868	9.418	13.346	18.597	22.4	24.028	0	0	0	0	3.194
1992	0	1.497	2.402	4.113	4.745	6.758	7.9	9.999	11.612	15.398	19.272	0	22.191	0	0	0	2.956
1993	0	1.546	2.219	3.816	5.861	6.117	8.127	9.417	9.302	31.885	0	0	0	0	0	0	2.791
1994	0	1.351	2.105	3.475	5.071	7.425	7.001	9.28	10.207	0	18.723	0	0	0	0	0	3.192
1995	0	1.507	2.004	3.802	5.358	8.96	9.132	12.483	12.777	14.233	24.154	0	0	0	0	0	3.039
1996	0	1.524	2.45	3.237	4.836	6.735	11.876	10.313	11.241	0	0	0	0	0	0	0	3.218
1997	0	1.583	2.366	3.586	3.939	5.901	7.667	8.026	11.301	11.277	15.43	0	0	0	0	0	3.223
1998	0.536	1.475	2.266	3.611	4.96	5.721	8.285	7.8	15.398	0	0	0	0	0	0	0	2.735
1999	0	1.558	2.155	3.373	4.874	6.188	7.04	10.056	14.816	0	0	0	0	0	0	0	2.786
2000	1.177	1.708	2.486	3.646	5.088	6.265	8.27	8.684	8.457	0	0	0	0	0	0	0	2.99
2001	0.727	1.544	2.317	3.032	4.869	5.891	7.187	9.126	9.854	12.176	17.917	0	0	0	0	0	2.655
2002	0	1.883	2.192	3.04	3.982	5.403	6.632	7.948	10.68	12.768	12.144	13.129	0	0	0	0	3.128
2003	0	2.057	2.449	3.07	4.197	5.325	6.485	7.527	9.576	11.72	15.108	0	0	0	0	0	3.569
2004	0	2.034	2.842	3.713	4.292	5.187	6.298	7.952	9.23	11.451	14.713	11.8	16.086	0	0	0	3.922
2005	0	1.811	2.58	3.453	4.224	5.107	5.993	8.586	9.902	11.798	13.905	19.274	0	0	0	0	3.832
2006	0	2.08	2.527	3.638	4.119	5.21	6.319	7.303	8.931	10.118	8.935	10.505	16.568	18.822	0	0	3.259
2007	0	2.035	2.532	3.233	4.046	4.521	5.312	7.001	6.802	11.497	7.057	0	0	0	0	0	3.104

Appendix A. Table A1a.continued. USA Western GB commercial landings at age (thousands of fish; metric tons) and mean weight (kg) and mean length (cm) at age of Atlantic cod, 1978-2007.

Age																	
Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Average
<u>USA Western Georges Bank Commercial Landings Mean Length (cm) at Age</u>																	
1978	0.0	50.2	62.7	71.0	71.2	79.8	89.4	0.0	106.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.0
1979	44.2	52.0	60.4	75.7	78.6	88.7	98.2	100.3	0.0	110.9	102.0	0.0	0.0	0.0	0.0	0.0	72.0
1980	43.3	52.8	61.7	72.9	82.2	87.3	93.2	94.0	94.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.6
1981	47.6	53.1	62.4	70.9	83.1	89.3	95.1	100.6	113.2	123.0	129.0	0.0	0.0	0.0	0.0	0.0	65.8
1982	39.7	52.0	64.2	70.5	80.6	84.6	99.3	100.0	110.0	111.7	110.5	111.7	132.0	129.0	0.0	0.0	60.1
1983	47.5	52.4	61.5	69.5	78.3	85.6	95.7	101.6	102.8	110.8	119.2	117.4	126.1	124.5	0.0	0.0	62.4
1984	46.5	53.6	62.0	71.3	80.3	88.9	95.2	102.4	101.6	103.4	112.0	114.7	118.4	129.0	0.0	0.0	66.6
1985	45.5	51.8	59.5	73.8	80.1	85.9	92.0	100.8	109.6	107.3	117.9	114.2	124.5	131.6	0.0	0.0	62.0
1986	45.6	52.5	61.0	72.1	84.6	90.8	98.3	101.1	108.8	109.8	110.8	115.2	132.0	130.2	0.0	0.0	62.6
1987	44.2	51.8	62.6	73.3	82.6	92.5	93.2	99.9	105.8	113.2	129.0	127.8	126.0	0.0	0.0	0.0	59.1
1988	0.0	53.1	61.0	70.9	80.2	90.1	95.8	99.5	108.4	112.0	123.8	0.0	0.0	0.0	0.0	0.0	62.3
1989	0.0	54.8	60.3	71.7	80.0	88.2	97.5	96.3	107.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	64.8
1990	0.0	53.3	61.5	70.3	78.0	84.2	93.6	105.7	105.1	108.7	0.0	114.0	0.0	0.0	0.0	0.0	60.5
1991	48.8	53.2	61.8	71.1	80.5	84.9	89.7	93.2	108.6	121.4	129.0	132.0	0.0	0.0	0.0	0.0	65.6
1992	0.0	52.7	61.4	73.4	76.9	85.6	92.2	98.2	104.9	117.0	120.0	0.0	132.0	0.0	0.0	0.0	63.7
1993	0.0	53.1	59.9	71.7	82.7	83.5	93.5	98.0	97.8	141.0	0.0	0.0	0.0	0.0	0.0	0.0	63.1
1994	0.0	51.3	58.8	69.4	79.4	89.9	89.1	98.1	101.1	0.0	122.8	0.0	0.0	0.0	0.0	0.0	66.2
1995	0.0	52.8	57.9	71.1	81.3	95.1	97.1	106.9	108.6	114.0	129.0	0.0	0.0	0.0	0.0	0.0	64.6
1996	0.0	53.2	61.7	67.7	77.2	88.0	102.6	101.5	103.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.6
1997	0.0	53.6	61.2	70.0	72.1	84.2	92.0	93.1	104.8	105.3	117.0	0.0	0.0	0.0	0.0	0.0	66.6
1998	38.1	52.4	60.4	71.1	79.4	83.5	94.8	93.1	117.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63.0
1999	0.0	53.5	59.6	69.4	79.1	85.4	89.6	100.5	115.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	63.9
2000	48.9	54.9	62.4	71.1	79.3	85.6	94.1	96.4	96.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	65.1
2001	42.0	53.2	60.8	66.5	78.3	83.7	90.0	96.7	100.2	107.5	123.0	0.0	0.0	0.0	0.0	0.0	62.8
2002	0.0	56.9	59.6	66.8	72.8	80.8	86.8	91.7	101.8	109.2	107.0	111.0	0.0	0.0	0.0	0.0	66.4
2003	0.0	58.3	61.8	66.8	74.4	80.4	86.6	90.8	97.9	106.0	111.0	0.0	0.0	0.0	0.0	0.0	69.7
2004	0.0	58.2	64.7	71.1	75.2	80.3	85.8	93.1	97.5	105.5	114.5	106.1	118.3	0.0	0.0	0.0	71.8
2005	0.0	56.1	63.1	69.7	75.3	80.1	84.3	95.8	99.9	104.9	112.9	126.0	0.0	0.0	0.0	0.0	71.6
2006	0.0	58.7	62.3	70.9	74.2	80.2	85.8	90.2	94.2	100.6	96.8	99.3	119.0	125.0	0.0	0.0	67.5
2007	0.0	58.2	62.8	68.1	73.1	75.8	80.0	87.6	86.6	104.8	85.3	0.0	0.0	0.0	0.0	0.0	66.8

Appendix A. Table A1b. USA Eastern GB commercial landings at age (thousands of fish; metric tons) and mean weight (kg) and mean length (cm) at age of Atlantic cod, 1978-2007.

Year	Age																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
<u>USA Eastern Georges Bank Commercial Landings in Numbers (000's) at Age</u>																	
1978	0.34	367	12834	4446	1752	862	685	102	121	24	7	2	0	0.47	2		21204
1979	21	3231	2011	7127	2723	1238	581	480	87	18	9	5	0	4	0		17536
1980	0	2596	5626	1002	4639	2179	656	117	201	34	7	0	0	0	0		17056
1981	96	5731	9602	6916	942	1937	869	533	308	114	20	10	0	0	0		27077
1982	0	13029	5110	3644	3953	415	1642	503	191	63	48	31	25	5	0		28659
1983	50	3650	10674	4323	2709	1786	279	549	325	136	161	100	14	35	6		24797
1984	75	2041	6661	9655	2877	2188	1830	205	542	231	100	41	21	9	0	4	26481
1985	10	6670	4425	2544	4294	1143	638	596	80	176	24	29	8	5	0		20640
1986	23	2021	9006	1918	1852	2147	301	256	165	15	61	12	0	0	0		17777
1987	0	10379	2367	3787	641	496	577	154	81	41	6	4	0	0	0		18533
1988	0	574	14450	3337	4418	672	447	525	91	60	29	5	1	0	1		24609
1989	0	2151	4624	10375	906	1709	209	133	169	24	8	1	0	0	0		20310
1990	0	2573	9722	3301	5338	564	591	51	28	37	0	3	0	0	0		22208
1991	53	2080	3437	6090	3186	2638	377	199	54	20	3	8	0	0	3		18148
1992	13	6451	4502	1618	3361	1084	977	66	65	5	9	0	0	0	0		18150
1993	3	1812	7087	2825	1055	1107	349	232	58	20	4	0	0	0	0		14553
1994	0	224	1184	1411	396	61	100	46	32	3	3	0	1	0	0		3461
1995	0	140	663	288	461	60	20	14	15	1	1	0	0	0	0		1664
1996	0	99	567	1056	219	211	24	10	12	2	0	0	0	0	0		2201
1997	0	100	220	348	687	141	82	26	5	3	3	0	0	0	0		1615
1998	0	100	424	364	441	433	55	34	10	2	0	0	0	0	0		1864
1999	0	175	1428	1222	497	275	278	60	11	2	0	0	0	0	0		3948
2000	0	165	410	1307	516	129	78	40	6	0	0	0	0	0	0	0	2652
2001	0	80	2270	915	1730	398	123	76	34	4	1	1	0	0	0	0	5633
2002	0	29	793	2740	615	735	146	37	32	11	3	2	0	0	0		5143
2003	0	14	574	1379	2368	485	456	90	18	5	1	0	0	0	0		5390
2004	0	18	339	700	815	579	166	101	23	3	2	0	0	0	0		2746
2005	0	0	13	152	130	52	104	14	8	3	0	0	0	0	0		475
2006	0	0	58	59	170	78	24	15	4	0	0	1	0	0	0		409
2007	0	3	29	509	28	133	5	6	3	1	0	0	0	0	0		718

Appendix A. Table A1b continued. USA Eastern GB commercial landings at age (thousands of fish; metric tons) and mean weight (kg) and mean length (cm) at age of Atlantic cod, 1978-2007.

Year	Age																Total
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
<u>USA Eastern Georges Bank Commercial Landings in Weight (Tons) at Age</u>																	
1978	0	48	2484	1250	718	452	360	72	82	22	11	3	0	1	3		5502
1979	2	454	301	2342	1282	877	554	450	86	26	11	9	0	7	0		6408
1980	0	324	1168	311	2399	1375	490	122	188	43	10	0	0	0	0		6418
1981	10	731	1833	2032	392	1243	699	497	398	165	38	20	0	0	0		8092
1982	0	1591	1095	1251	1948	283	1396	488	231	91	73	61	47	11	0		8565
1983	5	586	2502	1344	1194	1086	202	563	375	182	260	163	31	70	17		8572
1984	9	332	1509	3159	1324	1338	1537	186	618	282	128	68	39	20	0	7	10550
1985	1	888	783	782	1968	678	516	591	89	223	38	44	16	8	0		6641
1986	2	231	1859	516	841	1425	249	242	213	23	72	21	0	0	0		5696
1987	0	1415	520	1405	324	358	484	141	85	43	8	7	0	0	0		4793
1988	0	75	3105	931	2148	396	332	461	89	71	33	10	2	0	2		7645
1989	0	345	898	3120	398	950	133	125	166	25	10	2	0	0	0		6182
1990	0	359	1886	945	2310	334	462	45	29	41	1	3	0	0	0		6414
1991	7	329	790	1841	1399	1454	283	174	43	20	4	8	0	0	3		6353
1992	1	936	973	498	1343	571	625	53	63	7	12	0	0	0	0		5080
1993	0	263	1441	778	458	571	246	175	58	22	10	0	0	0	0		4019
1994	0	31	223	411	149	37	68	39	30	3	5	0	3	0	0		997
1995	0	18	121	94	215	39	21	14	16	1	1	0	0	0	0		540
1996	0	14	115	300	91	118	15	9	13	2	0	0	0	0	0		674
1997	0	13	36	87	259	70	51	19	6	3	3	0	0	0	0		549
1998	0	14	80	113	178	222	36	25	10	2	0	0	0	0	0		678
1999	0	23	249	362	203	141	162	40	8	2	0	0	0	0	0		1193
2000	0	22	78	354	194	57	41	23	4	0	0	0	0	0	0	0	771
2001	0	10	391	220	527	181	65	50	28	3	1	1	0	0	0	0	1479
2002	0	4	148	749	235	346	89	31	24	11	5	2	0	0	0		1641
2003	0	2	121	373	811	207	243	60	13	4	1	0	0	0	0		1838
2004	0	3	67	198	291	271	83	73	18	2	2	0	0	0	0		1007
2005	0	0	2	43	44	21	48	9	5	2	0	0	0	0	0		174
2006	0	0	13	16	57	26	12	7	2	0	0	0	0	0	0		134
2007	0	1	5	141	9	50	3	4	2	1	0	0	0	0	0		216

Appendix A. Table A1b continued. USA Eastern GB commercial landings at age (thousands of fish; metric tons) and mean weight (kg) and mean length (cm) at age of Atlantic cod, 1978-2007.

Year	Age																Average
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
<u>USA Eastern Georges Bank Commercial Landings Mean Weight (kg) at Age</u>																	
1978	0.582	1.307	1.935	2.812	4.099	5.239	5.255	7.086	6.723	9.172	15.742	15.59	0	11.95	16.63		2.595
1979	1.025	1.406	1.496	3.286	4.71	7.083	9.537	9.377	9.874	13.923	11.951	16.28	0	20.11	0		3.654
1980	0	1.25	2.076	3.102	5.171	6.314	7.466	10.394	9.379	12.696	14.159	0	0	0	0		3.763
1981	1.013	1.276	1.909	2.938	4.166	6.418	8.052	9.333	12.944	14.483	19.369	20.85	0	0	0		2.988
1982	0	1.221	2.143	3.432	4.928	6.808	8.504	9.686	12.057	14.48	15.121	19.32	18.76	24.36	0		2.989
1983	1.015	1.605	2.344	3.109	4.406	6.08	7.243	10.243	11.531	13.35	16.085	16.25	22.4	20.22	27.52		3.457
1984	1.217	1.628	2.265	3.272	4.604	6.118	8.399	9.074	11.406	12.172	12.865	16.45	18.57	22.23	0	20.85	3.984
1985	0.9	1.331	1.771	3.075	4.585	5.935	8.087	9.923	11.199	12.656	15.774	15.3	20.85	17.96	0		3.218
1986	0.877	1.146	2.064	2.689	4.542	6.636	8.277	9.448	12.903	15.224	11.914	17.28	0	0	0		3.204
1987	0	1.364	2.196	3.71	5.047	7.221	8.389	9.131	10.535	10.628	12.888	17.3	0	0	0		2.586
1988	0	1.315	2.149	2.791	4.861	5.888	7.422	8.79	9.783	11.822	11.209	18.78	20.11	0	14.16		3.107
1989	0	1.606	1.943	3.007	4.396	5.556	6.358	9.434	9.845	10.329	11.891	13.75	0	0	0		3.044
1990	0	1.396	1.94	2.863	4.327	5.914	7.821	8.956	10.205	11.078	13.024	11.24	0	0	0		2.888
1991	1.29	1.583	2.298	3.024	4.39	5.509	7.521	8.702	7.928	10.382	12.344	9.503	0	0	11.23		3.5
1992	1.016	1.451	2.162	3.077	3.995	5.265	6.396	8.094	9.742	13.175	13.74	0	0	0	0		2.799
1993	0.866	1.45	2.034	2.755	4.338	5.156	7.042	7.558	10.156	10.633	22.191	0	0	0	0		2.762
1994	0	1.382	1.88	2.909	3.754	6.037	6.832	8.623	9.188	13.136	14.95	0	22.19	0	0		2.881
1995	0	1.306	1.831	3.242	4.657	6.409	10.4	10.069	10.57	16.626	20.698	0	0	0	0		3.248
1996	0.902	1.377	2.023	2.839	4.137	5.576	6.078	8.978	10.182	9.283	12.702	0	0	0	0		3.062
1997	0	1.34	1.656	2.488	3.776	4.983	6.261	7.34	10.579	9.804	12.635	16.63	0	0	0		3.398
1998	0	1.35	1.894	3.105	4.026	5.113	6.529	7.33	9.97	10.299	11.095	10.16	0	0	0		3.637
1999	0	1.323	1.743	2.966	4.079	5.139	5.826	6.778	7.499	10.671	0	0	0	0	0		3.023
2000	0	1.329	1.894	2.708	3.768	4.42	5.273	5.681	6.378	0	7.682	0	0	0	0	0	2.908
2001	0	1.252	1.721	2.402	3.046	4.552	5.248	6.479	8.218	9.063	7.824	9.283	0	0	0		2.625
2002	0	1.349	1.863	2.732	3.816	4.711	6.079	8.387	7.426	10.332	13.567	11.94	0	0	0		3.19
2003	0	1.591	2.108	2.704	3.427	4.263	5.34	6.671	7.55	8.41	11.08	0	0	0	0		3.41
2004	0	1.801	1.986	2.821	3.576	4.671	5.003	7.195	7.641	7.686	9.057	11.1	0	0	0		3.665
2005	0	1.327	1.781	2.807	3.412	4.024	4.648	6.229	5.981	6.681	0	0	8.457	0	0		3.661
2006	0	0	2.298	2.667	3.35	3.31	5.172	5.069	5.029	6.277	9.283	5.911	0	0	0		3.275
2007	0	1.48	1.744	2.765	3.259	3.773	6.481	6.189	6.067	7.865	8.457	0	0	0	0		3.011

Appendix A. Table A1b continued. USA Eastern GB commercial landings at age (thousands of fish; metric tons) and mean weight (kg) and mean length (cm) at age of Atlantic cod, 1978-2007.

Age																	
Year	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	Average
<u>USA Eastern Georges Bank Commercial Landings Mean Length (cm) at Age</u>																	
1978	39.0	50.4	57.4	64.1	72.7	78.6	78.8	87.7	85.6	94.0	114.8	114.3	0.0	105.0	117.0		61.8
1979	46.9	51.7	52.6	67.9	76.3	87.2	97.2	96.5	98.5	110.3	105.0	116.1	0.0	124.5	0.0		67.8
1980	0.0	49.8	58.4	66.5	78.9	84.5	89.0	99.5	96.3	107.0	111.0	0.0	0.0	0.0	0.0		68.5
1981	46.7	49.6	56.5	65.5	73.6	85.1	91.6	96.2	106.8	110.8	123.0	126.0	0.0	0.0	0.0		62.7
1982	0.0	49.5	58.8	68.8	77.7	86.8	93.3	97.2	104.6	111.4	113.0	122.5	120.9	132.0	0.0		62.1
1983	46.7	54.0	60.8	66.7	74.6	83.2	88.1	98.7	103.1	108.3	115.6	115.4	129.0	124.6	138.0		66.6
1984	49.6	54.2	60.3	67.8	75.9	83.5	92.8	95.4	102.7	104.9	105.8	115.5	120.7	127.9	0.0	126.0	70.3
1985	45.0	50.9	55.7	66.6	75.8	82.7	91.5	97.9	102.0	106.1	114.5	113.7	126.0	120.0	0.0		64.3
1986	44.5	48.3	58.3	62.4	74.6	85.8	92.2	96.3	106.9	113.3	104.2	118.0	0.0	0.0	0.0		64.4
1987	0.0	51.2	59.4	70.5	78.6	88.6	93.0	95.6	99.8	100.2	106.7	118.5	0.0	0.0	0.0		60.2
1988	0.0	50.7	59.2	63.8	77.2	82.2	89.2	94.3	97.8	103.8	101.0	121.3	124.5	0.0	111.0		65.1
1989	0.0	54.1	57.5	66.0	74.2	79.9	82.8	96.8	98.3	99.8	104.8	109.9	0.0	0.0	0.0		65.0
1990	0.0	51.6	57.2	64.8	73.9	81.8	90.0	95.1	99.4	102.3	108.0	102.9	0.0	0.0	0.0		63.4
1991	50.5	53.9	60.6	65.7	74.3	79.8	89.4	93.4	90.5	99.9	105.8	97.0	0.0	0.0	102.7		67.8
1992	46.8	52.7	60.0	67.2	73.1	80.6	85.8	92.9	99.9	111.0	112.5	0.0	0.0	0.0	0.0		63.4
1993	45.0	52.8	58.9	64.9	75.2	79.8	89.3	90.9	99.7	102.5	132.0	0.0	0.0	0.0	0.0		63.6
1994	0.0	51.5	57.5	65.7	71.1	83.6	87.9	94.6	96.4	110.4	115.1	0.0	132.0	0.0	0.0		64.3
1995	0.0	51.3	57.1	68.7	78.1	86.9	102.3	101.2	102.2	120.0	129.0	0.0	0.0	0.0	0.0		66.9
1996	45.0	51.9	58.7	65.8	74.5	83.0	84.3	96.7	100.9	99.0	105.0	0.0	0.0	0.0	0.0		66.4
1997	0.0	51.7	55.5	63.0	72.7	79.7	86.2	90.7	102.9	99.5	109.2	120.0	0.0	0.0	0.0		68.8
1998	0.0	52.1	57.8	67.9	74.2	80.6	87.1	90.7	100.4	102.3	105.0	102.0	0.0	0.0	0.0		70.4
1999	0.0	51.9	56.4	67.0	74.2	80.4	84.3	88.8	91.9	103.6	0.0	0.0	0.0	0.0	0.0		66.0
2000	0.0	52.0	57.9	64.9	72.5	76.5	81.5	83.5	87.4	0.0	93.0	0.0	0.0	0.0	0.0	0.0	65.9
2001	0.0	50.2	56.1	62.3	67.2	76.8	80.1	87.1	94.5	97.9	92.4	99.0	0.0	0.0	0.0		63.1
2002	0.0	52.1	57.6	65.0	72.5	77.8	84.7	94.6	90.9	101.4	111.9	107.1	0.0	0.0	0.0		67.6
2003	0.0	54.6	60.2	65.4	70.5	75.5	81.3	87.5	90.9	94.6	104.8	0.0	0.0	0.0	0.0		69.8
2004	0.0	57.4	59.1	66.2	71.4	78.0	79.8	90.3	91.8	92.6	97.7	105.0	0.0	0.0	0.0		71.3
2005	0.0	52.1	57.3	66.3	70.5	74.1	77.9	85.2	83.1	88.3	0.0	0.0	96.0	0.0	0.0		71.5
2006	0.0	0.0	62.1	65.1	69.9	69.6	81.1	79.6	79.8	87.0	99.0	85.3	0.0	0.0	0.0		69.2
2007	0.0	54.0	57.0	65.9	68.6	72.6	87.6	85.8	85.1	93.3	96.0	0.0	0.0	0.0	0.0		67.3



**Appendix A. Table A2. BASE MODEL VPA output and diagnostics for GB cod.**

VPA Version 2.7.1

Model ID: Georges Bank Cod - spr 2008 Assessment TY 2007

Input File:

C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10\_PLUS\_SVSWEPT\10P\_SVSWEPT\_CORR\_DFO2004\_AUG1

Date of Run: 01-AUG-2008

Time of Run: 11:40

Levenburg-Marquardt Algorithm Completed 7 Iterations  
Residual Sum of Squares = 383.740

Number of Residuals = 595  
Number of Parameters = 8  
Degrees of Freedom = 587  
Mean Squared Residual = 0.653730  
Standard Deviation = 0.808536

Number of Years = 30  
Number of Ages = 10  
First Year = 1978  
Youngest Age = 1  
Oldest True Age = 9

Number of Survey Indices Available = 30  
Number of Survey Indices Used in Estimate = 30

VPA Classic Method - Auto Estimated Q's

Stock Numbers Predicted in Terminal Year Plus One (2008)

Age	Stock Predicted	Std. Error	CV
1	5158.350	0.246246E+04	0.477374E+00
2	5777.533	0.195206E+04	0.337870E+00
3	4312.780	0.134212E+04	0.311197E+00
4	1201.636	0.348563E+03	0.290074E+00
5	4150.462	0.112909E+04	0.272039E+00
6	348.414	0.977986E+02	0.280697E+00
7	566.199	0.170298E+03	0.300775E+00
8	218.540	0.684464E+02	0.313198E+00

Catchability Values for Each Survey Used in Estimate

INDEX	Catchability	Std. Error	CV
1	0.219439E-01	0.434391E-02	0.197955E+00
2	0.919973E-01	0.727614E-02	0.790908E-01
3	0.186189E+00	0.193080E-01	0.103701E+00
4	0.316089E+00	0.450858E-01	0.142637E+00

5	0.402164E+00	0.624872E-01	0.155377E+00
6	0.408966E+00	0.614000E-01	0.150135E+00
7	0.427224E+00	0.771050E-01	0.180479E+00
8	0.517786E+00	0.835569E-01	0.161374E+00
9	0.141338E-01	0.106855E-01	0.756029E+00
10	0.899870E-01	0.208708E-01	0.231931E+00
11	0.198731E+00	0.467107E-01	0.235044E+00
12	0.177261E+00	0.223604E-01	0.126144E+00
13	0.216299E+00	0.540535E-01	0.249901E+00
14	0.207689E+00	0.355707E-01	0.171269E+00
15	0.300243E+00	0.112587E+00	0.374986E+00
16	0.291472E+00	0.165071E+00	0.566335E+00
17	0.209249E-01	0.562393E-02	0.268767E+00
18	0.981470E-01	0.209510E-01	0.213466E+00
19	0.327191E+00	0.335557E-01	0.102557E+00
20	0.615292E+00	0.779107E-01	0.126624E+00
21	0.949463E+00	0.112662E+00	0.118658E+00
22	0.112928E+01	0.189453E+00	0.167763E+00
23	0.121718E+01	0.235660E+00	0.193612E+00
24	0.128152E+01	0.264935E+00	0.206735E+00
25	0.172164E-01	0.366082E-02	0.212636E+00
26	0.746671E-01	0.874968E-02	0.117182E+00
27	0.131211E+00	0.152631E-01	0.116325E+00
28	0.158575E+00	0.229384E-01	0.144654E+00
29	0.122922E+00	0.223467E-01	0.181795E+00
30	0.143092E+00	0.233551E-01	0.163218E+00

-- Non-Linear Least Squares Fit --

Default Tolerances Used

Scaled Gradient Tolerance	=	6.055454E-06
Scaled Step Tolerance	=	3.666853E-11
Relative Function Tolerance	=	3.666853E-11
Absolute Function Tolerance	=	4.930381E-32

VPA Method Options

- Catchability Values Estimated as an Analytic Function of N
- Catch Equation Used in Cohort Solution
- Plus Group Backward Calculation Method Used
- Rivard Weights Used for JAN-1 Biomass
- Rivard Weights Used for SSB Biomass
- Rivard Weights Calculation Used 5 Years for Terminal Year Plus One
  
- Heincke Rule Used in F-Oldest Calculation
- F-Oldest Calculation in Years Prior to Terminal Year  
Uses Stock Sizes in Ages 5 to 8
- Calculation of Population of Age 1 In Year 2008  
= Stock Estimate

Stock Estimates

Age	1
Age	2

Age 3  
 Age 4  
 Age 5  
 Age 6  
 Age 7  
 Age 8

Full F in Terminal Year = 0.1407

F in Oldest True Age in Terminal Year = 0.1407

Full F Calculated Using Classic Method

Age	Input Partial Recruitment	Calc Partial Recruitment	Fishing Mortality	Used In Full F	Comments
1 T+1	0.010	0.006	0.0017	NO	Stock Estimate in
2 T+1	0.110	0.403	0.1044	NO	Stock Estimate in
3 T+1	0.390	1.000	0.2591	NO	Stock Estimate in
4 T+1	0.730	0.876	0.2271	NO	Stock Estimate in
5 T+1	1.000	0.658	0.1705	YES	Stock Estimate in
6 T+1	1.000	0.721	0.1869	YES	Stock Estimate in
7 T+1	1.000	0.250	0.0647	YES	Stock Estimate in
8	1.000	0.543	0.1407	NO	Input PR * Full F
9	1.000	0.543	0.1407	NO	Input PR * Full F

Catch At Age - Input Data

AGE	1978	1979	1980	1981	1982
1	151.6	279.2	339.9	1219.2	775.4
2	416.8	2242.7	4238.7	3910.7	10457.1
3	8109.1	953.6	5955.4	4738.2	4434.4
4	2429.6	4585.0	544.9	2685.5	2988.0
5	896.8	1206.9	2464.6	317.9	2039.8
6	178.4	449.8	983.0	1406.0	297.1
7	240.8	159.5	418.1	417.0	707.2
8	22.6	304.1	70.4	162.9	198.6
9	42.1	12.9	138.7	155.5	74.6
10	10.7	35.0	14.2	66.4	84.6
AGE	1983	1984	1985	1986	1987
1	626.2	280.9	176.0	768.3	103.8
2	5181.7	1547.7	7443.7	1594.1	7956.1
3	8753.3	3485.7	2942.2	4576.3	1515.5
4	2680.4	3328.4	1690.1	860.2	2170.1
5	1155.3	923.9	2097.7	525.3	299.7
6	746.4	560.2	496.5	615.4	249.9
7	94.6	450.3	267.2	85.5	277.3
8	175.0	58.9	196.8	70.4	56.1
9	67.7	167.0	27.7	56.0	36.2
10	112.6	124.9	89.7	27.8	26.0
AGE	1988	1989	1990	1991	1992
1	324.9	891.5	71.8	278.7	191.7
2	2352.1	2608.6	5561.1	1963.0	4808.4
3	8368.3	3032.8	5373.4	3491.4	2286.3
4	1074.1	4254.4	1964.0	3160.5	1070.7
5	1575.6	383.5	2272.1	1442.1	1500.0
6	223.8	534.2	230.6	1088.0	448.1
7	150.3	81.4	229.4	141.3	356.0
8	218.0	51.2	24.6	89.7	44.1
9	46.5	60.2	23.2	27.5	36.4
10	52.5	21.3	40.4	26.0	10.4

Catch At Age - Input Data

AGE	1993	1994	1995	1996	1997
1	299.2	94.4	32.3	64.9	126.9
2	1534.9	614.6	652.8	287.3	685.2
3	4429.4	1543.4	1429.0	986.6	749.6
4	1224.8	1987.7	669.9	1269.8	1020.7
5	475.3	425.6	382.3	256.3	882.9
6	535.6	97.6	41.2	183.8	147.7
7	178.0	146.2	21.4	17.9	94.4
8	141.0	51.2	20.0	11.6	18.9
9	43.1	30.5	6.4	11.3	10.1
10	21.2	5.6	1.4	0.3	3.9
AGE	1998	1999	2000	2001	2002
1	63.3	47.7	113.5	11.7	33.6
2	918.9	356.3	943.2	719.8	113.0
3	1310.3	2021.8	741.1	2667.3	1182.7
4	494.3	852.6	1156.4	751.6	1516.2
5	385.6	286.6	315.8	698.7	365.4
6	285.2	125.8	88.0	180.4	371.5
7	40.2	143.8	46.3	54.8	84.7
8	16.0	22.2	38.8	25.8	18.7
9	5.6	5.0	4.2	14.8	10.6
10	2.9	3.4	1.0	1.3	6.5
AGE	2003	2004	2005	2006	2007
1	17.0	50.5	12.3	32.8	10.6
2	201.3	69.4	364.1	69.7	526.1
3	404.4	434.3	201.8	842.8	395.2
4	800.7	260.1	578.4	208.3	1175.8
5	910.4	313.6	144.5	366.1	71.9
6	156.0	253.0	106.0	70.8	129.2
7	142.4	58.2	85.3	31.2	16.2
8	28.2	49.2	18.0	28.5	10.4
9	6.5	11.8	8.9	3.8	8.6
10	2.9	5.0	3.7	3.4	1.1

Weight At Age - Input Data

AGE	1978	1979	1980	1981	1982
1	0.5787	0.6942	0.6438	0.5873	0.6430
2	1.2513	1.3643	1.4133	1.4411	1.3928
3	2.4408	1.8920	2.4308	2.3815	2.5397
4	3.4074	4.2804	3.5465	3.5294	3.7201
5	4.0144	4.9312	5.5826	5.0546	5.2823
6	5.6957	7.1757	6.7481	7.3032	6.5758
7	6.6453	9.6642	8.3051	8.7797	9.4656
8	8.7084	10.3497	9.9256	9.7997	9.7448
9	9.9364	10.4378	9.2950	14.0178	12.9721
10	13.8870	13.6108	14.8999	16.7990	15.6229
AGE	1983	1984	1985	1986	1987
1	0.6763	0.5405	0.8055	0.6738	0.5817
2	1.4363	1.4991	1.3855	1.3568	1.4684
3	2.3895	2.4762	2.0750	2.4477	2.4763
4	3.3518	3.6676	3.7198	3.6106	4.1715
5	4.7839	4.9374	4.9774	5.4941	5.7677
6	6.4468	6.5544	6.4394	7.1726	7.7772
7	8.4913	8.7376	8.2465	8.8770	8.9078
8	10.6665	10.3090	10.2787	9.9439	10.3361
9	11.6989	11.0933	11.7651	12.9472	12.0274
10	16.3190	14.6426	14.0475	14.5623	15.6415
AGE	1988	1989	1990	1991	1992
1	0.4918	0.4347	0.5311	0.6581	0.8296
2	1.3794	1.4362	1.4893	1.5196	1.4349
3	2.3728	2.2041	2.4630	2.4992	2.4077
4	3.5065	3.7324	3.5732	3.5198	3.7982
5	5.4118	5.1806	4.9668	4.8089	4.5200
6	6.7808	6.5629	6.4025	5.8249	6.0428
7	8.7219	7.9373	8.4042	7.3177	7.0854
8	10.4333	9.9761	11.1911	9.3877	9.4720
9	11.5348	11.2867	12.4247	9.6151	11.8412
10	14.9262	14.6514	14.5119	14.6490	18.8362

Weight At Age - Input Data

AGE	1993	1994	1995	1996	1997
1	0.2837	0.4771	0.3963	0.4867	0.5385
2	1.3063	1.1976	1.3467	1.4419	1.4631
3	2.2082	2.1531	1.9769	2.3910	2.3278
4	3.2271	3.5435	3.7206	3.2180	3.4446
5	4.9843	4.7869	5.2487	4.8754	4.0326
6	5.8198	7.0741	7.4302	6.4963	5.7339
7	7.3782	7.1760	9.3273	8.1007	7.7343
8	8.9218	9.1163	12.1972	9.6991	8.0901
9	11.1348	9.0029	11.8414	10.9742	11.4196
10	12.2279	15.7618	19.1176	8.6207	12.0867
AGE	1998	1999	2000	2001	2002
1	0.6185	0.5340	0.3879	0.6008	0.4900
2	1.4324	1.4313	1.5286	1.3651	1.3165
3	2.2614	2.1372	2.3862	2.2118	2.1052
4	3.4254	3.3549	3.3875	2.9372	2.9569
5	4.5713	4.5433	4.5495	4.1007	3.9493
6	5.5756	5.8669	5.4719	5.2650	5.1562
7	7.3994	6.6406	6.9962	5.9799	6.4745
8	7.7535	8.4061	8.0125	7.6805	8.0004
9	11.8255	9.5624	8.0492	9.0431	9.2479
10	12.3102	13.2010	12.5970	9.7372	11.7081
AGE	2003	2004	2005	2006	2007
1	0.6020	0.3318	0.4309	0.3791	0.4225
2	1.4576	1.5332	1.0351	1.0785	1.4203
3	2.2536	2.3640	2.1015	2.0931	1.9169
4	2.9071	3.0802	3.0681	3.1067	2.8988
5	3.8660	3.8831	4.0035	3.6792	3.6265
6	4.7097	4.8244	4.9245	4.5349	4.1726
7	5.7888	5.6511	5.4675	6.4617	5.9316
8	6.9183	7.3709	7.4969	6.3936	6.9569
9	8.2509	8.5524	8.7863	7.5189	6.9220
10	10.4481	11.1003	11.3704	9.0737	9.0701

JAN-1 Weights at Age - Input Data

AGE	1978	1979	1980	1981	1982
1	0.3769	0.4865	0.4303	0.3814	0.4302
2	1.0176	0.8885	0.9905	0.9632	0.9044
3	1.8431	1.5387	1.8211	1.8346	1.9131
4	2.8324	3.2323	2.5904	2.9290	2.9765
5	3.0026	4.0991	4.8883	4.2339	4.3178
6	4.3726	5.3671	5.7686	6.3852	5.7652
7	5.3249	7.4192	7.7198	7.6972	8.3144
8	7.9543	8.2932	9.7940	9.0215	9.2497
9	9.3022	9.5340	9.8082	11.7956	11.2749
10	13.8870	13.6108	14.8999	16.7990	15.6229
AGE	1983	1984	1985	1986	1987
1	0.4542	0.3376	0.6206	0.4564	0.3777
2	0.9610	1.0069	0.8654	1.0454	0.9947
3	1.8243	1.8859	1.7637	1.8415	1.8330
4	2.9176	2.9604	3.0350	2.7372	3.1954
5	4.2186	4.0681	4.2726	4.5207	4.5634
6	5.8356	5.5996	5.6386	5.9750	6.5367
7	7.4724	7.5053	7.3519	7.5606	7.9933
8	10.0481	9.3561	9.4769	9.0555	9.5788
9	10.6772	10.8778	11.0130	11.5361	10.9362
10	16.3190	14.6426	14.0475	14.5623	15.6415
AGE	1988	1989	1990	1991	1992
1	0.2878	0.2349	0.3140	0.4457	0.6611
2	0.8958	0.8404	0.8046	0.8984	0.9718
3	1.8666	1.7437	1.8808	1.9293	1.9128
4	2.9467	2.9759	2.8064	2.9444	3.0810
5	4.7514	4.2621	4.3056	4.1453	3.9887
6	6.2538	5.9596	5.7592	5.3788	5.3907
7	8.2360	7.3363	7.4267	6.8448	6.4243
8	9.6404	9.3279	9.4248	8.8823	8.3255
9	10.9190	10.8516	11.1333	10.3732	10.5433
10	14.9262	14.6514	14.5119	14.6490	18.8362



JAN-1 Weights at Age - Input Data

AGE	1993	1994	1995	1996	1997
1	0.1381	0.2840	0.2078	0.2807	0.3302
2	1.0410	0.5829	0.8016	0.7559	0.8439
3	1.7800	1.6771	1.5387	1.7944	1.8321
4	2.7875	2.7973	2.8303	2.5222	2.8699
5	4.3510	3.9304	4.3126	4.2590	3.6023
6	5.1289	5.9380	5.9639	5.8393	5.2873
7	6.6772	6.4624	8.1229	7.7582	7.0883
8	7.9508	8.2013	9.3556	9.5114	8.0954
9	10.2698	8.9623	10.3899	11.5696	10.5243
10	12.2279	15.7618	19.1176	8.6207	12.0867
AGE	1998	1999	2000	2001	2002
1	0.4066	0.3156	0.2068	0.4059	0.2841
2	0.8783	0.9409	0.9035	0.7277	0.8894
3	1.8190	1.7497	1.8481	1.8387	1.6952
4	2.8238	2.7544	2.6907	2.6474	2.5574
5	3.9682	3.9449	3.9068	3.7271	3.4059
6	4.7417	5.1787	4.9860	4.8942	4.5983
7	6.5136	6.0848	6.4067	5.7203	5.8385
8	7.7439	7.8867	7.2944	7.3304	6.9168
9	9.7811	8.6106	8.2257	8.5122	8.4278
10	12.3102	13.2010	12.5970	9.7372	11.7081
AGE	2003	2004	2005	2006	2007
1	0.3772	0.1879	0.2724	0.1959	0.2433
2	0.8451	0.9607	0.5860	0.6817	0.7338
3	1.7225	1.8563	1.7950	1.4719	1.4378
4	2.4739	2.6347	2.6931	2.5551	2.4632
5	3.3810	3.3598	3.5116	3.3598	3.3566
6	4.3128	4.3187	4.3729	4.2609	3.9181
7	5.4634	5.1590	5.1359	5.6410	5.1864
8	6.6927	6.5321	6.5089	5.9124	6.7047
9	8.1247	7.6921	8.0475	7.5079	6.6526
10	10.4481	11.1003	11.3704	9.0737	9.0701

JAN-1 Weights at Age - Input Data

AGE	2008
1	0.2553
2	0.7615
3	1.6567
4	2.5640
5	3.3938
6	4.2367
7	5.3171
8	6.4702
9	7.6050
10	10.2125

SSB Weight At Age - Input Data

AGE	1978	1979	1980	1981	1982
1	0.3769	0.4865	0.4303	0.3814	0.4302
2	1.0176	0.8885	0.9905	0.9632	0.9044
3	1.8431	1.5387	1.8211	1.8346	1.9131
4	2.8324	3.2323	2.5904	2.9290	2.9765
5	3.0026	4.0991	4.8883	4.2339	4.3178
6	4.3726	5.3671	5.7686	6.3852	5.7652
7	5.3249	7.4192	7.7198	7.6972	8.3144
8	7.9543	8.2932	9.7940	9.0215	9.2497
9	9.3022	9.5340	9.8082	11.7956	11.2749
10	13.8870	13.6108	14.8999	16.7990	15.6229

AGE	1983	1984	1985	1986	1987
1	0.4542	0.3376	0.6206	0.4564	0.3777
2	0.9610	1.0069	0.8654	1.0454	0.9947
3	1.8243	1.8859	1.7637	1.8415	1.8330
4	2.9176	2.9604	3.0350	2.7372	3.1954
5	4.2186	4.0681	4.2726	4.5207	4.5634
6	5.8356	5.5996	5.6386	5.9750	6.5367
7	7.4724	7.5053	7.3519	7.5606	7.9933
8	10.0481	9.3561	9.4769	9.0555	9.5788
9	10.6772	10.8778	11.0130	11.5361	10.9362
10	16.3190	14.6426	14.0475	14.5623	15.6415

AGE	1988	1989	1990	1991	1992
1	0.2878	0.2349	0.3140	0.4457	0.6611
2	0.8958	0.8404	0.8046	0.8984	0.9718
3	1.8666	1.7437	1.8808	1.9293	1.9128
4	2.9467	2.9759	2.8064	2.9444	3.0810

5	4.7514	4.2621	4.3056	4.1453	3.9887
6	6.2538	5.9596	5.7592	5.3788	5.3907
7	8.2360	7.3363	7.4267	6.8448	6.4243
8	9.6404	9.3279	9.4248	8.8823	8.3255
9	10.9190	10.8516	11.1333	10.3732	10.5433
10	14.9262	14.6514	14.5119	14.6490	18.8362

SSB Weight At Age - Input Data

AGE	1993	1994	1995	1996	1997
1	0.1381	0.2840	0.2078	0.2807	0.3302
2	1.0410	0.5829	0.8016	0.7559	0.8439
3	1.7800	1.6771	1.5387	1.7944	1.8321
4	2.7875	2.7973	2.8303	2.5222	2.8699
5	4.3510	3.9304	4.3126	4.2590	3.6023
6	5.1289	5.9380	5.9639	5.8393	5.2873
7	6.6772	6.4624	8.1229	7.7582	7.0883
8	7.9508	8.2013	9.3556	9.5114	8.0954
9	10.2698	8.9623	10.3899	11.5696	10.5243
10	12.2279	15.7618	19.1176	8.6207	12.0867
AGE	1998	1999	2000	2001	2002
1	0.4066	0.3156	0.2068	0.4059	0.2841
2	0.8783	0.9409	0.9035	0.7277	0.8894
3	1.8190	1.7497	1.8481	1.8387	1.6952
4	2.8238	2.7544	2.6907	2.6474	2.5574
5	3.9682	3.9449	3.9068	3.7271	3.4059
6	4.7417	5.1787	4.9860	4.8942	4.5983
7	6.5136	6.0848	6.4067	5.7203	5.8385
8	7.7439	7.8867	7.2944	7.3304	6.9168
9	9.7811	8.6106	8.2257	8.5122	8.4278
10	12.3102	13.2010	12.5970	9.7372	11.7081
AGE	2003	2004	2005	2006	2007
1	0.3772	0.1879	0.2724	0.1959	0.2433
2	0.8451	0.9607	0.5860	0.6817	0.7338
3	1.7225	1.8563	1.7950	1.4719	1.4378
4	2.4739	2.6347	2.6931	2.5551	2.4632
5	3.3810	3.3598	3.5116	3.3598	3.3566
6	4.3128	4.3187	4.3729	4.2609	3.9181
7	5.4634	5.1590	5.1359	5.6410	5.1864
8	6.6927	6.5321	6.5089	5.9124	6.7047
9	8.1247	7.6921	8.0475	7.5079	6.6526
10	10.4481	11.1003	11.3704	9.0737	9.0701

Natural Mortality - Input Data

AGE	1978	1979	1980	1981	1982
1	0.2000	0.2000	0.2000	0.2000	0.2000
2	0.2000	0.2000	0.2000	0.2000	0.2000
3	0.2000	0.2000	0.2000	0.2000	0.2000
4	0.2000	0.2000	0.2000	0.2000	0.2000
5	0.2000	0.2000	0.2000	0.2000	0.2000
6	0.2000	0.2000	0.2000	0.2000	0.2000
7	0.2000	0.2000	0.2000	0.2000	0.2000
8	0.2000	0.2000	0.2000	0.2000	0.2000
9	0.2000	0.2000	0.2000	0.2000	0.2000
10	0.2000	0.2000	0.2000	0.2000	0.2000
AGE	1983	1984	1985	1986	1987
1	0.2000	0.2000	0.2000	0.2000	0.2000
2	0.2000	0.2000	0.2000	0.2000	0.2000
3	0.2000	0.2000	0.2000	0.2000	0.2000
4	0.2000	0.2000	0.2000	0.2000	0.2000
5	0.2000	0.2000	0.2000	0.2000	0.2000
6	0.2000	0.2000	0.2000	0.2000	0.2000
7	0.2000	0.2000	0.2000	0.2000	0.2000
8	0.2000	0.2000	0.2000	0.2000	0.2000
9	0.2000	0.2000	0.2000	0.2000	0.2000
10	0.2000	0.2000	0.2000	0.2000	0.2000
AGE	1988	1989	1990	1991	1992
1	0.2000	0.2000	0.2000	0.2000	0.2000
2	0.2000	0.2000	0.2000	0.2000	0.2000
3	0.2000	0.2000	0.2000	0.2000	0.2000
4	0.2000	0.2000	0.2000	0.2000	0.2000
5	0.2000	0.2000	0.2000	0.2000	0.2000
6	0.2000	0.2000	0.2000	0.2000	0.2000
7	0.2000	0.2000	0.2000	0.2000	0.2000
8	0.2000	0.2000	0.2000	0.2000	0.2000
9	0.2000	0.2000	0.2000	0.2000	0.2000
10	0.2000	0.2000	0.2000	0.2000	0.2000

Natural Mortality - Input Data

AGE	1993	1994	1995	1996	1997
1	0.2000	0.2000	0.2000	0.2000	0.2000
2	0.2000	0.2000	0.2000	0.2000	0.2000
3	0.2000	0.2000	0.2000	0.2000	0.2000
4	0.2000	0.2000	0.2000	0.2000	0.2000
5	0.2000	0.2000	0.2000	0.2000	0.2000
6	0.2000	0.2000	0.2000	0.2000	0.2000
7	0.2000	0.2000	0.2000	0.2000	0.2000
8	0.2000	0.2000	0.2000	0.2000	0.2000
9	0.2000	0.2000	0.2000	0.2000	0.2000
10	0.2000	0.2000	0.2000	0.2000	0.2000
AGE	1998	1999	2000	2001	2002
1	0.2000	0.2000	0.2000	0.2000	0.2000
2	0.2000	0.2000	0.2000	0.2000	0.2000
3	0.2000	0.2000	0.2000	0.2000	0.2000
4	0.2000	0.2000	0.2000	0.2000	0.2000
5	0.2000	0.2000	0.2000	0.2000	0.2000
6	0.2000	0.2000	0.2000	0.2000	0.2000
7	0.2000	0.2000	0.2000	0.2000	0.2000
8	0.2000	0.2000	0.2000	0.2000	0.2000
9	0.2000	0.2000	0.2000	0.2000	0.2000
10	0.2000	0.2000	0.2000	0.2000	0.2000
AGE	2003	2004	2005	2006	2007
1	0.2000	0.2000	0.2000	0.2000	0.2000
2	0.2000	0.2000	0.2000	0.2000	0.2000
3	0.2000	0.2000	0.2000	0.2000	0.2000
4	0.2000	0.2000	0.2000	0.2000	0.2000
5	0.2000	0.2000	0.2000	0.2000	0.2000
6	0.2000	0.2000	0.2000	0.2000	0.2000
7	0.2000	0.2000	0.2000	0.2000	0.2000
8	0.2000	0.2000	0.2000	0.2000	0.2000
9	0.2000	0.2000	0.2000	0.2000	0.2000
10	0.2000	0.2000	0.2000	0.2000	0.2000

Proportion of Natural Mortality Before Spawning = 0.1667  
 Proportion of Fishing Mortality Before Spawning = 0.1667

Maturity - Input Data

AGE	1978	1979	1980	1981	1982
1	0.0800	0.0700	0.0900	0.0900	0.0800
2	0.3300	0.3400	0.3800	0.3800	0.3600
3	0.7500	0.7800	0.7900	0.7900	0.7900
4	0.9500	0.9600	0.9600	0.9600	0.9600
5	0.9900	0.9900	0.9900	0.9900	0.9900
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	1.0000
9	1.0000	1.0000	1.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000	1.0000
AGE	1983	1984	1985	1986	1987
1	0.0800	0.1300	0.1800	0.1600	0.2000
2	0.4100	0.4900	0.5900	0.5800	0.5900
3	0.8500	0.8700	0.9100	0.9100	0.8900
4	0.9800	0.9800	0.9900	0.9900	0.9800
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	1.0000
9	1.0000	1.0000	1.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000	1.0000
AGE	1988	1989	1990	1991	1992
1	0.2500	0.2000	0.1200	0.1300	0.0900
2	0.6400	0.6100	0.4600	0.5300	0.4700
3	0.9000	0.9100	0.8500	0.8900	0.8900
4	0.9800	0.9800	0.9700	0.9800	0.9900
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	1.0000
9	1.0000	1.0000	1.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000	1.0000

Maturity - Input Data

AGE	1993	1994	1995	1996	1997
1	0.0400	0.0400	0.0400	0.0500	0.1000
2	0.4300	0.4100	0.5000	0.4800	0.5700
3	0.9300	0.9200	0.9600	0.9500	0.9400
4	1.0000	1.0000	1.0000	1.0000	0.9900
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	1.0000
9	1.0000	1.0000	1.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000	1.0000
AGE	1998	1999	2000	2001	2002
1	0.0900	0.0700	0.0700	0.0800	0.0700
2	0.5600	0.5100	0.5100	0.5000	0.4300
3	0.9400	0.9300	0.9400	0.9300	0.8800
4	1.0000	0.9900	1.0000	0.9900	0.9900
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	1.0000
9	1.0000	1.0000	1.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000	1.0000
AGE	2003	2004	2005	2006	2007
1	0.0400	0.0700	0.0600	0.0500	0.0400
2	0.3300	0.3800	0.3600	0.3500	0.3700
3	0.8400	0.8300	0.8300	0.8400	0.8900
4	0.9800	0.9800	0.9800	0.9800	0.9900
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	1.0000
9	1.0000	1.0000	1.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000	1.0000

Input Partial Recruitment

AGE

1	0.0100
2	0.1100
3	0.3900
4	0.7300
5	1.0000
6	1.0000
7	1.0000
8	1.0000
9	1.0000

Input F-Plus Ratio

YEAR

1978	1.0000
1979	1.0000
1980	1.0000
1981	1.0000
1982	1.0000
1983	1.0000
1984	1.0000
1985	1.0000
1986	1.0000
1987	1.0000
1988	1.0000
1989	1.0000
1990	1.0000
1991	1.0000
1992	1.0000
1993	1.0000
1994	1.0000
1995	1.0000
1996	1.0000
1997	1.0000
1998	1.0000
1999	1.0000
2000	1.0000
2001	1.0000
2002	1.0000
2003	1.0000
2004	1.0000
2005	1.0000
2006	1.0000
2007	1.0000



SURVEY - INPUT DATA

INDEX	1	2	3	4	5
SURVEY TAG	spr_36	spr_36	spr_36	spr_36	spr_36
AGE	1	2	3	4	5
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	0.0000	0.0000	0.0000	0.0000	0.0000
1979	0.0000	0.0000	0.0000	0.0000	0.0000
1980	0.0000	0.0000	0.0000	0.0000	0.0000
1981	0.0000	0.0000	0.0000	0.0000	0.0000
1982	693.8277	7425.1446	12980.2741	11371.7250	8480.5714
1983	452.8527	2666.2982	4121.4375	1087.6661	952.1518
1984	549.4339	588.7768	1039.1705	1691.4696	576.8920
1985	151.7705	3624.3241	906.1152	1516.7491	1929.3027
1986	1190.5313	558.7232	2519.5821	498.8893	737.6786
1987	26.9116	2202.7902	516.9214	1042.7223	84.8330
1988	983.8446	831.6643	4302.5786	558.4500	879.0670
1989	424.0286	1926.7071	910.3500	2162.6277	321.1634
1990	236.8768	1258.8348	2373.0027	921.0054	1245.7205
1991	1402.4089	721.0125	940.8134	1268.9438	654.0750
1992	167.6170	1710.8679	639.5946	229.6366	372.8009
1993	11.6116	544.7893	1784.2259	280.4545	122.2634
1994	170.4857	372.1179	273.2143	295.7545	45.3536
1995	67.6205	521.4295	1166.4884	729.4821	818.2768
1996	99.7232	292.2027	1005.7018	1703.7643	237.9696
1997	397.2536	597.1098	232.5054	667.4625	576.8920
1998	152.0438	908.7107	1773.1607	1158.1554	1031.2473
1999	290.0170	397.3902	831.9375	696.2866	325.3982
2000	301.4920	1101.8732	1133.5661	1558.8241	505.8563
2001	82.9205	320.4804	1084.2509	218.8446	522.7955
2002	88.3848	126.9080	523.6152	1356.5089	327.0375
2003	22.4036	290.7000	370.4786	850.3795	951.3321
2004	870.0509	79.2321	790.8188	1921.3795	1849.5241
2005	16.2563	660.9054	188.2446	861.9911	374.8500
2006	243.9804	315.5625	1783.9527	453.3991	988.2161
2007	170.8955	872.7830	513.0964	2450.3223	247.1223
2008	864.1768	1136.0250	790.2723	479.9009	1312.2482

SURVEY - INPUT DATA

INDEX	6	7	8	9	10
SURVEY TAG	spr_36	spr_36	spr_36	spr_41	spr_41
AGE	6	7	8	1	2
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	0.0000	0.0000	0.0000	477.9000	246.6000
1979	0.0000	0.0000	0.0000	550.6714	1668.4714
1980	0.0000	0.0000	0.0000	40.1143	2850.4286
1981	0.0000	0.0000	0.0000	2959.9714	2381.4000
1982	400.1223	2548.6795	503.3973	0.0000	0.0000
1983	605.3063	37.1571	298.6232	0.0000	0.0000
1984	546.9750	285.2357	0.0000	0.0000	0.0000
1985	362.5554	262.1491	245.7563	0.0000	0.0000
1986	844.0955	84.2866	170.8955	0.0000	0.0000
1987	245.0732	185.1027	44.8071	0.0000	0.0000
1988	87.4286	50.5446	67.2107	0.0000	0.0000
1989	479.6277	68.9866	53.9598	0.0000	0.0000
1990	178.1357	195.4848	17.6223	0.0000	0.0000
1991	448.2080	73.9045	55.4625	0.0000	0.0000
1992	194.5286	216.7955	26.7750	0.0000	0.0000
1993	188.7911	40.0259	46.9929	0.0000	0.0000
1994	7.7866	60.2438	0.0000	0.0000	0.0000
1995	145.7598	319.1143	38.2500	0.0000	0.0000
1996	284.8259	37.8402	24.7259	0.0000	0.0000
1997	68.0304	182.9170	27.4580	0.0000	0.0000
1998	727.5696	138.7929	42.2116	0.0000	0.0000
1999	162.9723	86.8821	41.6652	0.0000	0.0000
2000	139.8857	34.8348	27.4580	0.0000	0.0000
2001	241.2482	31.5563	24.1795	0.0000	0.0000
2002	306.9563	53.2768	0.0000	0.0000	0.0000
2003	87.5652	108.6027	16.8027	0.0000	0.0000
2004	1219.2188	243.9804	356.8179	0.0000	0.0000
2005	280.4545	174.0375	40.7089	0.0000	0.0000
2006	290.7000	165.7045	73.6313	0.0000	0.0000
2007	285.7821	42.2116	24.7259	0.0000	0.0000
2008	51.6375	61.4732	0.0000	0.0000	0.0000

SURVEY - INPUT DATA

INDEX	11	12	13	14	15
SURVEY TAG	spr_41	spr_41	spr_41	spr_41	spr_41
AGE	3	4	5	6	7
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	7111.1571	1249.0714	999.7714	182.0571	915.8143
1979	353.7000	2380.5000	702.7714	302.7857	107.4857
1980	3458.0571	272.9571	2192.1429	480.4714	238.5000
1981	3613.8857	2166.3000	136.1571	1129.6286	331.9714
1982	0.0000	0.0000	0.0000	0.0000	0.0000
1983	0.0000	0.0000	0.0000	0.0000	0.0000
1984	0.0000	0.0000	0.0000	0.0000	0.0000
1985	0.0000	0.0000	0.0000	0.0000	0.0000
1986	0.0000	0.0000	0.0000	0.0000	0.0000
1987	0.0000	0.0000	0.0000	0.0000	0.0000
1988	0.0000	0.0000	0.0000	0.0000	0.0000
1989	0.0000	0.0000	0.0000	0.0000	0.0000
1990	0.0000	0.0000	0.0000	0.0000	0.0000
1991	0.0000	0.0000	0.0000	0.0000	0.0000
1992	0.0000	0.0000	0.0000	0.0000	0.0000
1993	0.0000	0.0000	0.0000	0.0000	0.0000
1994	0.0000	0.0000	0.0000	0.0000	0.0000
1995	0.0000	0.0000	0.0000	0.0000	0.0000
1996	0.0000	0.0000	0.0000	0.0000	0.0000
1997	0.0000	0.0000	0.0000	0.0000	0.0000
1998	0.0000	0.0000	0.0000	0.0000	0.0000
1999	0.0000	0.0000	0.0000	0.0000	0.0000
2000	0.0000	0.0000	0.0000	0.0000	0.0000
2001	0.0000	0.0000	0.0000	0.0000	0.0000
2002	0.0000	0.0000	0.0000	0.0000	0.0000
2003	0.0000	0.0000	0.0000	0.0000	0.0000
2004	0.0000	0.0000	0.0000	0.0000	0.0000
2005	0.0000	0.0000	0.0000	0.0000	0.0000
2006	0.0000	0.0000	0.0000	0.0000	0.0000
2007	0.0000	0.0000	0.0000	0.0000	0.0000
2008	0.0000	0.0000	0.0000	0.0000	0.0000

SURVEY - INPUT DATA

INDEX	16	17	18	19	20
SURVEY TAG	spr_41	sp_can	sp_can	sp_can	sp_can
AGE	8	1	2	3	4
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	83.7000	0.0000	0.0000	0.0000	0.0000
1979	178.2000	0.0000	0.0000	0.0000	0.0000
1980	39.8571	0.0000	0.0000	0.0000	0.0000
1981	169.8429	0.0000	0.0000	0.0000	0.0000
1982	0.0000	0.0000	0.0000	0.0000	0.0000
1983	0.0000	0.0000	0.0000	0.0000	0.0000
1984	0.0000	0.0000	0.0000	0.0000	0.0000
1985	0.0000	0.0000	0.0000	0.0000	0.0000
1986	0.0000	844.4316	3194.7662	3954.7547	520.7328
1987	0.0000	351.8465	2997.7322	1308.8690	1534.0507
1988	0.0000	394.0681	1421.4599	6558.4188	816.2839
1989	0.0000	2294.0392	3912.5331	1942.1927	4011.0501
1990	0.0000	591.1021	3434.0218	5319.9191	2927.3629
1991	0.0000	1660.7155	1632.5678	2589.5902	3025.8799
1992	0.0000	154.8125	4025.1240	2491.0732	1125.9088
1993	0.0000	0.0000	0.0000	0.0000	0.0000
1994	0.0000	0.0000	0.0000	0.0000	0.0000
1995	0.0000	98.5170	942.9486	2111.0790	1210.3520
1996	0.0000	197.0340	689.6191	3251.0617	5657.6917
1997	0.0000	450.3635	745.9146	774.0623	1759.2325
1998	0.0000	14.0739	942.9486	1337.0167	492.5851
1999	0.0000	464.4374	450.3635	2097.0051	1534.0507
2000	0.0000	140.7386	619.2498	1477.7553	5516.9531
2001	0.0000	0.0000	84.4432	900.7270	591.1021
2002	0.0000	12.8934	121.7457	805.6169	2887.0783
2003	0.0000	0.0000	31.3603	419.1448	912.1602
2004	0.0000	753.7760	134.4987	551.7156	595.5775
2005	0.0000	34.4185	1880.0260	661.9957	4092.5096
2006	0.0000	0.0000	52.7756	1978.5841	925.6215
2007	0.0000	193.3181	730.7096	1329.3200	4136.1066
2008	0.0000	12.2714	454.9284	1259.8226	835.7757

SURVEY - INPUT DATA

INDEX	21	22	23	24	25
SURVEY TAG	sp_can	sp_can	sp_can	sp_can	us0aut
AGE	5	6	7	8	1
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	0.0000	0.0000	0.0000	0.0000	207.0964
1979	0.0000	0.0000	0.0000	0.0000	540.0080
1980	0.0000	0.0000	0.0000	0.0000	156.4152
1981	0.0000	0.0000	0.0000	0.0000	382.0902
1982	0.0000	0.0000	0.0000	0.0000	356.5446
1983	0.0000	0.0000	0.0000	0.0000	494.5179
1984	0.0000	0.0000	0.0000	0.0000	1752.5330
1985	0.0000	0.0000	0.0000	0.0000	244.6634
1986	914.8009	619.2498	365.9204	56.2954	1368.6670
1987	478.5112	168.8863	309.6249	112.5909	103.9580
1988	1435.5337	182.9602	112.5909	239.2556	278.2688
1989	506.6590	591.1021	70.3693	140.7386	750.6563
1990	5446.5838	591.1021	1308.8690	168.8863	342.6107
1991	1477.7553	1843.6757	225.1818	309.6249	214.6098
1992	1379.2383	844.4316	605.1760	168.8863	55.3259
1993	0.0000	0.0000	0.0000	0.0000	47.9491
1994	0.0000	0.0000	0.0000	0.0000	243.7071
1995	844.4316	267.4033	56.2954	70.3693	91.2536
1996	1534.0507	1111.8349	464.4374	112.5909	218.4348
1997	1731.0848	379.9942	84.4432	42.2216	29.5071
1998	492.5851	394.0681	98.5170	28.1477	8.7429
1999	577.0283	365.9204	211.1079	14.0739	95.7616
2000	2406.6301	1097.7611	562.9544	337.7726	95.7616
2001	1562.1985	731.8407	365.9204	239.2556	26.6384
2002	961.5430	1718.1603	563.8122	232.3755	38.7964
2003	1706.7639	447.1511	474.4035	227.5985	319.6607
2004	634.6213	545.4536	103.8278	165.3542	446.5688
2005	1591.4896	721.6604	583.5206	18.8549	2302.2402
2006	2297.1633	982.6574	283.5685	260.2498	71.1723
2007	545.8412	851.2446	135.4739	106.6092	135.7875
2008	3069.2880	196.4960	396.5004	41.2168	102.3188

SURVEY - INPUT DATA

INDEX	26	27	28	29	30
SURVEY TAG	us1aut	us2aut	us3aut	us4aut	us5aut
AGE	2	3	4	5	6
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	323.4857	4690.4063	943.6821	345.3429	236.4670
1979	2520.9482	534.4071	5543.1080	1316.3464	458.3170
1980	2220.0027	2290.9018	221.4402	2303.8795	437.9625
1981	1120.0420	769.9179	1057.2027	71.7188	361.7357
1982	4815.4018	3073.6607	2129.7054	804.6161	73.7679
1983	788.6330	2608.5134	330.3161	92.6196	157.3714
1984	1160.4777	1488.0616	1011.1661	94.3955	44.8071
1985	2607.9670	931.3875	1268.6705	1127.1455	33.0589
1986	247.6688	1151.0518	91.1170	144.1205	104.6411
1987	3113.1402	175.5402	449.4375	11.2018	66.5277
1988	565.1438	1848.0214	147.5357	273.6241	38.2500
1989	1194.9027	596.9732	1234.6554	81.9643	264.6080
1990	3822.8143	1429.4571	220.0741	692.7348	74.7241
1991	496.7036	2219.0464	2478.1902	563.3679	390.0134
1992	556.8107	239.3357	374.5768	41.6652	39.6161
1993	563.3679	1296.2652	238.1063	136.6071	59.6973
1994	1324.9527	726.2036	522.6589	22.5402	34.5616
1995	554.0786	907.4813	592.0554	209.5554	92.7563
1996	334.2777	2473.4089	1705.5402	119.1214	73.9045
1997	327.7205	267.4768	566.1000	195.3482	81.5545
1998	322.6661	438.3723	149.3116	176.4964	66.3911
1999	458.3170	1401.8625	480.5839	56.1455	48.3589
2000	190.8402	210.6482	422.9357	348.2116	118.9848
2001	780.0268	734.6732	96.3080	107.6464	41.8018
2002	64.3420	520.2000	627.0268	81.1446	74.5875
2003	652.9821	965.8125	1907.0357	2222.5982	161.1964
2004	227.1777	422.3893	273.8973	212.5607	112.5643
2005	1017.4500	185.5125	970.0473	344.2500	439.1920
2006	75.5438	791.5018	176.0866	239.8821	35.3813
2007	590.8259	221.0304	702.4339	46.1732	170.4857
2008	156.6884	282.5036	68.8500	177.9991	8.7429

Additional Output Files

Population File

C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10\_PLUS\_SVSWEPT\10P\_SVSWEPT\_CO

Auxilliary File

C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10\_PLUS\_SVSWEPT\10P\_SVSWEPT\_CO

Covariance File

C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10\_PLUS\_SVSWEPT\10P\_SVSWEPT\_CO

Residuals File

C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10\_PLUS\_SVSWEPT\10P\_SVSWEPT\_CO

Log File

C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10\_PLUS\_SVSWEPT\10P\_SVSWEPT\_CO

Bootstrap Files

Bootstrap Stock Numbers

C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10\_PLUS\_SVSWEPT\10P\_SVSWEPT\_CO

Bootstrap Fishing Mortality

C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10\_PLUS\_SVSWEPT\10P\_SVSWEPT\_CO

Bootstrap Biomass

C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10\_PLUS\_SVSWEPT\10P\_SVSWEPT\_CO

Bootstrap Catchability

C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10\_PLUS\_SVSWEPT\10P\_SVSWEPT\_CO

Estimation Results

JAN-1 Population Numbers

AGE	1978	1979	1980	1981	1982
1	28705.	25943.	22914.	45891.	19863.
2	4707.	23365.	20988.	18453.	36471.
3	25333.	3478.	17107.	13370.	11591.
4	7660.	13468.	1991.	8669.	6701.
5	2967.	4093.	6916.	1141.	4688.
6	1264.	1624.	2267.	3454.	649.
7	1212.	874.	926.	978.	1570.
8	82.	776.	572.	385.	428.
9	174.	47.	363.	405.	169.
10	44.	127.	37.	173.	192.
=====					
Total	72148.	73793.	74082.	92919.	82323.
AGE	1983	1984	1985	1986	1987
1	11305.	29021.	9615.	44505.	17898.
2	15562.	8691.	23506.	7713.	35744.
3	20473.	8096.	5723.	12569.	4881.
4	5520.	8936.	3512.	2063.	6191.
5	2817.	2128.	4336.	1367.	920.
6	2015.	1273.	916.	1678.	649.
7	266.	982.	541.	308.	823.
8	654.	133.	402.	205.	176.
9	173.	378.	56.	153.	105.
10	288.	283.	182.	76.	75.
=====					
Total	59073.	59920.	48789.	70638.	67462.
AGE	1988	1989	1990	1991	1992
1	24854.	17849.	10204.	19796.	7470.

2	14560.	20056.	13809.	8290.	15956.
3	22111.	9803.	14070.	6330.	5023.
4	2637.	10610.	5305.	6709.	2076.
5	3124.	1198.	4880.	2584.	2671.
6	484.	1153.	637.	1967.	833.
7	308.	197.	467.	315.	642.
8	425.	118.	88.	178.	132.
9	93.	154.	51.	50.	66.
10	105.	54.	88.	47.	19.
=====					
Total	68702.	61191.	49599.	46266.	34887.

JAN-1 Population Numbers

AGE	1993	1994	1995	1996	1997
1	9873.	6318.	3928.	6690.	10672.
2	5943.	7814.	5088.	3187.	5419.
3	8749.	3487.	5843.	3577.	2350.
4	2070.	3214.	1476.	3500.	2043.
5	745.	607.	868.	610.	1728.
6	853.	189.	121.	369.	270.
7	283.	223.	68.	62.	138.
8	209.	74.	53.	36.	35.
9	68.	46.	15.	26.	19.
10	34.	9.	3.	1.	7.
=====					
Total	28827.	21980.	17463.	18057.	22681.

AGE	1998	1999	2000	2001	2002
1	4976.	12399.	6159.	2858.	5338.
2	8623.	4017.	10108.	4940.	2330.
3	3819.	6231.	2967.	7425.	3396.
4	1252.	1952.	3289.	1764.	3690.
5	762.	582.	836.	1656.	772.
6	628.	280.	221.	402.	731.
7	90.	259.	117.	102.	168.
8	30.	37.	84.	54.	35.
9	12.	10.	11.	34.	22.
10	6.	7.	3.	3.	13.
=====					
Total	20196.	25776.	23796.	19240.	16495.

AGE	2003	2004	2005	2006	2007
1	1983.	13523.	2945.	7178.	7068.
2	4340.	1608.	11026.	2400.	5847.
3	1805.	3372.	1254.	8698.	1902.
4	1721.	1115.	2369.	845.	6362.



5	1665.	694.	679.	1420.	505.
6	306.	553.	288.	426.	834.
7	268.	111.	226.	141.	285.
8	62.	92.	39.	109.	87.
9	12.	26.	32.	16.	64.
10	5.	11.	13.	14.	9.
=====					
Total	12167.	21104.	18871.	21247.	22962.

JAN-1 Population Numbers

AGE	2008
1	5158.
2	5778.
3	4313.
4	1202.
5	4150.
6	348.
7	566.
8	219.
9	62.
10	52.
=====	
Total	21848.

Fishing Mortality Calculated

AGE	1978	1979	1980	1981	1982
1	0.0058	0.0119	0.0165	0.0297	0.0440
2	0.1026	0.1117	0.2509	0.2650	0.3774
3	0.4318	0.3577	0.4797	0.4908	0.5419
4	0.4269	0.4664	0.3569	0.4147	0.6667
5	0.4024	0.3905	0.4942	0.3647	0.6443
6	0.1688	0.3620	0.6411	0.5883	0.6924
7	0.2463	0.2239	0.6785	0.6268	0.6760
8	0.3601	0.5597	0.1456	0.6208	0.7059
9	0.3083	0.3598	0.5414	0.5446	0.6558
10	0.3083	0.3598	0.5414	0.5446	0.6558
AGE	1983	1984	1985	1986	1987
1	0.0630	0.0107	0.0204	0.0192	0.0064
2	0.4535	0.2179	0.4261	0.2575	0.2803
3	0.6290	0.6351	0.8203	0.5081	0.4158
4	0.7533	0.5232	0.7433	0.6078	0.4840
5	0.5944	0.6425	0.7493	0.5448	0.4415
6	0.5194	0.6547	0.8897	0.5129	0.5462
7	0.4937	0.6939	0.7714	0.3628	0.4606
8	0.3474	0.6618	0.7637	0.4717	0.4309
9	0.5587	0.6574	0.7723	0.5108	0.4756
10	0.5587	0.6574	0.7723	0.5108	0.4756
AGE	1988	1989	1990	1991	1992
1	0.0145	0.0566	0.0078	0.0157	0.0287
2	0.1956	0.1545	0.5800	0.3011	0.4009
3	0.5343	0.4140	0.5406	0.9151	0.6864
4	0.5889	0.5766	0.5192	0.7209	0.8244
5	0.7968	0.4318	0.7087	0.9323	0.9419
6	0.7013	0.7038	0.5044	0.9192	0.8797
7	0.7592	0.6020	0.7662	0.6727	0.9223
8	0.8176	0.6421	0.3653	0.7979	0.4573
9	0.7815	0.5595	0.6891	0.9081	0.9261
10	0.7815	0.5595	0.6891	0.9081	0.9261

Fishing Mortality Calculated

AGE	1993	1994	1995	1996	1997
1	0.0340	0.0166	0.0091	0.0108	0.0132
2	0.3332	0.0906	0.1522	0.1046	0.1499
3	0.8014	0.6599	0.3126	0.3602	0.4299
4	1.0271	1.1091	0.6837	0.5058	0.7857
5	1.1730	1.4127	0.6553	0.6145	0.8127
6	1.1405	0.8272	0.4666	0.7819	0.9028
7	1.1436	1.2329	0.4261	0.3798	1.3371
8	1.3043	1.3802	0.5289	0.4333	0.8935
9	1.1537	1.2382	0.6158	0.6541	0.8508
10	1.1537	1.2382	0.6158	0.6541	0.8508
AGE	1998	1999	2000	2001	2002
1	0.0141	0.0043	0.0205	0.0045	0.0070
2	0.1248	0.1028	0.1084	0.1747	0.0550
3	0.4710	0.4391	0.3203	0.4993	0.4800
4	0.5650	0.6476	0.4859	0.6262	0.5959
5	0.8003	0.7680	0.5326	0.6175	0.7257
6	0.6848	0.6727	0.5704	0.6726	0.8055
7	0.6721	0.9245	0.5658	0.8724	0.7964
8	0.8806	1.0292	0.6990	0.7266	0.8687
9	0.7418	0.7765	0.5429	0.6384	0.7670
10	0.7418	0.7765	0.5429	0.6384	0.7670
AGE	2003	2004	2005	2006	2007
1	0.0095	0.0041	0.0046	0.0051	0.0017
2	0.0525	0.0488	0.0371	0.0326	0.1044
3	0.2823	0.1529	0.1948	0.1128	0.2591
4	0.7083	0.2960	0.3119	0.3155	0.2271
5	0.9027	0.6794	0.2664	0.3325	0.1705
6	0.8102	0.6919	0.5154	0.2020	0.1869
7	0.8651	0.8409	0.5308	0.2789	0.0647
8	0.6852	0.8695	0.6915	0.3379	0.1407
9	0.8851	0.6969	0.3688	0.2993	0.1407
10	0.8851	0.6969	0.3688	0.2993	0.1407

## Average Fishing Mortality For Ages 5- 8

Year	Average F	N Weighted	Biomass Wtd	Catch Wtd
1978	0.2944	0.3141	0.2944	0.3425
1979	0.3840	0.3823	0.3842	0.3962
1980	0.4898	0.5227	0.5158	0.5442
1981	0.5501	0.5539	0.5704	0.5667
1982	0.6796	0.6589	0.6647	0.6594
1983	0.4887	0.5354	0.5104	0.5443
1984	0.6633	0.6577	0.6626	0.6581
1985	0.7935	0.7729	0.7769	0.7749
1986	0.4730	0.5098	0.5017	0.5137
1987	0.4698	0.4734	0.4746	0.4765
1988	0.7687	0.7855	0.7846	0.7864
1989	0.5949	0.5713	0.5934	0.5936
1990	0.5862	0.6867	0.6799	0.6933
1991	0.8305	0.9063	0.8959	0.9095
1992	0.8003	0.9119	0.8981	0.9179
1993	1.1903	1.1689	1.1748	1.1699
1994	1.2133	1.2726	1.2443	1.2946
1995	0.5192	0.6147	0.5963	0.6226
1996	0.5524	0.6522	0.6477	0.6666
1997	0.9866	0.8586	0.8874	0.8690
1998	0.7595	0.7463	0.7416	0.7497
1999	0.8486	0.7884	0.8010	0.7962
2000	0.5919	0.5535	0.5620	0.5558
2001	0.7223	0.6420	0.6505	0.6454
2002	0.7991	0.7698	0.7773	0.7713
2003	0.8158	0.8802	0.8725	0.8818
2004	0.7705	0.7087	0.7197	0.7120
2005	0.5010	0.3868	0.4106	0.4264
2006	0.2878	0.3027	0.2981	0.3109
2007	0.1407	0.1594	0.1534	0.1709

## Average Fishing Mortality For Ages 6- 8

Year	Average F	N Weighted	Biomass Wtd	Catch Wtd
1978	0.2584	0.2117	0.2183	0.2208
1979	0.3819	0.3720	0.3794	0.4037
1980	0.4884	0.5750	0.5440	0.6280
1981	0.6120	0.5987	0.6005	0.5990
1982	0.6914	0.6848	0.6846	0.6850
1983	0.4535	0.4788	0.4613	0.4874
1984	0.6702	0.6712	0.6736	0.6716
1985	0.8083	0.8280	0.8163	0.8310
1986	0.4491	0.4879	0.4829	0.4925
1987	0.4793	0.4912	0.4857	0.4944
1988	0.7594	0.7566	0.7658	0.7589
1989	0.6493	0.6852	0.6810	0.6867
1990	0.5453	0.5967	0.6039	0.6213
1991	0.7966	0.8789	0.8687	0.8846
1992	0.7531	0.8621	0.8502	0.8756
1993	1.1961	1.1666	1.1756	1.1682
1994	1.1468	1.0976	1.1175	1.1243
1995	0.4739	0.4690	0.4716	0.4712
1996	0.5317	0.7015	0.6767	0.7292
1997	1.0445	1.0376	1.0601	1.0593
1998	0.7458	0.6911	0.6947	0.6925
1999	0.8755	0.8089	0.8238	0.8239
2000	0.6117	0.5947	0.6010	0.5980
2001	0.7572	0.7145	0.7196	0.7199
2002	0.8235	0.8063	0.8069	0.8064
2003	0.7869	0.8211	0.8191	0.8234
2004	0.8008	0.7355	0.7460	0.7403
2005	0.5793	0.5342	0.5389	0.5368
2006	0.2729	0.2399	0.2477	0.2500
2007	0.1308	0.1547	0.1480	0.1711

## Average Fishing Mortality For Ages 7- 8

Year	Average F	N Weighted	Biomass Wtd	Catch Wtd
1978	0.3032	0.2535	0.2568	0.2561
1979	0.3918	0.3818	0.3911	0.4442
1980	0.4120	0.4750	0.4443	0.6017
1981	0.6238	0.6251	0.6249	0.6251
1982	0.6909	0.6824	0.6829	0.6825
1983	0.4206	0.3897	0.3814	0.3988
1984	0.6779	0.6901	0.6893	0.6902
1985	0.7676	0.7681	0.7676	0.7681
1986	0.4172	0.4063	0.4111	0.4120
1987	0.4458	0.4554	0.4546	0.4556
1988	0.7884	0.7931	0.7953	0.7938
1989	0.6220	0.6170	0.6193	0.6175
1990	0.5657	0.7025	0.6887	0.7274
1991	0.7353	0.7178	0.7256	0.7213
1992	0.6898	0.8433	0.8248	0.8711
1993	1.2239	1.2119	1.2188	1.2146
1994	1.3066	1.2695	1.2764	1.2711
1995	0.4775	0.4714	0.4750	0.4758
1996	0.4065	0.3995	0.4021	0.4008
1997	1.1153	1.2480	1.2381	1.2631
1998	0.7763	0.7240	0.7310	0.7314
1999	0.9769	0.9377	0.9410	0.9385
2000	0.6324	0.6215	0.6257	0.6265
2001	0.7995	0.8218	0.8133	0.8257
2002	0.8325	0.8089	0.8107	0.8095
2003	0.7752	0.8313	0.8254	0.8354
2004	0.8552	0.8539	0.8556	0.8540
2005	0.6112	0.5546	0.5598	0.5588
2006	0.3084	0.3046	0.3053	0.3070
2007	0.1027	0.0826	0.0863	0.0944

Back Calculated Partial Recruitment

AGE	1978	1979	1980	1981	1982
1	0.0135	0.0213	0.0243	0.0474	0.0623
2	0.2377	0.1996	0.3698	0.4228	0.5347
3	1.0000	0.6391	0.7070	0.7830	0.7676
4	0.9886	0.8332	0.5260	0.6616	0.9444
5	0.9319	0.6976	0.7284	0.5819	0.9127
6	0.3909	0.6467	0.9449	0.9386	0.9809
7	0.5705	0.4000	1.0000	1.0000	0.9576
8	0.8339	1.0000	0.2145	0.9905	1.0000
9	0.7139	0.6428	0.7979	0.8689	0.9291
10	0.7139	0.6428	0.7979	0.8689	0.9291
AGE	1983	1984	1985	1986	1987
1	0.0836	0.0155	0.0229	0.0316	0.0118
2	0.6021	0.3140	0.4789	0.4237	0.5132
3	0.8350	0.9152	0.9220	0.8359	0.7613
4	1.0000	0.7540	0.8355	1.0000	0.8861
5	0.7891	0.9259	0.8422	0.8963	0.8083
6	0.6895	0.9435	1.0000	0.8438	1.0000
7	0.6554	1.0000	0.8671	0.5969	0.8433
8	0.4613	0.9537	0.8584	0.7760	0.7890
9	0.7417	0.9473	0.8681	0.8404	0.8707
10	0.7417	0.9473	0.8681	0.8404	0.8707
AGE	1988	1989	1990	1991	1992
1	0.0178	0.0805	0.0102	0.0168	0.0305
2	0.2392	0.2195	0.7570	0.3229	0.4256
3	0.6534	0.5882	0.7056	0.9815	0.7287
4	0.7203	0.8193	0.6776	0.7732	0.8753
5	0.9745	0.6135	0.9249	1.0000	1.0000
6	0.8578	1.0000	0.6583	0.9860	0.9340
7	0.9286	0.8553	1.0000	0.7215	0.9792
8	1.0000	0.9123	0.4767	0.8558	0.4856
9	0.9558	0.7949	0.8994	0.9740	0.9832
10	0.9558	0.7949	0.8994	0.9740	0.9832

Back Calculated Partial Recruitment

AGE	1993	1994	1995	1996	1997
1	0.0261	0.0118	0.0133	0.0138	0.0099
2	0.2555	0.0642	0.2226	0.1337	0.1121
3	0.6144	0.4671	0.4572	0.4607	0.3215
4	0.7875	0.7851	1.0000	0.6469	0.5876
5	0.8993	1.0000	0.9584	0.7858	0.6078
6	0.8744	0.5856	0.6824	1.0000	0.6752
7	0.8768	0.8727	0.6231	0.4857	1.0000
8	1.0000	0.9770	0.7736	0.5542	0.6682
9	0.8846	0.8765	0.9007	0.8365	0.6362
10	0.8846	0.8765	0.9007	0.8365	0.6362
AGE	1998	1999	2000	2001	2002
1	0.0160	0.0041	0.0294	0.0052	0.0080
2	0.1417	0.0999	0.1551	0.2003	0.0633
3	0.5348	0.4266	0.4582	0.5724	0.5525
4	0.6416	0.6292	0.6951	0.7177	0.6860
5	0.9089	0.7462	0.7619	0.7078	0.8354
6	0.7776	0.6536	0.8160	0.7710	0.9273
7	0.7632	0.8982	0.8093	1.0000	0.9168
8	1.0000	1.0000	1.0000	0.8328	1.0000
9	0.8424	0.7544	0.7766	0.7317	0.8830
10	0.8424	0.7544	0.7766	0.7317	0.8830
AGE	2003	2004	2005	2006	2007
1	0.0105	0.0047	0.0067	0.0150	0.0064
2	0.0581	0.0561	0.0536	0.0963	0.4027
3	0.3128	0.1758	0.2817	0.3340	1.0000
4	0.7846	0.3405	0.4511	0.9337	0.8763
5	1.0000	0.7814	0.3853	0.9842	0.6579
6	0.8975	0.7957	0.7453	0.5978	0.7212
7	0.9584	0.9671	0.7676	0.8254	0.2499
8	0.7591	1.0000	1.0000	1.0000	0.5430
9	0.9804	0.8014	0.5333	0.8859	0.5430
10	0.9804	0.8014	0.5333	0.8859	0.5430



JAN-1 Biomass

AGE	1978	1979	1980	1981	1982
1	10819.	12621.	9860.	17503.	8545.
2	4790.	20760.	20788.	17774.	32985.
3	46691.	5351.	31154.	24529.	22175.
4	21697.	43531.	5158.	25392.	19946.
5	8908.	16776.	33810.	4830.	20244.
6	5526.	8718.	13080.	22058.	3739.
7	6453.	6485.	7149.	7527.	13058.
8	652.	6432.	5603.	3470.	3957.
9	1621.	446.	3558.	4776.	1909.
10	615.	1729.	553.	2905.	2999.
=====					
Total	107772.	122849.	130713.	130763.	129555.
AGE	1983	1984	1985	1986	1987
1	5135.	9797.	5967.	20312.	6760.
2	14955.	8751.	20342.	8064.	35555.
3	37349.	15268.	10093.	23145.	8947.
4	16105.	26455.	10660.	5647.	19783.
5	11883.	8656.	18524.	6182.	4197.
6	11761.	7127.	5167.	10026.	4244.
7	1985.	7367.	3981.	2330.	6575.
8	6572.	1242.	3805.	1856.	1681.
9	1846.	4115.	618.	1767.	1145.
10	4693.	4143.	2551.	1107.	1176.
=====					
Total	112284.	92921.	81708.	80435.	90064.
AGE	1988	1989	1990	1991	1992
1	7153.	4193.	3204.	8823.	4939.
2	13043.	16855.	11111.	7447.	15506.
3	41273.	17093.	26462.	12213.	9607.
4	7770.	31575.	14888.	19753.	6395.
5	14844.	5106.	21013.	10713.	10655.
6	3028.	6871.	3668.	10580.	4490.
7	2536.	1442.	3468.	2155.	4126.
8	4096.	1100.	831.	1578.	1095.
9	1020.	1667.	566.	520.	691.
10	1574.	796.	1284.	694.	353.
=====					
Total	96337.	86699.	86495.	74476.	57856.

JAN-1 Biomass

AGE	1993	1994	1995	1996	1997
1	1364.	1794.	816.	1878.	3524.
2	6187.	4555.	4078.	2409.	4573.
3	15573.	5848.	8990.	6419.	4306.
4	5770.	8991.	4176.	8827.	5863.
5	3242.	2385.	3743.	2597.	6224.
6	4373.	1121.	721.	2155.	1428.
7	1889.	1442.	549.	482.	980.
8	1662.	605.	498.	344.	282.
9	700.	416.	158.	297.	202.
10	410.	134.	64.	6.	90.
=====					
Total	41171.	27292.	23795.	25413.	27469.
=====					
AGE	1998	1999	2000	2001	2002
1	2023.	3913.	1274.	1160.	1517.
2	7573.	3780.	9133.	3595.	2072.
3	6947.	10903.	5484.	13653.	5757.
4	3535.	5377.	8849.	4669.	9436.
5	3025.	2298.	3268.	6173.	2629.
6	2976.	1452.	1103.	1968.	3363.
7	584.	1576.	750.	586.	981.
8	230.	296.	614.	399.	242.
9	114.	87.	90.	291.	182.
10	74.	91.	33.	29.	155.
=====					
Total	27081.	29772.	30598.	32524.	26334.
=====					
AGE	2003	2004	2005	2006	2007
1	748.	2541.	802.	1406.	1720.
2	3668.	1545.	6461.	1636.	4291.
3	3110.	6259.	2251.	12803.	2734.
4	4257.	2936.	6380.	2159.	15670.
5	5628.	2331.	2383.	4771.	1694.
6	1319.	2387.	1259.	1814.	3266.
7	1462.	575.	1163.	794.	1477.
8	415.	602.	256.	645.	585.
9	98.	197.	255.	121.	424.
10	56.	121.	150.	131.	84.
=====					
Total	20760.	19494.	21360.	26280.	31945.

JAN-1 Biomass

AGE	2008
1	1317.
2	4400.
3	7145.
4	3081.
5	14086.
6	1476.
7	3011.
8	1414.
9	472.
10	530.
Total	36930.

Mean Biomass

AGE	1978	1979	1980	1981	1982
1	15013.	16229.	13264.	24080.	11333.
2	5082.	27387.	23876.	21266.	38590.
3	45837.	5044.	30176.	22993.	20784.
4	19392.	42080.	5415.	22857.	16673.
5	8946.	15241.	27839.	4406.	16724.
6	6020.	8917.	10347.	17455.	2821.
7	6496.	6885.	5118.	5841.	9903.
8	547.	5623.	4801.	2571.	2742.
9	1357.	374.	2381.	4003.	1476.
10	482.	1324.	391.	2048.	2015.
Total	109174.	129103.	123607.	127520.	123060.

AGE	1983	1984	1985	1986	1987
1	6723.	14143.	6951.	26928.	9407.
2	16410.	10649.	24205.	8398.	41679.
3	33254.	13591.	7443.	22045.	9025.
4	11927.	23330.	8458.	5110.	18705.
5	9298.	7100.	13935.	5297.	3915.
6	9264.	5608.	3594.	8606.	3558.
7	1627.	5670.	2856.	2092.	5363.
8	5372.	917.	2649.	1484.	1346.
9	1418.	2818.	422.	1419.	916.
10	3289.	2782.	1632.	793.	855.
Total	98582.	86608.	72144.	82173.	94769.

AGE	1988	1989	1990	1991	1992
1	11001.	6843.	4893.	11719.	5540.
2	16587.	24252.	14280.	9908.	17210.
3	37166.	16145.	24480.	9535.	8020.
4	6395.	27538.	13518.	15432.	4933.
5	10701.	4601.	15924.	7439.	7198.
6	2164.	4981.	2927.	6894.	3078.
7	1727.	1073.	2516.	1537.	2735.
8	2782.	795.	754.	1055.	913.
9	686.	1214.	418.	291.	465.
10	1003.	558.	851.	419.	212.
=====					
Total	90212.	88002.	80560.	64231.	50304.

Mean Biomass

AGE	1993	1994	1995	1996	1997
1	2498.	2710.	1405.	2936.	5175.
2	6017.	8120.	5775.	3961.	6690.
3	12205.	5036.	9038.	6548.	4059.
4	3848.	6351.	3645.	8078.	4475.
5	2020.	1442.	3062.	2034.	4381.
6	2733.	835.	656.	1527.	938.
7	1148.	851.	468.	382.	546.
8	965.	338.	461.	260.	171.
9	416.	222.	123.	190.	136.
10	225.	71.	43.	4.	55.
=====					
Total	32075.	25976.	24677.	25919.	26626.

AGE	1998	1999	2000	2001	2002
1	2771.	5989.	2144.	1553.	2363.
2	10546.	4961.	13296.	5624.	2707.
3	6291.	9840.	5521.	11815.	5187.
4	2997.	4417.	8062.	3526.	7523.
5	2202.	1695.	2698.	4640.	1988.
6	2322.	1097.	844.	1412.	2378.
7	443.	1033.	573.	376.	689.
8	141.	181.	445.	273.	172.
9	89.	62.	62.	210.	128.
10	48.	58.	23.	20.	99.
=====					
Total	27850.	29332.	33667.	29447.	23235.

AGE	2003	2004	2005	2006	2007
1	1077.	4059.	1147.	2460.	2705.
2	5591.	2183.	10161.	2309.	7160.
3	3228.	6716.	2177.	15634.	2923.

4	3286.	2706.	5689.	2051.	15009.
5	3899.	1792.	2171.	4050.	1529.
6	907.	1764.	1013.	1590.	2885.
7	953.	391.	879.	723.	1484.
8	285.	417.	195.	539.	514.
9	61.	145.	212.	95.	374.
10	34.	80.	114.	103.	71.
=====					
Total	19320.	20253.	23759.	29556.	34654.

Spawning Stock Biomass

AGE	1978	1979	1980	1981	1982
1	836.	853.	856.	1516.	656.
2	1503.	6701.	7328.	6250.	10785.
3	31517.	3803.	21975.	17270.	15480.
4	18567.	37396.	4512.	22002.	16572.
5	7977.	15051.	29814.	4352.	17410.
6	5197.	7938.	11369.	19341.	3223.
7	5990.	6042.	6175.	6557.	11284.
8	594.	5667.	5289.	3026.	3402.
9	1489.	407.	3145.	4219.	1655.
10	565.	1575.	489.	2566.	2600.
=====					
Total	74235.	85433.	90951.	87101.	83067.

AGE	1983	1984	1985	1986	1987
1	393.	1230.	1035.	3133.	1306.
2	5499.	3999.	10813.	4333.	19363.
3	27649.	11557.	7748.	18717.	7186.
4	13464.	22981.	9017.	4886.	17298.
5	10409.	7522.	15813.	5460.	3771.
6	10432.	6181.	4308.	8903.	3748.
7	1769.	6347.	3385.	2121.	5890.
8	5999.	1076.	3240.	1659.	1514.
9	1627.	3567.	525.	1570.	1023.
10	4135.	3591.	2170.	984.	1051.
=====					
Total	81375.	68051.	58056.	51766.	62150

AGE	1988	1989	1990	1991	1992
1	1725.	803.	371.	1107.	428.
2	7815.	9691.	4488.	3631.	6593.
3	32866.	14041.	19881.	9025.	7376.
4	6676.	27186.	12810.	16603.	5337.
5	12571.	4596.	18059.	8870.	8808.
6	2606.	5910.	3262.	8779.	3750.
7	2161.	1262.	2952.	1863.	3422.
8	3457.	956.	756.	1336.	982.
9	866.	1468.	488.	432.	572.
10	1336.	701.	1107.	577.	292.
=====					
Total	72080.	66616.	64174.	52224.	37561.

Spawning Stock Biomass

AGE	1993	1994	1995	1996	1997
1	52.	69.	32.	91.	340.
2	2434.	1779.	1923.	1099.	2459.
3	12256.	4661.	7924.	5554.	3644.
4	4703.	7228.	3604.	7847.	4925.
5	2579.	1823.	3246.	2267.	5257.
6	3498.	945.	646.	1830.	1188.
7	1510.	1136.	495.	437.	758.
8	1294.	465.	441.	309.	235.
9	559.	328.	138.	258.	169.
10	327.	106.	55.	5.	75.
=====					
Total	29212.	18540.	18503.	19697.	19050.
=====					
AGE	1998	1999	2000	2001	2002
1	176.	265.	86.	90.	103.
2	4018.	1833.	4424.	1689.	854.
3	5839.	9115.	4727.	11300.	4523.
4	3112.	4622.	7893.	4028.	8181.
5	2560.	1955.	2892.	5387.	2253.
6	2568.	1255.	970.	1701.	2844.
7	505.	1307.	660.	490.	831.
8	192.	241.	528.	342.	203.
9	97.	74.	80.	253.	155.
10	63.	77.	29.	25.	132.
=====					
Total	19130.	20744.	22290.	25305.	20078.
=====					
AGE	2003	2004	2005	2006	2007
1	29.	172.	47.	68.	67.
2	1161.	563.	2236.	551.	1509.
3	2410.	4898.	1749.	10208.	2254.
4	3585.	2649.	5741.	1942.	14448.
5	4683.	2013.	2205.	4365.	1592.
6	1115.	2057.	1118.	1696.	3062.
7	1224.	483.	1030.	733.	1413.
8	358.	504.	221.	590.	552.
9	82.	170.	232.	111.	400.
10	47.	104.	136.	120.	79.
=====					
Total	14694.	13613.	14714.	20385.	25377.

Catch Biomass

AGE	1978	1979	1980	1981	1982
1	88.	194.	219.	716.	499.
2	522.	3060.	5991.	5636.	14565.
3	19793.	1804.	14476.	11284.	11262.
4	8279.	19626.	1932.	9478.	11116.
5	3600.	5951.	13759.	1607.	10775.
6	1016.	3228.	6633.	10268.	1954.
7	1600.	1541.	3472.	3661.	6694.
8	197.	3147.	699.	1596.	1935.
9	418.	135.	1289.	2180.	968.
10	149.	476.	212.	1115.	1322.
=====					
Total	35661.	39162.	48682.	47542.	61088.
=====					
AGE	1983	1984	1985	1986	1987
1	423.	152.	142.	518.	60.
2	7442.	2320.	10313.	2163.	11683.
3	20916.	8631.	6105.	11201.	3753.
4	8984.	12207.	6287.	3106.	9053.
5	5527.	4562.	10441.	2886.	1729.
6	4812.	3672.	3197.	4414.	1944.
7	803.	3935.	2203.	759.	2470.
8	1867.	607.	2023.	700.	580.
9	792.	1853.	326.	725.	435.
10	1838.	1829.	1260.	405.	407.
=====					
Total	53404.	39767.	42297.	26877.	32113.
=====					
AGE	1988	1989	1990	1991	1992
1	160.	388.	38.	183.	159.
2	3244.	3746.	8282.	2983.	6900.
3	19856.	6685.	13235.	8726.	5505.
4	3766.	15879.	7018.	11124.	4067.
5	8527.	1987.	11285.	6935.	6780.
6	1518.	3506.	1476.	6337.	2708.
7	1311.	646.	1928.	1034.	2522.
8	2274.	511.	275.	842.	418.
9	536.	679.	288.	264.	431.
10	784.	312.	586.	381.	196.
=====					
Total	41977.	34339.	44412.	38810.	29685.

Catch Biomass

AGE	1993	1994	1995	1996	1997
1	85.	45.	13.	32.	68.
2	2005.	736.	879.	414.	1003.
3	9781.	3323.	2825.	2359.	1745.
4	3953.	7043.	2492.	4086.	3516.
5	2369.	2037.	2007.	1250.	3560.
6	3117.	690.	306.	1194.	847.
7	1313.	1049.	200.	145.	730.
8	1258.	467.	244.	113.	153.
9	480.	275.	76.	124.	115.
10	259.	88.	27.	3.	47.
=====					
Total	24620.	15754.	9068.	9719.	11784.
=====					
AGE	1998	1999	2000	2001	2002
1	39.	25.	44.	7.	16.
2	1316.	510.	1442.	983.	149.
3	2963.	4321.	1768.	5900.	2490.
4	1693.	2860.	3917.	2208.	4483.
5	1763.	1302.	1437.	2865.	1443.
6	1590.	738.	482.	950.	1916.
7	297.	955.	324.	328.	548.
8	124.	187.	311.	198.	150.
9	66.	48.	34.	134.	98.
10	36.	45.	13.	13.	76.
=====					
Total	9888.	10991.	9771.	13584.	11369.
=====					
AGE	2003	2004	2005	2006	2007
1	10.	17.	5.	12.	4.
2	293.	106.	377.	75.	747.
3	911.	1027.	424.	1764.	758.
4	2328.	801.	1775.	647.	3408.
5	3520.	1218.	579.	1347.	261.
6	735.	1221.	522.	321.	539.
7	824.	329.	466.	202.	96.
8	195.	363.	135.	182.	72.
9	54.	101.	78.	29.	60.
10	30.	56.	42.	31.	10.
=====					
Total	8900.	5238.	4403.	4610.	5955.



Catch Numbers

AGE	1978	1979	1980	1981	1982
1	151.6	279.2	339.9	1219.2	775.4
2	416.8	2242.7	4238.7	3910.7	10457.1
3	8109.1	953.6	5955.4	4738.2	4434.4
4	2429.6	4585.0	544.9	2685.5	2988.0
5	896.8	1206.9	2464.6	317.9	2039.8
6	178.4	449.8	983.0	1406.0	297.1
7	240.8	159.5	418.1	417.0	707.2
8	22.6	304.1	70.4	162.9	198.6
9	42.1	12.9	138.7	155.5	74.6
10	10.7	35.0	14.2	66.4	84.6
=====					
Total	12498.5	10228.7	15167.9	15079.3	22056.8
=====					
AGE	1983	1984	1985	1986	1987
1	626.2	280.9	176.0	768.3	103.8
2	5181.7	1547.7	7443.7	1594.1	7956.1
3	8753.3	3485.7	2942.2	4576.3	1515.5
4	2680.4	3328.4	1690.1	860.2	2170.1
5	1155.3	923.9	2097.7	525.3	299.7
6	746.4	560.2	496.5	615.4	249.9
7	94.6	450.3	267.2	85.5	277.3
8	175.0	58.9	196.8	70.4	56.1
9	67.7	167.0	27.7	56.0	36.2
10	112.6	124.9	89.7	27.8	26.0
=====					
Total	19593.2	10927.9	15427.6	9179.3	12690.7
=====					
AGE	1988	1989	1990	1991	1992
1	324.9	891.5	71.8	278.7	191.7
2	2352.1	2608.6	5561.1	1963.0	4808.4
3	8368.3	3032.8	5373.4	3491.4	2286.3
4	1074.1	4254.4	1964.0	3160.5	1070.7
5	1575.6	383.5	2272.1	1442.1	1500.0
6	223.8	534.2	230.6	1088.0	448.1
7	150.3	81.4	229.4	141.3	356.0
8	218.0	51.2	24.6	89.7	44.1
9	46.5	60.2	23.2	27.5	36.4
10	52.5	21.3	40.4	26.0	10.4
=====					
Total	14386.1	11919.1	15790.6	11708.2	10752.1

Catch Numbers

AGE	1993	1994	1995	1996	1997
1	299.2	94.4	32.3	64.9	126.9
2	1534.9	614.6	652.8	287.3	685.2
3	4429.4	1543.4	1429.0	986.6	749.6
4	1224.8	1987.7	669.9	1269.8	1020.7
5	475.3	425.6	382.3	256.3	882.9
6	535.6	97.6	41.2	183.8	147.7
7	178.0	146.2	21.4	17.9	94.4
8	141.0	51.2	20.0	11.6	18.9
9	43.1	30.5	6.4	11.3	10.1
10	21.2	5.6	1.4	0.3	3.9
=====					
Total	8882.5	4996.8	3256.7	3089.8	3740.3
AGE	1998	1999	2000	2001	2002
1	63.3	47.7	113.5	11.7	33.6
2	918.9	356.3	943.2	719.8	113.0
3	1310.3	2021.8	741.1	2667.3	1182.7
4	494.3	852.6	1156.4	751.6	1516.2
5	385.6	286.6	315.8	698.7	365.4
6	285.2	125.8	88.0	180.4	371.5
7	40.2	143.8	46.3	54.8	84.7
8	16.0	22.2	38.8	25.8	18.7
9	5.6	5.0	4.2	14.8	10.6
10	2.9	3.4	1.0	1.3	6.5
=====					
Total	3522.3	3865.2	3448.3	5126.2	3702.9
AGE	2003	2004	2005	2006	2007
1	17.0	50.5	12.3	32.8	10.6
2	201.3	69.4	364.1	69.7	526.1
3	404.4	434.3	201.8	842.8	395.2
4	800.7	260.1	578.4	208.3	1175.8
5	910.4	313.6	144.5	366.1	71.9
6	156.0	253.0	106.0	70.8	129.2
7	142.4	58.2	85.3	31.2	16.2
8	28.2	49.2	18.0	28.5	10.4
9	6.5	11.8	8.9	3.8	8.6
10	2.9	5.0	3.7	3.4	1.1
=====					
Total	2669.8	1505.2	1523.0	1657.4	2345.1

## Surplus Production

Average Adjustment Factor (Delta) = 1.0000

Year	Biomass	Delta Biomass	Catch Biomass	Surplus Production
1978	107771.534	15077.374	35660.721	50738.095
1979	122848.908	7864.015	39162.286	47026.301
1980	130712.923	50.259	48682.434	48732.694
1981	130763.183	-1207.795	47541.857	46334.062
1982	129555.388	-17271.698	61088.247	43816.549
1983	112283.690	-19362.222	53404.330	34042.108
1984	92921.468	-11213.851	39767.136	28553.284
1985	81707.616	-1272.242	42297.434	41025.193
1986	80435.375	9628.756	26876.781	36505.537
1987	90064.131	6272.381	32112.683	38385.065
1988	96336.512	-9637.748	41976.636	32338.888
1989	86698.764	-203.999	34338.791	34134.792
1990	86494.764	-12018.565	44411.969	32393.405
1991	74476.200	-16619.991	38810.185	22190.193
1992	57856.208	-16685.047	29684.877	12999.830
1993	41171.161	-13879.167	24620.033	10740.867
1994	27291.994	-3497.010	15754.070	12257.060
1995	23794.985	1618.018	9068.146	10686.164
1996	25413.002	2056.393	9718.713	11775.106
1997	27469.395	-388.372	11784.450	11396.079
1998	27081.024	2690.824	9887.960	12578.784
1999	29771.848	825.652	10991.218	11816.870
2000	30597.500	1926.115	9770.992	11697.107
2001	32523.616	-6190.113	13584.079	7393.966
2002	26333.503	-5573.083	11369.031	5795.948
2003	20760.420	-1266.742	8900.391	7633.649
2004	19493.678	1866.809	5237.603	7104.412
2005	21360.488	4919.513	4402.945	9322.458
2006	26280.000	5664.618	4610.067	10274.685
2007	31944.618	4985.780	5955.462	10941.242
2008	36930.398			

Summary of Survey Indices Used in the Estimate

INDEX	Survey Tag	Age	Time	Type	Catchability	Std. Error	CV
1	spr_36	1	JAN-1	NUMBER	0.2194E-01	0.4344E-02	0.1980E+00
2	spr_36	2	JAN-1	NUMBER	0.9200E-01	0.7276E-02	0.7909E-01
3	spr_36	3	JAN-1	NUMBER	0.1862E+00	0.1931E-01	0.1037E+00
4	spr_36	4	JAN-1	NUMBER	0.3161E+00	0.4509E-01	0.1426E+00
5	spr_36	5	JAN-1	NUMBER	0.4022E+00	0.6249E-01	0.1554E+00
6	spr_36	6	JAN-1	NUMBER	0.4090E+00	0.6140E-01	0.1501E+00
7	spr_36	7	JAN-1	NUMBER	0.4272E+00	0.7710E-01	0.1805E+00
8	spr_36	8	JAN-1	NUMBER	0.5178E+00	0.8356E-01	0.1614E+00
9	spr_41	1	JAN-1	NUMBER	0.1413E-01	0.1069E-01	0.7560E+00
10	spr_41	2	JAN-1	NUMBER	0.8999E-01	0.2087E-01	0.2319E+00
11	spr_41	3	JAN-1	NUMBER	0.1987E+00	0.4671E-01	0.2350E+00
12	spr_41	4	JAN-1	NUMBER	0.1773E+00	0.2236E-01	0.1261E+00
13	spr_41	5	JAN-1	NUMBER	0.2163E+00	0.5405E-01	0.2499E+00
14	spr_41	6	JAN-1	NUMBER	0.2077E+00	0.3557E-01	0.1713E+00
15	spr_41	7	JAN-1	NUMBER	0.3002E+00	0.1126E+00	0.3750E+00
16	spr_41	8	JAN-1	NUMBER	0.2915E+00	0.1651E+00	0.5663E+00
17	sp_can	1	JAN-1	NUMBER	0.2092E-01	0.5624E-02	0.2688E+00
18	sp_can	2	JAN-1	NUMBER	0.9815E-01	0.2095E-01	0.2135E+00
19	sp_can	3	JAN-1	NUMBER	0.3272E+00	0.3356E-01	0.1026E+00
20	sp_can	4	JAN-1	NUMBER	0.6153E+00	0.7791E-01	0.1266E+00
21	sp_can	5	JAN-1	NUMBER	0.9495E+00	0.1127E+00	0.1187E+00
22	sp_can	6	JAN-1	NUMBER	0.1129E+01	0.1895E+00	0.1678E+00
23	sp_can	7	JAN-1	NUMBER	0.1217E+01	0.2357E+00	0.1936E+00
24	sp_can	8	JAN-1	NUMBER	0.1282E+01	0.2649E+00	0.2067E+00
25	us0aut	1	JAN-1	NUMBER	0.1722E-01	0.3661E-02	0.2126E+00
26	us1aut	2	JAN-1	NUMBER	0.7467E-01	0.8750E-02	0.1172E+00
27	us2aut	3	JAN-1	NUMBER	0.1312E+00	0.1526E-01	0.1163E+00
28	us3aut	4	JAN-1	NUMBER	0.1586E+00	0.2294E-01	0.1447E+00
29	us4aut	5	JAN-1	NUMBER	0.1229E+00	0.2235E-01	0.1818E+00
30	us5aut	6	JAN-1	NUMBER	0.1431E+00	0.2336E-01	0.1632E+00

Survey Index: 1 Tag: spr\_36 AGE = 1  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.219439E-01 % Variance Contribution = 7.1686  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.629901E+03	N/A
1979	N/A	0.569281E+03	N/A
1980	N/A	0.502813E+03	N/A
1981	N/A	0.100702E+04	N/A
1982	0.693828E+03	0.435869E+03	0.464881E+00
1983	0.452853E+03	0.248083E+03	0.601803E+00
1984	0.549434E+03	0.636826E+03	-0.147609E+00
1985	0.151770E+03	0.210997E+03	-0.329473E+00
1986	0.119053E+04	0.976626E+03	0.198052E+00
1987	0.269116E+02	0.392754E+03	-0.268063E+01

1988	0.983845E+03	0.545403E+03	0.589944E+00
1989	0.424029E+03	0.391672E+03	0.793757E-01
1990	0.236877E+03	0.223922E+03	0.562433E-01
1991	0.140241E+04	0.434410E+03	0.117196E+01
1992	0.167617E+03	0.163924E+03	0.222766E-01
1993	0.116116E+02	0.216663E+03	-0.292634E+01
1994	0.170486E+03	0.138644E+03	0.206745E+00
1995	0.676205E+02	0.861973E+02	-0.242727E+00
1996	0.997232E+02	0.146805E+03	-0.386707E+00
1997	0.397254E+03	0.234179E+03	0.528488E+00
1998	0.152044E+03	0.109196E+03	0.331027E+00
1999	0.290017E+03	0.272079E+03	0.638480E-01
2000	0.301492E+03	0.135147E+03	0.802378E+00
2001	0.829205E+02	0.627228E+02	0.279157E+00
2002	0.883848E+02	0.117140E+03	-0.281673E+00
2003	0.224036E+02	0.435161E+02	-0.663908E+00
2004	0.870051E+03	0.296740E+03	0.107570E+01
2005	0.162563E+02	0.646176E+02	-0.138001E+01
2006	0.243980E+03	0.157510E+03	0.437598E+00
2007	0.170895E+03	0.155108E+03	0.969288E-01
2008	0.864177E+03	0.113194E+03	0.203267E+01

Survey Index: 2 Tag: spr\_36 AGE = 2  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.919973E-01 % Variance Contribution = 1.1443  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.433026E+03	N/A
1979	N/A	0.214949E+04	N/A
1980	N/A	0.193082E+04	N/A
1981	N/A	0.169763E+04	N/A
1982	0.742514E+04	0.335525E+04	0.794345E+00
1983	0.266630E+04	0.143170E+04	0.621829E+00
1984	0.588777E+03	0.799543E+03	-0.305993E+00
1985	0.362432E+04	0.216252E+04	0.516393E+00
1986	0.558723E+03	0.709610E+03	-0.239061E+00
1987	0.220279E+04	0.328837E+04	-0.400667E+00
1988	0.831664E+03	0.133947E+04	-0.476604E+00
1989	0.192671E+04	0.184506E+04	0.432995E-01
1990	0.125883E+04	0.127037E+04	-0.912143E-02
1991	0.721013E+03	0.762630E+03	-0.561161E-01
1992	0.171087E+04	0.146793E+04	0.153150E+00
1993	0.544789E+03	0.546735E+03	-0.356575E-02
1994	0.372118E+03	0.718830E+03	-0.658415E+00
1995	0.521429E+03	0.468042E+03	0.108017E+00
1996	0.292203E+03	0.293182E+03	-0.334671E-02
1997	0.597110E+03	0.498505E+03	0.180487E+00
1998	0.908711E+03	0.793261E+03	0.135875E+00
1999	0.397390E+03	0.369547E+03	0.726405E-01
2000	0.110187E+04	0.929927E+03	0.169660E+00
2001	0.320480E+03	0.454454E+03	-0.349277E+00
2002	0.126908E+03	0.214320E+03	-0.524006E+00
2003	0.290700E+03	0.399284E+03	-0.317381E+00
2004	0.792321E+02	0.147953E+03	-0.624515E+00
2005	0.660905E+03	0.101434E+04	-0.428386E+00
2006	0.315562E+03	0.220773E+03	0.357221E+00
2007	0.872783E+03	0.537917E+03	0.483983E+00
2008	0.113603E+04	0.531517E+03	0.759555E+00

Survey Index: 3 Tag: spr\_36 AGE = 3  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.186189E+00 % Variance Contribution = 1.9673  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.471667E+04	N/A
1979	N/A	0.647539E+03	N/A
1980	N/A	0.318520E+04	N/A
1981	N/A	0.248941E+04	N/A
1982	0.129803E+05	0.215811E+04	0.179420E+01
1983	0.412144E+04	0.381182E+04	0.780942E-01
1984	0.103917E+04	0.150732E+04	-0.371914E+00
1985	0.906115E+03	0.106547E+04	-0.162005E+00

1986	0.251958E+04	0.234013E+04	0.738855E-01
1987	0.516921E+03	0.908851E+03	-0.564291E+00
1988	0.430258E+04	0.411688E+04	0.441184E-01
1989	0.910350E+03	0.182518E+04	-0.695607E+00
1990	0.237300E+04	0.261964E+04	-0.988808E-01
1991	0.940813E+03	0.117859E+04	-0.225326E+00
1992	0.639595E+03	0.935161E+03	-0.379884E+00
1993	0.178423E+04	0.162897E+04	0.910342E-01
1994	0.273214E+03	0.649205E+03	-0.865492E+00
1995	0.116649E+04	0.108788E+04	0.697642E-01
1996	0.100570E+04	0.666025E+03	0.412114E+00
1997	0.232505E+03	0.437564E+03	-0.632309E+00
1998	0.177316E+04	0.711063E+03	0.913758E+00
1999	0.831938E+03	0.116020E+04	-0.332589E+00
2000	0.113357E+04	0.552513E+03	0.718646E+00
2001	0.108425E+04	0.138253E+04	-0.243027E+00
2002	0.523615E+03	0.632316E+03	-0.188632E+00
2003	0.370479E+03	0.336138E+03	0.972743E-01
2004	0.790819E+03	0.627784E+03	0.230873E+00
2005	0.188245E+03	0.233488E+03	-0.215388E+00
2006	0.178395E+04	0.161956E+04	0.966774E-01
2007	0.513096E+03	0.354103E+03	0.370876E+00
2008	0.790272E+03	0.802993E+03	-0.159690E-01

Survey Index: 4 Tag: spr\_36 AGE = 4  
Time = JAN-1 Type = NUMBER  
Catchability = 0.316089E+00 % Variance Contribution = 3.7219  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.242136E+04	N/A
1979	N/A	0.425697E+04	N/A
1980	N/A	0.629366E+03	N/A
1981	N/A	0.274021E+04	N/A
1982	0.113717E+05	0.211816E+04	0.168058E+01
1983	0.108767E+04	0.174476E+04	-0.472583E+00
1984	0.169147E+04	0.282464E+04	-0.512783E+00
1985	0.151675E+04	0.111018E+04	0.312051E+00
1986	0.498889E+03	0.652071E+03	-0.267770E+00
1987	0.104272E+04	0.195689E+04	-0.629522E+00
1988	0.558450E+03	0.833493E+03	-0.400461E+00
1989	0.216263E+04	0.335380E+04	-0.438769E+00
1990	0.921005E+03	0.167685E+04	-0.599206E+00
1991	0.126894E+04	0.212050E+04	-0.513469E+00
1992	0.229637E+03	0.656061E+03	-0.104975E+01
1993	0.280454E+03	0.654340E+03	-0.847215E+00
1994	0.295755E+03	0.101596E+04	-0.123406E+01
1995	0.729482E+03	0.466430E+03	0.447226E+00
1996	0.170376E+04	0.110617E+04	0.431932E+00
1997	0.667462E+03	0.645705E+03	0.331410E-01
1998	0.115816E+04	0.395670E+03	0.107400E+01
1999	0.696287E+03	0.617105E+03	0.120722E+00
2000	0.155882E+04	0.103950E+04	0.405195E+00
2001	0.218845E+03	0.557473E+03	-0.935052E+00
2002	0.135651E+04	0.116630E+04	0.151080E+00

2003	0.850380E+03	0.543852E+03	0.447005E+00
2004	0.192138E+04	0.352281E+03	0.169637E+01
2005	0.861991E+03	0.748876E+03	0.140671E+00
2006	0.453399E+03	0.267099E+03	0.529152E+00
2007	0.245032E+04	0.201089E+04	0.197642E+00
2008	0.479901E+03	0.379823E+03	0.233874E+00

Survey Index: 5 Tag: spr\_36 AGE = 5  
Time = JAN-1 Type = NUMBER  
Catchability = 0.402164E+00 % Variance Contribution = 4.4165  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.119316E+04	N/A
1979	N/A	0.164587E+04	N/A
1980	N/A	0.278155E+04	N/A
1981	N/A	0.458814E+03	N/A
1982	0.848057E+04	0.188551E+04	0.150358E+01
1983	0.952152E+03	0.113281E+04	-0.173731E+00
1984	0.576892E+03	0.855716E+03	-0.394284E+00
1985	0.192930E+04	0.174363E+04	0.101187E+00
1986	0.737679E+03	0.549920E+03	0.293736E+00
1987	0.848330E+02	0.369872E+03	-0.147247E+01
1988	0.879067E+03	0.125638E+04	-0.357130E+00
1989	0.321163E+03	0.481806E+03	-0.405591E+00
1990	0.124572E+04	0.196268E+04	-0.454595E+00
1991	0.654075E+03	0.103935E+04	-0.463129E+00
1992	0.372801E+03	0.107426E+04	-0.105835E+01
1993	0.122263E+03	0.299661E+03	-0.896473E+00
1994	0.453536E+02	0.244043E+03	-0.168285E+01
1995	0.818277E+03	0.349092E+03	0.851866E+00
1996	0.237970E+03	0.245232E+03	-0.300622E-01
1997	0.576892E+03	0.694826E+03	-0.186007E+00
1998	0.103125E+04	0.306567E+03	0.121309E+01
1999	0.325398E+03	0.234259E+03	0.328623E+00
2000	0.505856E+03	0.336379E+03	0.408013E+00
2001	0.522795E+03	0.666086E+03	-0.242228E+00
2002	0.327038E+03	0.310469E+03	0.519894E-01
2003	0.951332E+03	0.669490E+03	0.351347E+00
2004	0.184952E+04	0.279009E+03	0.189144E+01
2005	0.374850E+03	0.272933E+03	0.317299E+00
2006	0.988216E+03	0.571052E+03	0.548421E+00
2007	0.247122E+03	0.202956E+03	0.196896E+00
2008	0.131225E+04	0.166917E+04	-0.240583E+00



Survey Index: 6 Tag: spr\_36 AGE = 6  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.408966E+00 % Variance Contribution = 4.1235  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.516862E+03	N/A
1979	N/A	0.664295E+03	N/A
1980	N/A	0.927325E+03	N/A
1981	N/A	0.141277E+04	N/A
1982	0.400122E+03	0.265264E+03	0.411044E+00
1983	0.605306E+03	0.824229E+03	-0.308714E+00
1984	0.546975E+03	0.520515E+03	0.495839E-01
1985	0.362555E+03	0.374729E+03	-0.330267E-01
1986	0.844096E+03	0.686242E+03	0.207035E+00
1987	0.245073E+03	0.265528E+03	-0.801644E-01
1988	0.874286E+02	0.198035E+03	-0.817621E+00
1989	0.479628E+03	0.471524E+03	0.170410E-01
1990	0.178136E+03	0.260474E+03	-0.379956E+00
1991	0.448208E+03	0.804430E+03	-0.584877E+00
1992	0.194529E+03	0.340640E+03	-0.560246E+00
1993	0.188791E+03	0.348724E+03	-0.613638E+00
1994	0.778660E+01	0.772038E+02	-0.229404E+01
1995	0.145760E+03	0.494726E+02	0.108054E+01
1996	0.284826E+03	0.150930E+03	0.635065E+00
1997	0.680304E+02	0.110445E+03	-0.484560E+00
1998	0.727570E+03	0.256647E+03	0.104201E+01
1999	0.162972E+03	0.114647E+03	0.351720E+00
2000	0.139886E+03	0.904873E+02	0.435616E+00
2001	0.241248E+03	0.164418E+03	0.383413E+00
2002	0.306956E+03	0.299063E+03	0.260502E-01
2003	0.875652E+02	0.125102E+03	-0.356744E+00
2004	0.121922E+04	0.226003E+03	0.168542E+01
2005	0.280454E+03	0.117751E+03	0.867840E+00
2006	0.290700E+03	0.174091E+03	0.512714E+00
2007	0.285782E+03	0.340941E+03	-0.176479E+00
2008	0.516375E+02	0.142489E+03	-0.101502E+01

Survey Index: 7 Tag: spr\_36 AGE = 7  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.427224E+00 % Variance Contribution = 5.9587  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.517738E+03	N/A
1979	N/A	0.373407E+03	N/A
1980	N/A	0.395609E+03	N/A
1981	N/A	0.417749E+03	N/A
1982	0.254868E+04	0.670954E+03	0.133463E+01
1983	0.371571E+02	0.113517E+03	-0.111680E+01
1984	0.285236E+03	0.419358E+03	-0.385408E+00
1985	0.262149E+03	0.231313E+03	0.125142E+00
1986	0.842866E+02	0.131658E+03	-0.445982E+00

1987	0.185103E+03	0.351439E+03	-0.641124E+00
1988	0.505446E+02	0.131526E+03	-0.956345E+00
1989	0.689866E+02	0.839973E+02	-0.196872E+00
1990	0.195485E+03	0.199499E+03	-0.203288E-01
1991	0.739045E+02	0.134524E+03	-0.598966E+00
1992	0.216796E+03	0.274393E+03	-0.235605E+00
1993	0.400259E+02	0.120883E+03	-0.110530E+01
1994	0.602438E+02	0.953431E+02	-0.459083E+00
1995	0.319114E+03	0.288724E+02	0.240266E+01
1996	0.378402E+02	0.265352E+02	0.354898E+00
1997	0.182917E+03	0.590595E+02	0.113049E+01
1998	0.138793E+03	0.382960E+02	0.128764E+01
1999	0.868821E+02	0.110674E+03	-0.242038E+00
2000	0.348348E+02	0.500415E+02	-0.362236E+00
2001	0.315563E+02	0.437492E+02	-0.326701E+00
2002	0.532768E+02	0.717704E+02	-0.297971E+00
2003	0.108603E+03	0.114295E+03	-0.510902E-01
2004	0.243980E+03	0.475882E+02	0.163450E+01
2005	0.174037E+03	0.967652E+02	0.586983E+00
2006	0.165704E+03	0.601494E+02	0.101338E+01
2007	0.422116E+02	0.121665E+03	-0.105858E+01
2008	0.614732E+02	0.241894E+03	-0.136990E+01

Survey Index: 8 Tag: spr\_36 AGE = 8  
Time = JAN-1 Type = NUMBER  
Catchability = 0.517786E+00 % Variance Contribution = 3.4338  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.424445E+02	N/A
1979	N/A	0.401573E+03	N/A
1980	N/A	0.296199E+03	N/A
1981	N/A	0.199172E+03	N/A
1982	0.503397E+03	0.221488E+03	0.821012E+00
1983	0.298623E+03	0.338660E+03	-0.125813E+00
1984	N/A	0.687540E+02	N/A
1985	0.245756E+03	0.207895E+03	0.167306E+00
1986	0.170895E+03	0.106124E+03	0.476443E+00
1987	0.448071E+02	0.908907E+02	-0.707291E+00
1988	0.672107E+02	0.220010E+03	-0.118584E+01
1989	0.539598E+02	0.610824E+02	-0.123985E+00
1990	0.176223E+02	0.456522E+02	-0.951887E+00
1991	0.554625E+02	0.920049E+02	-0.506135E+00
1992	0.267750E+02	0.681236E+02	-0.933855E+00
1993	0.469929E+02	0.108255E+03	-0.834493E+00
1994	N/A	0.382234E+02	N/A
1995	0.382500E+02	0.275734E+02	0.327294E+00
1996	0.247259E+02	0.187106E+02	0.278764E+00
1997	0.274580E+02	0.180107E+02	0.421694E+00
1998	0.422116E+02	0.153890E+02	0.100904E+01
1999	0.416652E+02	0.194048E+02	0.764146E+00
2000	0.274580E+02	0.435692E+02	-0.461693E+00
2001	0.241795E+02	0.282009E+02	-0.153848E+00
2002	N/A	0.181436E+02	N/A
2003	0.168027E+02	0.321143E+02	-0.647762E+00
2004	0.356818E+03	0.477458E+02	0.201133E+01

2005	0.407089E+02	0.203667E+02	0.692547E+00
2006	0.736313E+02	0.564696E+02	0.265367E+00
2007	0.247259E+02	0.451595E+02	-0.602348E+00
2008	N/A	0.113157E+03	N/A

Survey Index: 9 Tag: spr\_41 AGE = 1  
Time = JAN-1 Type = NUMBER  
Catchability = 0.141338E-01 % Variance Contribution = 1.7874  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.477900E+03	0.405710E+03	0.163763E+00
1979	0.550671E+03	0.366665E+03	0.406688E+00
1980	0.401143E+02	0.323854E+03	-0.208856E+01
1981	0.295997E+04	0.648606E+03	0.151811E+01
1982	N/A	0.280737E+03	N/A
1983	N/A	0.159787E+03	N/A
1984	N/A	0.410170E+03	N/A
1985	N/A	0.135900E+03	N/A
1986	N/A	0.629030E+03	N/A
1987	N/A	0.252967E+03	N/A
1988	N/A	0.351286E+03	N/A
1989	N/A	0.252270E+03	N/A
1990	N/A	0.144225E+03	N/A
1991	N/A	0.279797E+03	N/A
1992	N/A	0.105581E+03	N/A
1993	N/A	0.139549E+03	N/A
1994	N/A	0.892983E+02	N/A
1995	N/A	0.555184E+02	N/A
1996	N/A	0.945549E+02	N/A
1997	N/A	0.150831E+03	N/A
1998	N/A	0.703313E+02	N/A
1999	N/A	0.175242E+03	N/A
2000	N/A	0.870463E+02	N/A
2001	N/A	0.403988E+02	N/A
2002	N/A	0.754484E+02	N/A
2003	N/A	0.280280E+02	N/A
2004	N/A	0.191126E+03	N/A
2005	N/A	0.416192E+02	N/A
2006	N/A	0.101450E+03	N/A
2007	N/A	0.999029E+02	N/A
2008	N/A	0.729069E+02	N/A

Survey Index: 10 Tag: spr\_41 AGE = 2  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.899870E-01 % Variance Contribution = 0.1682  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.246600E+03	0.423564E+03	-0.540937E+00
1979	0.166847E+04	0.210252E+04	-0.231231E+00
1980	0.285043E+04	0.188863E+04	0.411618E+00
1981	0.238140E+04	0.166053E+04	0.360549E+00
1982	N/A	0.328194E+04	N/A
1983	N/A	0.140041E+04	N/A
1984	N/A	0.782072E+03	N/A
1985	N/A	0.211527E+04	N/A
1986	N/A	0.694104E+03	N/A
1987	N/A	0.321651E+04	N/A
1988	N/A	0.131021E+04	N/A
1989	N/A	0.180474E+04	N/A
1990	N/A	0.124261E+04	N/A
1991	N/A	0.745965E+03	N/A
1992	N/A	0.143585E+04	N/A
1993	N/A	0.534788E+03	N/A
1994	N/A	0.703123E+03	N/A
1995	N/A	0.457814E+03	N/A
1996	N/A	0.286776E+03	N/A
1997	N/A	0.487612E+03	N/A
1998	N/A	0.775927E+03	N/A
1999	N/A	0.361472E+03	N/A
2000	N/A	0.909607E+03	N/A
2001	N/A	0.444524E+03	N/A
2002	N/A	0.209636E+03	N/A
2003	N/A	0.390559E+03	N/A
2004	N/A	0.144720E+03	N/A
2005	N/A	0.992178E+03	N/A
2006	N/A	0.215949E+03	N/A
2007	N/A	0.526163E+03	N/A
2008	N/A	0.519903E+03	N/A

Survey Index: 11 Tag: spr\_41 AGE = 3  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.198731E+00 % Variance Contribution = 0.1728  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.711116E+04	0.503439E+04	0.345372E+00
1979	0.353700E+03	0.691159E+03	-0.669921E+00
1980	0.345806E+04	0.339976E+04	0.170022E-01
1981	0.361389E+04	0.265710E+04	0.307547E+00
1982	N/A	0.230348E+04	N/A
1983	N/A	0.406860E+04	N/A
1984	N/A	0.160886E+04	N/A
1985	N/A	0.113724E+04	N/A

1986	N/A	0.249777E+04	N/A
1987	N/A	0.970074E+03	N/A
1988	N/A	0.439420E+04	N/A
1989	N/A	0.194813E+04	N/A
1990	N/A	0.279610E+04	N/A
1991	N/A	0.125798E+04	N/A
1992	N/A	0.998155E+03	N/A
1993	N/A	0.173871E+04	N/A
1994	N/A	0.692937E+03	N/A
1995	N/A	0.116117E+04	N/A
1996	N/A	0.710890E+03	N/A
1997	N/A	0.467039E+03	N/A
1998	N/A	0.758962E+03	N/A
1999	N/A	0.123835E+04	N/A
2000	N/A	0.589732E+03	N/A
2001	N/A	0.147566E+04	N/A
2002	N/A	0.674910E+03	N/A
2003	N/A	0.358781E+03	N/A
2004	N/A	0.670073E+03	N/A
2005	N/A	0.249216E+03	N/A
2006	N/A	0.172866E+04	N/A
2007	N/A	0.377956E+03	N/A
2008	N/A	0.857085E+03	N/A

Survey Index: 12 Tag: spr\_41 AGE = 4  
Time = JAN-1 Type = NUMBER  
Catchability = 0.177261E+00 % Variance Contribution = 0.0498  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.124907E+04	0.135789E+04	-0.835318E-01
1979	0.238050E+04	0.238729E+04	-0.284902E-02
1980	0.272957E+03	0.352946E+03	-0.257001E+00
1981	0.216630E+04	0.153670E+04	0.343382E+00
1982	N/A	0.118786E+04	N/A
1983	N/A	0.978455E+03	N/A
1984	N/A	0.158405E+04	N/A
1985	N/A	0.622583E+03	N/A
1986	N/A	0.365679E+03	N/A
1987	N/A	0.109742E+04	N/A
1988	N/A	0.467420E+03	N/A
1989	N/A	0.188080E+04	N/A
1990	N/A	0.940372E+03	N/A
1991	N/A	0.118917E+04	N/A
1992	N/A	0.367917E+03	N/A
1993	N/A	0.366951E+03	N/A
1994	N/A	0.569748E+03	N/A
1995	N/A	0.261573E+03	N/A
1996	N/A	0.620339E+03	N/A
1997	N/A	0.362109E+03	N/A
1998	N/A	0.221891E+03	N/A
1999	N/A	0.346070E+03	N/A
2000	N/A	0.582946E+03	N/A
2001	N/A	0.312629E+03	N/A
2002	N/A	0.654056E+03	N/A
2003	N/A	0.304990E+03	N/A

2004	N/A	0.197558E+03	N/A
2005	N/A	0.419967E+03	N/A
2006	N/A	0.149788E+03	N/A
2007	N/A	0.112770E+04	N/A
2008	N/A	0.213004E+03	N/A

Survey Index: 13 Tag: spr\_41 AGE = 5  
Time = JAN-1 Type = NUMBER  
Catchability = 0.216299E+00 % Variance Contribution = 0.1953  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.999771E+03	0.641727E+03	0.443364E+00
1979	0.702771E+03	0.885211E+03	-0.230795E+00
1980	0.219214E+04	0.149602E+04	0.382068E+00
1981	0.136157E+03	0.246768E+03	-0.594637E+00
1982	N/A	0.101410E+04	N/A
1983	N/A	0.609268E+03	N/A
1984	N/A	0.460237E+03	N/A
1985	N/A	0.937793E+03	N/A
1986	N/A	0.295768E+03	N/A
1987	N/A	0.198931E+03	N/A
1988	N/A	0.675730E+03	N/A
1989	N/A	0.259133E+03	N/A
1990	N/A	0.105560E+04	N/A
1991	N/A	0.559003E+03	N/A
1992	N/A	0.577780E+03	N/A
1993	N/A	0.161169E+03	N/A
1994	N/A	0.131256E+03	N/A
1995	N/A	0.187755E+03	N/A
1996	N/A	0.131895E+03	N/A
1997	N/A	0.373704E+03	N/A
1998	N/A	0.164883E+03	N/A
1999	N/A	0.125993E+03	N/A
2000	N/A	0.180918E+03	N/A
2001	N/A	0.358247E+03	N/A
2002	N/A	0.166982E+03	N/A
2003	N/A	0.360077E+03	N/A
2004	N/A	0.150062E+03	N/A
2005	N/A	0.146794E+03	N/A
2006	N/A	0.307134E+03	N/A
2007	N/A	0.109157E+03	N/A
2008	N/A	0.897742E+03	N/A

Survey Index: 14 Tag: spr\_41 AGE = 6  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.207689E+00 % Variance Contribution = 0.0917  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.182057E+03	0.262483E+03	-0.365866E+00
1979	0.302786E+03	0.337355E+03	-0.108111E+00
1980	0.480471E+03	0.470932E+03	0.200532E-01
1981	0.112963E+04	0.717462E+03	0.453924E+00
1982	N/A	0.134712E+03	N/A
1983	N/A	0.418576E+03	N/A
1984	N/A	0.264338E+03	N/A
1985	N/A	0.190302E+03	N/A
1986	N/A	0.348501E+03	N/A
1987	N/A	0.134846E+03	N/A
1988	N/A	0.100570E+03	N/A
1989	N/A	0.239458E+03	N/A
1990	N/A	0.132279E+03	N/A
1991	N/A	0.408522E+03	N/A
1992	N/A	0.172990E+03	N/A
1993	N/A	0.177096E+03	N/A
1994	N/A	0.392072E+02	N/A
1995	N/A	0.251241E+02	N/A
1996	N/A	0.766480E+02	N/A
1997	N/A	0.560882E+02	N/A
1998	N/A	0.130335E+03	N/A
1999	N/A	0.582225E+02	N/A
2000	N/A	0.459530E+02	N/A
2001	N/A	0.834981E+02	N/A
2002	N/A	0.151876E+03	N/A
2003	N/A	0.635317E+02	N/A
2004	N/A	0.114773E+03	N/A
2005	N/A	0.597986E+02	N/A
2006	N/A	0.884103E+02	N/A
2007	N/A	0.173143E+03	N/A
2008	N/A	0.723618E+02	N/A

Survey Index: 15 Tag: spr\_41 AGE = 7  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.300243E+00 % Variance Contribution = 0.4397  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.915814E+03	0.363855E+03	0.923058E+00
1979	0.107486E+03	0.262422E+03	-0.892596E+00
1980	0.238500E+03	0.278025E+03	-0.153343E+00
1981	0.331971E+03	0.293585E+03	0.122881E+00
1982	N/A	0.471532E+03	N/A
1983	N/A	0.797775E+02	N/A
1984	N/A	0.294715E+03	N/A
1985	N/A	0.162562E+03	N/A
1986	N/A	0.925261E+02	N/A

1987	N/A	0.246983E+03	N/A
1988	N/A	0.924333E+02	N/A
1989	N/A	0.590315E+02	N/A
1990	N/A	0.140204E+03	N/A
1991	N/A	0.945403E+02	N/A
1992	N/A	0.192837E+03	N/A
1993	N/A	0.849539E+02	N/A
1994	N/A	0.670051E+02	N/A
1995	N/A	0.202909E+02	N/A
1996	N/A	0.186484E+02	N/A
1997	N/A	0.415057E+02	N/A
1998	N/A	0.269136E+02	N/A
1999	N/A	0.777793E+02	N/A
2000	N/A	0.351681E+02	N/A
2001	N/A	0.307460E+02	N/A
2002	N/A	0.504386E+02	N/A
2003	N/A	0.803243E+02	N/A
2004	N/A	0.334440E+02	N/A
2005	N/A	0.680045E+02	N/A
2006	N/A	0.422717E+02	N/A
2007	N/A	0.855034E+02	N/A
2008	N/A	0.169998E+03	N/A

Survey Index: 16 Tag: spr\_41 AGE = 8  
Time = JAN-1 Type = NUMBER  
Catchability = 0.291472E+00 % Variance Contribution = 1.0030  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.837000E+02	0.238929E+02	0.125366E+01
1979	0.178200E+03	0.226054E+03	-0.237867E+00
1980	0.398571E+02	0.166737E+03	-0.143111E+01
1981	0.169843E+03	0.112118E+03	0.415324E+00
1982	N/A	0.124680E+03	N/A
1983	N/A	0.190639E+03	N/A
1984	N/A	0.387030E+02	N/A
1985	N/A	0.117028E+03	N/A
1986	N/A	0.597394E+02	N/A
1987	N/A	0.511642E+02	N/A
1988	N/A	0.123848E+03	N/A
1989	N/A	0.343846E+02	N/A
1990	N/A	0.256986E+02	N/A
1991	N/A	0.517915E+02	N/A
1992	N/A	0.383482E+02	N/A
1993	N/A	0.609389E+02	N/A
1994	N/A	0.215168E+02	N/A
1995	N/A	0.155216E+02	N/A
1996	N/A	0.105326E+02	N/A
1997	N/A	0.101386E+02	N/A
1998	N/A	0.866276E+01	N/A
1999	N/A	0.109234E+02	N/A
2000	N/A	0.245260E+02	N/A
2001	N/A	0.158749E+02	N/A
2002	N/A	0.102134E+02	N/A
2003	N/A	0.180778E+02	N/A



2004	N/A	0.268771E+02	N/A
2005	N/A	0.114648E+02	N/A
2006	N/A	0.317879E+02	N/A
2007	N/A	0.254212E+02	N/A
2008	N/A	0.636984E+02	N/A

Survey Index: 17 Tag: sp\_can AGE = 1  
Time = JAN-1 Type = NUMBER  
Catchability = 0.209249E-01 % Variance Contribution = 5.7602  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
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1978	N/A	0.600650E+03	N/A
1979	N/A	0.542845E+03	N/A
1980	N/A	0.479463E+03	N/A
1981	N/A	0.960256E+03	N/A
1982	N/A	0.415628E+03	N/A
1983	N/A	0.236563E+03	N/A
1984	N/A	0.607253E+03	N/A
1985	N/A	0.201198E+03	N/A
1986	0.844432E+03	0.931273E+03	-0.978887E-01
1987	0.351846E+03	0.374515E+03	-0.624372E-01
1988	0.394068E+03	0.520075E+03	-0.277450E+00
1989	0.229404E+04	0.373484E+03	0.181520E+01
1990	0.591102E+03	0.213523E+03	0.101824E+01
1991	0.166072E+04	0.414237E+03	0.138857E+01
1992	0.154812E+03	0.156312E+03	-0.963945E-02
1993	N/A	0.206602E+03	N/A
1994	N/A	0.132205E+03	N/A
1995	0.985170E+02	0.821945E+02	0.181141E+00
1996	0.197034E+03	0.139988E+03	0.341822E+00
1997	0.450363E+03	0.223305E+03	0.701519E+00
1998	0.140739E+02	0.104125E+03	-0.200127E+01
1999	0.464437E+03	0.259444E+03	0.582286E+00
2000	0.140739E+03	0.128871E+03	0.880899E-01
2001	N/A	0.598101E+02	N/A
2002	0.128934E+02	0.111701E+03	-0.215911E+01
2003	N/A	0.414953E+02	N/A
2004	0.753776E+03	0.282960E+03	0.979790E+00
2005	0.344185E+02	0.616168E+02	-0.582341E+00
2006	N/A	0.150196E+03	N/A
2007	0.193318E+03	0.147905E+03	0.267764E+00
2008	0.122714E+02	0.107938E+03	-0.217429E+01

Survey Index: 18 Tag: sp\_can AGE = 2  
Time = JAN-1 Type = NUMBER  
Catchability = 0.981470E-01 % Variance Contribution = 4.9873  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
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1978	N/A	0.461972E+03	N/A
1979	N/A	0.229318E+04	N/A

1980	N/A	0.205989E+04	N/A
1981	N/A	0.181111E+04	N/A
1982	N/A	0.357954E+04	N/A
1983	N/A	0.152740E+04	N/A
1984	N/A	0.852989E+03	N/A
1985	N/A	0.230708E+04	N/A
1986	0.319477E+04	0.757045E+03	0.143985E+01
1987	0.299773E+04	0.350819E+04	-0.157243E+00
1988	0.142146E+04	0.142901E+04	-0.530002E-02
1989	0.391253E+04	0.196840E+04	0.686965E+00
1990	0.343402E+04	0.135529E+04	0.929717E+00
1991	0.163257E+04	0.813609E+03	0.696430E+00
1992	0.402512E+04	0.156605E+04	0.943998E+00
1993	N/A	0.583283E+03	N/A
1994	N/A	0.766882E+03	N/A
1995	0.942949E+03	0.499329E+03	0.635747E+00
1996	0.689619E+03	0.312780E+03	0.790638E+00
1997	0.745915E+03	0.531829E+03	0.338290E+00
1998	0.942949E+03	0.846287E+03	0.108153E+00
1999	0.450363E+03	0.394250E+03	0.133070E+00
2000	0.619250E+03	0.992090E+03	-0.471305E+00
2001	0.844432E+02	0.484833E+03	-0.174773E+01
2002	0.121746E+03	0.228646E+03	-0.630241E+00
2003	0.313603E+02	0.425975E+03	-0.260884E+01
2004	0.134499E+03	0.157843E+03	-0.160049E+00
2005	0.188003E+04	0.108215E+04	0.552337E+00
2006	0.527756E+02	0.235531E+03	-0.149579E+01
2007	0.730710E+03	0.573875E+03	0.241605E+00
2008	0.454928E+03	0.567047E+03	-0.220303E+00

Survey Index: 19 Tag: sp\_can AGE = 3  
Time = JAN-1 Type = NUMBER  
Catchability = 0.327191E+00 % Variance Contribution = 1.1512  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.828862E+04	N/A
1979	N/A	0.113792E+04	N/A
1980	N/A	0.559736E+04	N/A
1981	N/A	0.437466E+04	N/A
1982	N/A	0.379245E+04	N/A
1983	N/A	0.669854E+04	N/A
1984	N/A	0.264883E+04	N/A
1985	N/A	0.187236E+04	N/A
1986	0.395475E+04	0.411233E+04	-0.390703E-01
1987	0.130887E+04	0.159713E+04	-0.199044E+00
1988	0.655842E+04	0.723462E+04	-0.981279E-01
1989	0.194219E+04	0.320741E+04	-0.501645E+00
1990	0.531992E+04	0.460351E+04	0.144640E+00
1991	0.258959E+04	0.207114E+04	0.223403E+00
1992	0.249107E+04	0.164336E+04	0.415969E+00
1993	N/A	0.286260E+04	N/A
1994	N/A	0.114085E+04	N/A
1995	0.211108E+04	0.191174E+04	0.991842E-01
1996	0.325106E+04	0.117041E+04	0.102163E+01

1997	0.774062E+03	0.768933E+03	0.664815E-02
1998	0.133702E+04	0.124955E+04	0.676540E-01
1999	0.209701E+04	0.203882E+04	0.281383E-01
2000	0.147776E+04	0.970934E+03	0.420021E+00
2001	0.900727E+03	0.242953E+04	-0.992251E+00
2002	0.805617E+03	0.111117E+04	-0.321562E+00
2003	0.419145E+03	0.590697E+03	-0.343086E+00
2004	0.551716E+03	0.110321E+04	-0.692945E+00
2005	0.661996E+03	0.410309E+03	0.478347E+00
2006	0.197858E+04	0.284606E+04	-0.363554E+00
2007	0.132932E+04	0.622267E+03	0.759053E+00
2008	0.125982E+04	0.141110E+04	-0.113402E+00

Survey Index: 20 Tag: sp\_can AGE = 4  
Time = JAN-1 Type = NUMBER  
Catchability = 0.615292E+00 % Variance Contribution = 1.7549  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.471337E+04	N/A
1979	N/A	0.828653E+04	N/A
1980	N/A	0.122511E+04	N/A
1981	N/A	0.533404E+04	N/A
1982	N/A	0.412317E+04	N/A
1983	N/A	0.339632E+04	N/A
1984	N/A	0.549839E+04	N/A
1985	N/A	0.216105E+04	N/A
1986	0.520733E+03	0.126931E+04	-0.890991E+00
1987	0.153405E+04	0.380925E+04	-0.909520E+00
1988	0.816284E+03	0.162246E+04	-0.686938E+00
1989	0.401105E+04	0.652844E+04	-0.487115E+00
1990	0.292736E+04	0.326412E+04	-0.108889E+00
1991	0.302588E+04	0.412773E+04	-0.310527E+00
1992	0.112591E+04	0.127707E+04	-0.125982E+00
1993	N/A	0.127372E+04	N/A
1994	N/A	0.197765E+04	N/A
1995	0.121035E+04	0.907944E+03	0.287484E+00
1996	0.565769E+04	0.215326E+04	0.966034E+00
1997	0.175923E+04	0.125692E+04	0.336216E+00
1998	0.492585E+03	0.770204E+03	-0.446988E+00
1999	0.153405E+04	0.120124E+04	0.244553E+00
2000	0.551695E+04	0.202346E+04	0.100301E+01
2001	0.591102E+03	0.108517E+04	-0.607499E+00
2002	0.288708E+04	0.227029E+04	0.240336E+00
2003	0.912160E+03	0.105865E+04	-0.148936E+00
2004	0.595577E+03	0.685744E+03	-0.140973E+00
2005	0.409251E+04	0.145775E+04	0.103227E+01
2006	0.925621E+03	0.519930E+03	0.576770E+00
2007	0.413611E+04	0.391436E+04	0.551031E-01
2008	0.835776E+03	0.739357E+03	0.122580E+00

Survey Index: 21 Tag: sp\_can AGE = 5  
Time = JAN-1 Type = NUMBER  
Catchability = 0.949463E+00 % Variance Contribution = 1.5410  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.281691E+04	N/A
1979	N/A	0.388570E+04	N/A
1980	N/A	0.656692E+04	N/A
1981	N/A	0.108321E+04	N/A
1982	N/A	0.445147E+04	N/A
1983	N/A	0.267443E+04	N/A
1984	N/A	0.202025E+04	N/A
1985	N/A	0.411652E+04	N/A
1986	0.914801E+03	0.129830E+04	-0.350102E+00
1987	0.478511E+03	0.873224E+03	-0.601512E+00
1988	0.143553E+04	0.296617E+04	-0.725735E+00
1989	0.506659E+03	0.113749E+04	-0.808738E+00
1990	0.544658E+04	0.463365E+04	0.161644E+00
1991	0.147776E+04	0.245379E+04	-0.507108E+00
1992	0.137924E+04	0.253621E+04	-0.609140E+00
1993	N/A	0.707464E+03	N/A
1994	N/A	0.576156E+03	N/A
1995	0.844432E+03	0.824164E+03	0.242937E-01
1996	0.153405E+04	0.578964E+03	0.974426E+00
1997	0.173108E+04	0.164040E+04	0.538060E-01
1998	0.492585E+03	0.723769E+03	-0.384805E+00
1999	0.577028E+03	0.553058E+03	0.424293E-01
2000	0.240663E+04	0.794152E+03	0.110871E+01
2001	0.156220E+04	0.157255E+04	-0.660507E-02
2002	0.961543E+03	0.732982E+03	0.271418E+00
2003	0.170676E+04	0.158059E+04	0.768030E-01
2004	0.634621E+03	0.658708E+03	-0.372520E-01
2005	0.159149E+04	0.644363E+03	0.904163E+00
2006	0.229716E+04	0.134819E+04	0.532914E+00
2007	0.545841E+03	0.479154E+03	0.130305E+00
2008	0.306929E+04	0.394071E+04	-0.249915E+00

Survey Index: 22 Tag: sp\_can AGE = 6  
Time = JAN-1 Type = NUMBER  
Catchability = 0.112928E+01 % Variance Contribution = 3.0804  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.142722E+04	N/A
1979	N/A	0.183433E+04	N/A
1980	N/A	0.256064E+04	N/A
1981	N/A	0.390111E+04	N/A
1982	N/A	0.732478E+03	N/A
1983	N/A	0.227596E+04	N/A
1984	N/A	0.143731E+04	N/A
1985	N/A	0.103475E+04	N/A
1986	0.619250E+03	0.189493E+04	-0.111843E+01
1987	0.168886E+03	0.733207E+03	-0.146820E+01
1988	0.182960E+03	0.546837E+03	-0.109488E+01
1989	0.591102E+03	0.130202E+04	-0.789687E+00
1990	0.591102E+03	0.719250E+03	-0.196220E+00
1991	0.184368E+04	0.222128E+04	-0.186324E+00

1992	0.844432E+03	0.940613E+03	-0.107868E+00
1993	N/A	0.962935E+03	N/A
1994	N/A	0.213184E+03	N/A
1995	0.267403E+03	0.136609E+03	0.671633E+00
1996	0.111183E+04	0.416764E+03	0.981247E+00
1997	0.379994E+03	0.304972E+03	0.219935E+00
1998	0.394068E+03	0.708683E+03	-0.586884E+00
1999	0.365920E+03	0.316577E+03	0.144849E+00
2000	0.109776E+04	0.249864E+03	0.148011E+01
2001	0.731841E+03	0.454010E+03	0.477443E+00
2002	0.171816E+04	0.825808E+03	0.732647E+00
2003	0.447151E+03	0.345445E+03	0.258062E+00
2004	0.545454E+03	0.624065E+03	-0.134636E+00
2005	0.721660E+03	0.325147E+03	0.797277E+00
2006	0.982657E+03	0.480720E+03	0.714976E+00
2007	0.851245E+03	0.941445E+03	-0.100716E+00
2008	0.196496E+03	0.393458E+03	-0.694333E+00

Survey Index: 23 Tag: sp\_can AGE = 7  
Time = JAN-1 Type = NUMBER  
Catchability = 0.121718E+01 % Variance Contribution = 4.1028  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.147506E+04	N/A
1979	N/A	0.106385E+04	N/A
1980	N/A	0.112711E+04	N/A
1981	N/A	0.119019E+04	N/A
1982	N/A	0.191158E+04	N/A
1983	N/A	0.323416E+03	N/A
1984	N/A	0.119477E+04	N/A
1985	N/A	0.659020E+03	N/A
1986	0.365920E+03	0.375098E+03	-0.247723E-01
1987	0.309625E+03	0.100126E+04	-0.117366E+01
1988	0.112591E+03	0.374722E+03	-0.120242E+01
1989	0.703693E+02	0.239312E+03	-0.122401E+01
1990	0.130887E+04	0.568382E+03	0.834124E+00
1991	0.225182E+03	0.383264E+03	-0.531815E+00
1992	0.605176E+03	0.781756E+03	-0.256023E+00
1993	N/A	0.344401E+03	N/A
1994	N/A	0.271637E+03	N/A
1995	0.562954E+02	0.822586E+02	-0.379256E+00
1996	0.464437E+03	0.756000E+02	0.181537E+01
1997	0.844432E+02	0.168263E+03	-0.689450E+00
1998	0.985170E+02	0.109107E+03	-0.102100E+00
1999	0.211108E+03	0.315315E+03	-0.401203E+00
2000	0.562954E+03	0.142570E+03	0.137336E+01
2001	0.365920E+03	0.124643E+03	0.107696E+01
2002	0.563812E+03	0.204477E+03	0.101427E+01
2003	0.474404E+03	0.325632E+03	0.376289E+00
2004	0.103828E+03	0.135581E+03	-0.266834E+00
2005	0.583521E+03	0.275688E+03	0.749810E+00
2006	0.283568E+03	0.171368E+03	0.503640E+00
2007	0.135474E+03	0.346628E+03	-0.939474E+00
2008	0.396500E+03	0.689165E+03	-0.552804E+00

Survey Index: 24 Tag: sp\_can AGE = 8  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.128152E+01 % Variance Contribution = 4.6778  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.105050E+03	N/A
1979	N/A	0.993891E+03	N/A
1980	N/A	0.733091E+03	N/A
1981	N/A	0.492948E+03	N/A
1982	N/A	0.548181E+03	N/A
1983	N/A	0.838180E+03	N/A
1984	N/A	0.170165E+03	N/A
1985	N/A	0.514539E+03	N/A
1986	0.562954E+02	0.262656E+03	-0.154023E+01
1987	0.112591E+03	0.224954E+03	-0.692134E+00
1988	0.239256E+03	0.544524E+03	-0.822379E+00
1989	0.140739E+03	0.151178E+03	-0.715569E-01
1990	0.168886E+03	0.112989E+03	0.401936E+00
1991	0.309625E+03	0.227711E+03	0.307283E+00
1992	0.168886E+03	0.168605E+03	0.166526E-02
1993	N/A	0.267930E+03	N/A
1994	N/A	0.946027E+02	N/A
1995	0.703693E+02	0.682438E+02	0.306702E-01
1996	0.112591E+03	0.463085E+02	0.888436E+00
1997	0.422216E+02	0.445762E+02	-0.542687E-01
1998	0.281477E+02	0.380876E+02	-0.302422E+00
1999	0.140739E+02	0.480267E+02	-0.122744E+01
2000	0.337773E+03	0.107833E+03	0.114179E+01
2001	0.239256E+03	0.697970E+02	0.123194E+01
2002	0.232375E+03	0.449052E+02	0.164380E+01
2003	0.227599E+03	0.794826E+02	0.105204E+01
2004	0.165354E+03	0.118170E+03	0.335962E+00
2005	0.188549E+02	0.504074E+02	-0.983364E+00
2006	0.260250E+03	0.139762E+03	0.621702E+00
2007	0.106609E+03	0.111769E+03	-0.472670E-01
2008	0.412168E+02	0.280063E+03	-0.191617E+01

Survey Index: 25 Tag: us0aut AGE = 1  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.172164E-01 % Variance Contribution = 10.9577  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.207096E+03	0.494197E+03	-0.869750E+00
1979	0.540008E+03	0.446637E+03	0.189839E+00
1980	0.156415E+03	0.394488E+03	-0.925075E+00
1981	0.382090E+03	0.790070E+03	-0.726465E+00
1982	0.356545E+03	0.341967E+03	0.417457E-01
1983	0.494518E+03	0.194637E+03	0.932448E+00
1984	0.175253E+04	0.499630E+03	0.125495E+01
1985	0.244663E+03	0.165540E+03	0.390670E+00
1986	0.136867E+04	0.766224E+03	0.580118E+00
1987	0.103958E+03	0.308140E+03	-0.108657E+01
1988	0.278269E+03	0.427902E+03	-0.430308E+00
1989	0.750656E+03	0.307291E+03	0.893152E+00
1990	0.342611E+03	0.175681E+03	0.667927E+00
1991	0.214610E+03	0.340822E+03	-0.462538E+00
1992	0.553259E+02	0.128609E+03	-0.843535E+00
1993	0.479491E+02	0.169986E+03	-0.126557E+01
1994	0.243707E+03	0.108775E+03	0.806689E+00
1995	0.912536E+02	0.676272E+02	0.299633E+00
1996	0.218435E+03	0.115178E+03	0.640012E+00
1997	0.295071E+02	0.183728E+03	-0.182883E+01
1998	0.874290E+01	0.856708E+02	-0.228227E+01
1999	0.957616E+02	0.213463E+03	-0.801601E+00
2000	0.957616E+02	0.106031E+03	-0.101874E+00
2001	0.266384E+02	0.492100E+02	-0.613743E+00
2002	0.387964E+02	0.919039E+02	-0.862416E+00
2003	0.319661E+03	0.341411E+02	0.223676E+01
2004	0.446569E+03	0.232811E+03	0.651366E+00
2005	0.230224E+04	0.506965E+02	0.381578E+01
2006	0.711723E+02	0.123577E+03	-0.551757E+00
2007	0.135787E+03	0.121692E+03	0.109597E+00
2008	0.102319E+03	0.888081E+02	0.141615E+00

Survey Index: 26 Tag: uslaut AGE = 2  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.746671E-01 % Variance Contribution = 3.3279  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.323486E+03	0.351454E+03	-0.829237E-01
1979	0.252095E+04	0.174458E+04	0.368122E+00
1980	0.222000E+04	0.156710E+04	0.348283E+00
1981	0.112004E+04	0.137784E+04	-0.207148E+00
1982	0.481540E+04	0.272320E+04	0.570011E+00
1983	0.788633E+03	0.116200E+04	-0.387597E+00
1984	0.116048E+04	0.648927E+03	0.581266E+00
1985	0.260797E+04	0.175515E+04	0.396015E+00
1986	0.247669E+03	0.575936E+03	-0.843904E+00
1987	0.311314E+04	0.266892E+04	0.153959E+00
1988	0.565144E+03	0.108715E+04	-0.654233E+00

1989	0.119490E+04	0.149749E+04	-0.225729E+00
1990	0.382281E+04	0.103106E+04	0.131040E+01
1991	0.496704E+03	0.618968E+03	-0.220060E+00
1992	0.556811E+03	0.119140E+04	-0.760661E+00
1993	0.563368E+03	0.443743E+03	0.238687E+00
1994	0.132495E+04	0.583419E+03	0.820226E+00
1995	0.554079E+03	0.379873E+03	0.377469E+00
1996	0.334278E+03	0.237953E+03	0.339897E+00
1997	0.327721E+03	0.404598E+03	-0.210734E+00
1998	0.322666E+03	0.643829E+03	-0.690814E+00
1999	0.458317E+03	0.299933E+03	0.424002E+00
2000	0.190840E+03	0.754750E+03	-0.137495E+01
2001	0.780027E+03	0.368846E+03	0.748950E+00
2002	0.643420E+02	0.173947E+03	-0.994536E+00
2003	0.652982E+03	0.324068E+03	0.700596E+00
2004	0.227178E+03	0.120082E+03	0.637555E+00
2005	0.101745E+04	0.823264E+03	0.211778E+00
2006	0.755438E+02	0.179185E+03	-0.863704E+00
2007	0.590826E+03	0.436586E+03	0.302536E+00
2008	0.156688E+03	0.431392E+03	-0.101276E+01

Survey Index: 27 Tag: us2aut AGE = 3  
Time = JAN-1 Type = NUMBER  
Catchability = 0.131211E+00 % Variance Contribution = 3.2794  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.469041E+04	0.332391E+04	0.344377E+00
1979	0.534407E+03	0.456331E+03	0.157939E+00
1980	0.229090E+04	0.224466E+04	0.203913E-01
1981	0.769918E+03	0.175433E+04	-0.823558E+00
1982	0.307366E+04	0.152085E+04	0.703597E+00
1983	0.260851E+04	0.268625E+04	-0.293673E-01
1984	0.148806E+04	0.106224E+04	0.337098E+00
1985	0.931388E+03	0.750854E+03	0.215464E+00
1986	0.115105E+04	0.164913E+04	-0.359571E+00
1987	0.175540E+03	0.640482E+03	-0.129435E+01
1988	0.184802E+04	0.290123E+04	-0.451021E+00
1989	0.596973E+03	0.128624E+04	-0.767604E+00
1990	0.142946E+04	0.184610E+04	-0.255782E+00
1991	0.221905E+04	0.830569E+03	0.982722E+00
1992	0.239336E+03	0.659023E+03	-0.101289E+01
1993	0.129627E+04	0.114796E+04	0.121497E+00
1994	0.726204E+03	0.457505E+03	0.462042E+00
1995	0.907481E+03	0.766649E+03	0.168644E+00
1996	0.247341E+04	0.469359E+03	0.166199E+01
1997	0.267477E+03	0.308358E+03	-0.142230E+00
1998	0.438372E+03	0.501098E+03	-0.133732E+00
1999	0.140186E+04	0.817610E+03	0.539171E+00
2000	0.210648E+03	0.389365E+03	-0.614328E+00
2001	0.734673E+03	0.974293E+03	-0.282286E+00
2002	0.520200E+03	0.445603E+03	0.154784E+00
2003	0.965812E+03	0.236882E+03	0.140541E+01
2004	0.422389E+03	0.442410E+03	-0.463086E-01
2005	0.185512E+03	0.164543E+03	0.119952E+00



2006	0.791502E+03	0.114133E+04	-0.366017E+00
2007	0.221030E+03	0.249542E+03	-0.121328E+00
2008	0.282504E+03	0.565883E+03	-0.694695E+00

Survey Index: 28 Tag: us3aut AGE = 4  
Time = JAN-1 Type = NUMBER  
Catchability = 0.158575E+00 % Variance Contribution = 5.0712  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.943682E+03	0.121474E+04	-0.252498E+00
1979	0.554311E+04	0.213562E+04	0.953796E+00
1980	0.221440E+03	0.315739E+03	-0.354763E+00
1981	0.105720E+04	0.137470E+04	-0.262612E+00
1982	0.212971E+04	0.106263E+04	0.695234E+00
1983	0.330316E+03	0.875307E+03	-0.974525E+00
1984	0.101117E+04	0.141706E+04	-0.337479E+00
1985	0.126867E+04	0.556951E+03	0.823248E+00
1986	0.911170E+02	0.327130E+03	-0.127821E+01
1987	0.449438E+03	0.981729E+03	-0.781318E+00
1988	0.147536E+03	0.418145E+03	-0.104176E+01
1989	0.123466E+04	0.168253E+04	-0.309504E+00
1990	0.220074E+03	0.841238E+03	-0.134091E+01
1991	0.247819E+04	0.106381E+04	0.845672E+00
1992	0.374577E+03	0.329131E+03	0.129341E+00
1993	0.238106E+03	0.328268E+03	-0.321112E+00
1994	0.522659E+03	0.509685E+03	0.251356E-01
1995	0.592055E+03	0.233998E+03	0.928289E+00
1996	0.170554E+04	0.554943E+03	0.112277E+01
1997	0.566100E+03	0.323936E+03	0.558226E+00
1998	0.149312E+03	0.198499E+03	-0.284748E+00
1999	0.480584E+03	0.309588E+03	0.439760E+00
2000	0.422936E+03	0.521492E+03	-0.209474E+00
2001	0.963080E+02	0.279672E+03	-0.106606E+01
2002	0.627027E+03	0.585106E+03	0.691969E-01
2003	0.190704E+04	0.272838E+03	0.194443E+01
2004	0.273897E+03	0.176732E+03	0.438121E+00
2005	0.970047E+03	0.375694E+03	0.948569E+00
2006	0.176087E+03	0.133998E+03	0.273153E+00
2007	0.702434E+03	0.100882E+04	-0.361984E+00
2008	0.688500E+02	0.190549E+03	-0.101798E+01

Survey Index: 29 Tag: us4aut AGE = 5  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.122922E+00 % Variance Contribution = 8.0096  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.345343E+03	0.364691E+03	-0.545130E-01
1979	0.131635E+04	0.503063E+03	0.961900E+00
1980	0.230388E+04	0.850186E+03	0.996895E+00
1981	0.717188E+02	0.140237E+03	-0.670582E+00
1982	0.804616E+03	0.576309E+03	0.333721E+00
1983	0.926196E+02	0.346245E+03	-0.131865E+01
1984	0.943955E+02	0.261551E+03	-0.101914E+01
1985	0.112715E+04	0.532945E+03	0.749026E+00
1986	0.144120E+03	0.168084E+03	-0.153813E+00
1987	0.112018E+02	0.113052E+03	-0.231177E+01
1988	0.273624E+03	0.384015E+03	-0.338927E+00
1989	0.819643E+02	0.147265E+03	-0.585948E+00
1990	0.692735E+03	0.599895E+03	0.143892E+00
1991	0.563368E+03	0.317679E+03	0.572891E+00
1992	0.416652E+02	0.328351E+03	-0.206442E+01
1993	0.136607E+03	0.915918E+02	0.399767E+00
1994	0.225402E+02	0.745921E+02	-0.119673E+01
1995	0.209555E+03	0.106700E+03	0.674963E+00
1996	0.119121E+03	0.749556E+02	0.463247E+00
1997	0.195348E+03	0.212375E+03	-0.835692E-01
1998	0.176496E+03	0.937027E+02	0.633173E+00
1999	0.561455E+02	0.716016E+02	-0.243171E+00
2000	0.348212E+03	0.102815E+03	0.121988E+01
2001	0.107646E+03	0.203590E+03	-0.637258E+00
2002	0.811446E+02	0.948955E+02	-0.156544E+00
2003	0.222260E+04	0.204631E+03	0.238523E+01
2004	0.212561E+03	0.852796E+02	0.913292E+00
2005	0.344250E+03	0.834225E+02	0.141745E+01
2006	0.239882E+03	0.174543E+03	0.317976E+00
2007	0.461732E+02	0.620337E+02	-0.295279E+00
2008	0.177999E+03	0.510184E+03	-0.105299E+01

Survey Index: 30 Tag: us5aut AGE = 6  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.143092E+00 % Variance Contribution = 6.4563  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.236467E+03	0.180843E+03	0.268179E+00
1979	0.458317E+03	0.232428E+03	0.678982E+00
1980	0.437962E+03	0.324458E+03	0.299976E+00
1981	0.361736E+03	0.494310E+03	-0.312249E+00
1982	0.737679E+02	0.928123E+02	-0.229656E+00
1983	0.157371E+03	0.288387E+03	-0.605693E+00
1984	0.448071E+02	0.182121E+03	-0.140231E+01
1985	0.330589E+02	0.131113E+03	-0.137777E+01
1986	0.104641E+03	0.240107E+03	-0.830548E+00

1987	0.665277E+02	0.929047E+02	-0.333956E+00
1988	0.382500E+02	0.692898E+02	-0.594154E+00
1989	0.264608E+03	0.164980E+03	0.472427E+00
1990	0.747241E+02	0.911362E+02	-0.198552E+00
1991	0.390013E+03	0.281459E+03	0.326194E+00
1992	0.396161E+02	0.119185E+03	-0.110144E+01
1993	0.596973E+02	0.122014E+03	-0.714846E+00
1994	0.345616E+02	0.270126E+02	0.246441E+00
1995	0.927563E+02	0.173098E+02	0.167870E+01
1996	0.739045E+02	0.528082E+02	0.336107E+00
1997	0.815545E+02	0.386431E+02	0.746903E+00
1998	0.663911E+02	0.897972E+02	-0.301991E+00
1999	0.483589E+02	0.401135E+02	0.186936E+00
2000	0.118985E+03	0.316603E+02	0.132393E+01
2001	0.418018E+02	0.575277E+02	-0.319327E+00
2002	0.745875E+02	0.104638E+03	-0.338536E+00
2003	0.161196E+03	0.437714E+02	0.130364E+01
2004	0.112564E+03	0.790753E+02	0.353124E+00
2005	0.439192E+03	0.411994E+02	0.236651E+01
2006	0.353813E+02	0.609121E+02	-0.543248E+00
2007	0.170486E+03	0.119291E+03	0.357089E+00
2008	0.874290E+01	0.498551E+02	-0.174088E+01

Bootstrap Summary Report

Number of Bootstrap Repetitions Requested = 1000

Number of Bootstrap Repetitions Completed = 1000

Bootstrap Output Variable: Stock Estimates (2008)

	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. For NLLS Soln.
N 1	5158.	6533.	4768.	0.7298
N 2	5778.	6266.	2534.	0.4044
N 3	4313.	4506.	1340.	0.2974
N 4	1202.	1248.	338.	0.2705
N 5	4150.	4291.	1102.	0.2569
N 6	348.	366.	102.	0.2794
N 7	566.	591.	173.	0.2934
N 8	219.	225.	71.	0.3143

	Bias Estimate	Bias Std. Error	Per Cent Bias	NLLS Estimate Corrected For Bias	C.V. For Corrected Estimate
N 1	1375.	157.	26.6579	3783.	1.2603
N 2	489.	82.	8.4565	5289.	0.4792
N 3	194.	43.	4.4871	4119.	0.3254
N 4	47.	11.	3.8994	1155.	0.2925
N 5	141.	35.	3.3966	4009.	0.2749
N 6	17.	3.	4.9691	331.	0.3086
N 7	24.	6.	4.3101	542.	0.3198
N 8	6.	2.	2.8435	212.	0.3327

	LOWER 80. % CI	UPPER 80. % CI
N 1	2262.	12026.
N 2	3513.	9413.
N 3	2952.	6223.
N 4	873.	1747.
N 5	3037.	5708.
N 6	248.	498.
N 7	378.	829.
N 8	139.	320.

Bootstrap Output Variable: Catchability Estimates

	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. For NLLS Soln.
Q 1	0.219439E-01	0.224593E-01	0.453637E-02	0.2020
Q 2	0.919973E-01	0.918516E-01	0.740087E-02	0.0806
Q 3	0.186189E+00	0.186801E+00	0.193689E-01	0.1037
Q 4	0.316089E+00	0.318776E+00	0.461832E-01	0.1449
Q 5	0.402164E+00	0.405661E+00	0.630944E-01	0.1555
Q 6	0.408966E+00	0.411188E+00	0.605475E-01	0.1473
Q 7	0.427224E+00	0.434695E+00	0.805680E-01	0.1853
Q 8	0.517786E+00	0.522703E+00	0.856230E-01	0.1638
Q 9	0.141338E-01	0.187569E-01	0.153604E-01	0.8189
Q 10	0.899870E-01	0.908999E-01	0.203578E-01	0.2240
Q 11	0.198731E+00	0.205097E+00	0.478757E-01	0.2334
Q 12	0.177261E+00	0.178899E+00	0.226346E-01	0.1265
Q 13	0.216299E+00	0.223388E+00	0.550011E-01	0.2462
Q 14	0.207689E+00	0.209908E+00	0.352836E-01	0.1681
Q 15	0.300243E+00	0.322393E+00	0.124785E+00	0.3871
Q 16	0.291472E+00	0.340999E+00	0.192048E+00	0.5632
Q 17	0.209249E-01	0.214531E-01	0.589108E-02	0.2746
Q 18	0.981470E-01	0.990854E-01	0.214245E-01	0.2162
Q 19	0.327191E+00	0.327519E+00	0.339873E-01	0.1038
Q 20	0.615292E+00	0.621553E+00	0.782073E-01	0.1258
Q 21	0.949463E+00	0.957399E+00	0.112465E+00	0.1175
Q 22	0.112928E+01	0.114260E+01	0.190599E+00	0.1668
Q 23	0.121718E+01	0.123764E+01	0.248911E+00	0.2011
Q 24	0.128152E+01	0.129879E+01	0.274911E+00	0.2117
Q 25	0.172164E-01	0.175862E-01	0.371772E-02	0.2114
Q 26	0.746671E-01	0.753834E-01	0.859667E-02	0.1140
Q 27	0.131211E+00	0.132257E+00	0.151867E-01	0.1148
Q 28	0.158575E+00	0.159982E+00	0.228937E-01	0.1431
Q 29	0.122922E+00	0.124354E+00	0.224444E-01	0.1805
Q 30	0.143092E+00	0.145093E+00	0.237031E-01	0.1634

	Bias Estimate	Bias Std. Error	Per Cent Bias	NLLS Estimate Corrected For Bias	C.V. For Corrected Estimate
Q 1	0.5154E-03	0.1444E-03	2.3488	0.2143E-01	0.2117
Q 2	-0.1457E-03	0.2341E-03	-0.1583	0.9214E-01	0.0803
Q 3	0.6121E-03	0.6128E-03	0.3288	0.1856E+00	0.1044
Q 4	0.2687E-02	0.1463E-02	0.8502	0.3134E+00	0.1474
Q 5	0.3497E-02	0.1998E-02	0.8695	0.3987E+00	0.1583
Q 6	0.2222E-02	0.1916E-02	0.5433	0.4067E+00	0.1489
Q 7	0.7471E-02	0.2559E-02	1.7488	0.4198E+00	0.1919
Q 8	0.4917E-02	0.2712E-02	0.9496	0.5129E+00	0.1669
Q 9	0.4623E-02	0.5073E-03	32.7102	0.9511E-02	1.6151
Q 10	0.9128E-03	0.6444E-03	1.0144	0.8907E-01	0.2285
Q 11	0.6365E-02	0.1527E-02	3.2030	0.1924E+00	0.2489
Q 12	0.1638E-02	0.7176E-03	0.9241	0.1756E+00	0.1289
Q 13	0.7089E-02	0.1754E-02	3.2772	0.2092E+00	0.2629
Q 14	0.2218E-02	0.1118E-02	1.0681	0.2055E+00	0.1717
Q 15	0.2215E-01	0.4008E-02	7.3772	0.2781E+00	0.4487
Q 16	0.4953E-01	0.6272E-02	16.9918	0.2419E+00	0.7938
Q 17	0.5282E-03	0.1870E-03	2.5244	0.2040E-01	0.2888
Q 18	0.9385E-03	0.6782E-03	0.9562	0.9721E-01	0.2204
Q 19	0.3276E-03	0.1075E-02	0.1001	0.3269E+00	0.1040
Q 20	0.6261E-02	0.2481E-02	1.0175	0.6090E+00	0.1284
Q 21	0.7936E-02	0.3565E-02	0.8359	0.9415E+00	0.1194
Q 22	0.1332E-01	0.6042E-02	1.1792	0.1116E+01	0.1708
Q 23	0.2046E-01	0.7898E-02	1.6808	0.1197E+01	0.2080
Q 24	0.1728E-01	0.8711E-02	1.3481	0.1264E+01	0.2175
Q 25	0.3698E-03	0.1181E-03	2.1481	0.1685E-01	0.2207
Q 26	0.7163E-03	0.2728E-03	0.9593	0.7395E-01	0.1162
Q 27	0.1046E-02	0.4814E-03	0.7972	0.1302E+00	0.1167
Q 28	0.1408E-02	0.7253E-03	0.8877	0.1572E+00	0.1457
Q 29	0.1432E-02	0.7112E-03	1.1650	0.1215E+00	0.1847
Q 30	0.2001E-02	0.7522E-03	1.3984	0.1411E+00	0.1680

	LOWER	UPPER
	80. % CI	80. % CI
Q 1	0.171080E-01	0.284747E-01
Q 2	0.824644E-01	0.101632E+00
Q 3	0.162848E+00	0.211664E+00
Q 4	0.261463E+00	0.379759E+00
Q 5	0.328721E+00	0.483634E+00
Q 6	0.340594E+00	0.492365E+00
Q 7	0.337448E+00	0.537725E+00
Q 8	0.421175E+00	0.634985E+00
Q 9	0.553354E-02	0.371053E-01
Q 10	0.667041E-01	0.117456E+00
Q 11	0.150990E+00	0.267690E+00
Q 12	0.150555E+00	0.208511E+00
Q 13	0.161493E+00	0.297084E+00
Q 14	0.166932E+00	0.258730E+00
Q 15	0.188704E+00	0.478061E+00
Q 16	0.159412E+00	0.573340E+00
Q 17	0.145844E-01	0.292114E-01
Q 18	0.735690E-01	0.127626E+00
Q 19	0.284556E+00	0.370216E+00
Q 20	0.528958E+00	0.725873E+00
Q 21	0.816656E+00	0.110392E+01
Q 22	0.894573E+00	0.138485E+01
Q 23	0.936371E+00	0.155873E+01
Q 24	0.978545E+00	0.164180E+01
Q 25	0.130753E-01	0.225537E-01
Q 26	0.643867E-01	0.868744E-01
Q 27	0.112881E+00	0.152329E+00
Q 28	0.131884E+00	0.190578E+00
Q 29	0.968790E-01	0.154540E+00
Q 30	0.115862E+00	0.177230E+00

Bootstrap Output Variable: Fishing Mortality (2007)

	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. For NLLS Soln.
AGE 1	0.0017	0.0018	0.000684	0.3877
AGE 2	0.1044	0.1080	0.030238	0.2801
AGE 3	0.2591	0.2646	0.061457	0.2323
AGE 4	0.2271	0.2321	0.053591	0.2309
AGE 5	0.1705	0.1738	0.044442	0.2557
AGE 6	0.1869	0.1939	0.056194	0.2898
AGE 7	0.0647	0.0694	0.023411	0.3371
AGE 8	0.1407	0.1457	0.025088	0.1721
AGE 9	0.1407	0.1457	0.025088	0.1721
AGE 10	0.1407	0.1457	0.025088	0.1721

	Bias Estimate	Bias Std. Error	Per Cent Bias	NLLS Estimate Corrected For Bias	C.V. For Corrected Estimate
AGE 1	0.000109	0.000022	6.6054	0.0015	0.4425
AGE 2	0.003606	0.000963	3.4554	0.1008	0.3001
AGE 3	0.005418	0.001951	2.0909	0.2537	0.2422
AGE 4	0.005021	0.001702	2.2111	0.2221	0.2413
AGE 5	0.003348	0.001409	1.9636	0.1671	0.2659
AGE 6	0.007042	0.001791	3.7681	0.1798	0.3125
AGE 7	0.004697	0.000755	7.2536	0.0601	0.3898
AGE 8	0.005029	0.000809	3.5739	0.1357	0.1849
AGE 9	0.005029	0.000809	3.5739	0.1357	0.1849
AGE 10	0.005029	0.000809	3.5739	0.1357	0.1849

	LOWER 80. % CI	UPPER 80. % CI
AGE 1	0.001016	0.002715
AGE 2	0.073390	0.148701
AGE 3	0.185377	0.341005
AGE 4	0.170090	0.298353
AGE 5	0.121952	0.231915
AGE 6	0.131244	0.266855
AGE 7	0.044370	0.099813
AGE 8	0.116780	0.180193
AGE 9	0.116780	0.180193
AGE 10	0.116780	0.180193



Bootstrap Output Variable: Average F (2007) AGES 5 - 8

	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. For NLLS Soln.
AVG F	0.1407	0.1457	0.025088	0.1721
N WTD	0.1594	0.1587	0.028073	0.1769
B WTD	0.1534	0.1531	0.027092	0.1769
C WTD	0.1709	0.1765	0.035695	0.2022

	Bias Estimate	Bias Std. Error	Per Cent Bias	NLLS Estimate Corrected For Bias	C.V. For Corrected Estimate
AVG F	0.005029	0.000809	3.5739	0.1357	0.1849
N WTD	-0.000626	0.000888	-0.3929	0.1600	0.1755
B WTD	-0.000282	0.000857	-0.1841	0.1537	0.1763
C WTD	0.005617	0.001143	3.2863	0.1653	0.2159

	LOWER 80. % CI	UPPER 80. % CI
AVG F	0.116780	0.180193
N WTD	0.127188	0.197961
B WTD	0.122381	0.191581
C WTD	0.136571	0.225136

Bootstrap Output Variable: Biomass

JAN-1 Biomass (2008) Mean Biomass & SSB (2007)

	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. For NLLS Soln.
JAN-1	36930.	38830.	5418.	0.1395
MEAN	34654.	35969.	4702.	0.1307
SSB	25377.	26151.	3597.	0.1375

	Bias Estimate	Bias Std. Error	Per Cent Bias	NLLS Estimate Corrected For Bias	C.V. For Corrected Estimate
JAN-1	1899.	182.	5.1430	35031.	0.1547
MEAN	1315.	154.	3.7961	33338.	0.1410
SSB	774.	116.	3.0489	24604.	0.1462

	LOWER 80. % CI	UPPER 80. % CI
JAN-1	32236.	45859.
MEAN	30122.	42067.
SSB	21956.	30777.

Plus Group Diagnostic Report

Calculation Method Selected = Backward

Year	Population Backward	Population Forward	F Forward	F Backward	Ratio
1978	44.	44.	0.308259	0.308259	1.000000
1979	127.	131.	0.345514	0.359798	1.041340
1980	37.	103.	0.164657	0.541372	3.287884
1981	173.	244.	0.353951	0.544585	1.538590
1982	192.	333.	0.327151	0.655849	2.004726
1983	288.	268.	0.613105	0.558734	0.911319
1984	283.	200.	1.129093	0.657374	0.582214
1985	182.	213.	0.614331	0.772296	1.257135
1986	76.	116.	0.306033	0.510816	1.669156
1987	75.	145.	0.219497	0.475565	2.166617
1988	105.	149.	0.488756	0.781516	1.598990
1989	54.	110.	0.240156	0.559486	2.329678
1990	88.	142.	0.372456	0.689136	1.850247
1991	47.	101.	0.330944	0.908100	2.743969
1992	19.	76.	0.162994	0.926052	5.681498
1993	34.	74.	0.376019	1.153678	3.068139
1994	9.	59.	0.109812	1.238141	11.275120
1995	3.	55.	0.028722	0.615783	21.439721
1996	1.	50.	0.006627	0.653998	98.684231
1997	7.	52.	0.086785	0.850348	9.798357
1998	6.	46.	0.072801	0.741049	10.179071
1999	7.	39.	0.100418	0.774912	7.716849
2000	3.	33.	0.034158	0.539928	15.806849
2001	3.	31.	0.046971	0.632341	13.462251
2002	13.	39.	0.200182	0.754275	3.767954
2003	6.	35.	0.096275	0.850605	8.835135
2004	12.	30.	0.201696	0.636083	3.153673
2005	15.	32.	0.135933	0.311373	2.290637
2006	17.	45.	0.087321	0.243865	2.792736
2007	12.	46.	0.026732	0.105152	3.933531
2008	70.	98.	N/A	N/A	

**Appendix A. Table A3. SPLIT MODEL VPA output and diagnostics for GB cod.**

VPA Version 2.8.0

Model ID: Georges Bank Cod - spr 2008 Assessment TY 2008 sv swept split

Input File: C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10P\_SWPT\_SPLIT\10P-SWPT-SPLIT\_AUG\_CORR\_DFO.DAT

Date of Run: 05-AUG-2008

Time of Run: 12:24

Levenburg-Marquardt Algorithm Completed 9 Iterations

Residual Sum of Squares = 323.853

Number of Residuals = 595  
 Number of Parameters = 8  
 Degrees of Freedom = 587  
 Mean Squared Residual = 0.551709  
 Standard Deviation = 0.742771

Number of Years = 30  
 Number of Ages = 10  
 First Year = 1978  
 Youngest Age = 1  
 Oldest True Age = 9

Number of Survey Indices Available = 52  
 Number of Survey Indices Used in Estimate = 52

VPA Classic Method - Auto Estimated Q's

Stock Numbers Predicted in Terminal Year Plus One (2008)

Age	Stock Predicted	Std. Error	CV
1	4874.666	0.218662E+04	0.448568E+00
2	5751.749	0.182760E+04	0.317747E+00
3	3851.720	0.113398E+04	0.294410E+00
4	970.307	0.274066E+03	0.282453E+00
5	2929.571	0.803594E+03	0.274304E+00
6	157.359	0.498832E+02	0.317002E+00
7	237.651	0.866388E+02	0.364564E+00
8	80.692	0.313443E+02	0.388442E+00

Catchability Values for Each Survey Used in Estimate

INDEX	Catchability	Std. Error	CV
1	0.178394E-01	0.601117E-02	0.336960E+00
2	0.918544E-01	0.111156E-01	0.121014E+00
3	0.168705E+00	0.303091E-01	0.179657E+00
4	0.215614E+00	0.433017E-01	0.200829E+00
5	0.264241E+00	0.594130E-01	0.224844E+00

6	0.278657E+00	0.523770E-01	0.187962E+00
7	0.297561E+00	0.527492E-01	0.177272E+00
8	0.363074E+00	0.710421E-01	0.195668E+00
9	0.292985E-01	0.628344E-02	0.214463E+00
10	0.101150E+00	0.921209E-02	0.910737E-01
11	0.225276E+00	0.256921E-01	0.114047E+00
12	0.506259E+00	0.867519E-01	0.171359E+00
13	0.688799E+00	0.113946E+00	0.165426E+00
14	0.701770E+00	0.122594E+00	0.174693E+00
15	0.723118E+00	0.181470E+00	0.250954E+00
16	0.816798E+00	0.174300E+00	0.213394E+00
17	0.141338E-01	0.106855E-01	0.756029E+00
18	0.899870E-01	0.208708E-01	0.231931E+00
19	0.198731E+00	0.467107E-01	0.235044E+00
20	0.177261E+00	0.223604E-01	0.126144E+00
21	0.216299E+00	0.540535E-01	0.249901E+00
22	0.207689E+00	0.355707E-01	0.171269E+00
23	0.300243E+00	0.112587E+00	0.374986E+00
24	0.291472E+00	0.165071E+00	0.566335E+00
25	0.358799E-01	0.115005E-01	0.320529E+00
26	0.187587E+00	0.396148E-01	0.211181E+00
27	0.324684E+00	0.370155E-01	0.114005E+00
28	0.372132E+00	0.475039E-01	0.127653E+00
29	0.580779E+00	0.710335E-01	0.122307E+00
30	0.555873E+00	0.114979E+00	0.206844E+00
31	0.730017E+00	0.211842E+00	0.290188E+00
32	0.644843E-03	0.171054E-03	0.265264E+00
33	0.158633E-01	0.567279E-02	0.357605E+00
34	0.779414E-01	0.200113E-01	0.256748E+00
35	0.362628E+00	0.527704E-01	0.145522E+00
36	0.888325E+00	0.130864E+00	0.147315E+00
37	0.140774E+01	0.199374E+00	0.141627E+00
38	0.193422E+01	0.294172E+00	0.152088E+00
39	0.190133E+01	0.391504E+00	0.205911E+00
40	0.127804E-02	0.320091E-03	0.250454E+00
41	0.163752E-01	0.327145E-02	0.199780E+00
42	0.811005E-01	0.114794E-01	0.141545E+00
43	0.119082E+00	0.179800E-01	0.150989E+00
44	0.126944E+00	0.225861E-01	0.177922E+00
45	0.886514E-01	0.215241E-01	0.242795E+00
46	0.104097E+00	0.162056E-01	0.155678E+00
47	0.201548E-01	0.859432E-02	0.426415E+00
48	0.741493E-01	0.152083E-01	0.205104E+00
49	0.162972E+00	0.301554E-01	0.185035E+00
50	0.233271E+00	0.520419E-01	0.223096E+00
51	0.211986E+00	0.510959E-01	0.241035E+00
52	0.253043E+00	0.646169E-01	0.255360E+00

-- Non-Linear Least Squares Fit --  
 Default Tolerances Used

Scaled Gradient Tolerance = 6.055454E-06  
 Scaled Step Tolerance = 3.666853E-11  
 Relative Function Tolerance = 3.666853E-11  
 Absolute Function Tolerance = 4.930381E-32

VPA Method Options

- Catchability Values Estimated as an Analytic Function of N
- Catch Equation Used in Cohort Solution
- Plus Group Backward Calculation Method Used
- Rivard Weights Used for JAN-1 Biomass
- Rivard Weights Used for SSB Biomass
- Rivard Weights Calculation Used 5 Years for Terminal Year Plus One

- Heincke Rule Used in F-Oldest Calculation
- F-Oldest Calculation in Years Prior to Terminal Year  
 Uses Stock Sizes in Ages 5 to 8
- Calculation of Population of Age 1 In Year 2008  
 = Stock Estimate

Stock Estimates

Age 1  
 Age 2  
 Age 3  
 Age 4  
 Age 5  
 Age 6  
 Age 7  
 Age 8  
 Full F in Terminal Year = 0.3025

F in Oldest True Age in Terminal Year = 0.3025

Full F Calculated Using Classic Method

Age	Input Partial Recruitment	Calc Partial Recruitment	Fishing Mortality	Used In Full F	Comments
1	0.010	0.004	0.0017	NO	Stock Estimate in
T+1					
2	0.100	0.292	0.1161	NO	Stock Estimate in
T+1					
3	0.390	0.785	0.3119	NO	Stock Estimate in
T+1					
4	0.740	0.775	0.3080	NO	Stock Estimate in
T+1					
5	1.000	0.865	0.3439	YES	Stock Estimate in
T+1					
6	1.000	1.000	0.3973	YES	Stock Estimate in
T+1					
7	1.000	0.418	0.1662	YES	Stock Estimate in
T+1					
8	1.000	0.761	0.3025	NO	Input PR * Full F
9	1.000	0.761	0.3025		Input PR * Full F

Catch At Age - Input Data

AGE	1978	1979	1980	1981	1982
1	151.6	279.2	339.9	1219.2	775.4
2	416.8	2242.7	4238.7	3910.7	10457.1
3	8109.1	953.6	5955.4	4738.2	4434.4
4	2429.6	4585.0	544.9	2685.5	2988.0
5	896.8	1206.9	2464.6	317.9	2039.8
6	178.4	449.8	983.0	1406.0	297.1
7	240.8	159.5	418.1	417.0	707.2
8	22.6	304.1	70.4	162.9	198.6
9	42.1	12.9	138.7	155.5	74.6
10	10.7	35.0	14.2	66.4	84.6
AGE	1983	1984	1985	1986	1987
1	626.2	280.9	176.0	768.3	103.8
2	5181.7	1547.7	7443.7	1594.1	7956.1
3	8753.3	3485.7	2942.2	4576.3	1515.5
4	2680.4	3328.4	1690.1	860.2	2170.1
5	1155.3	923.9	2097.7	525.3	299.7
6	746.4	560.2	496.5	615.4	249.9
7	94.6	450.3	267.2	85.5	277.3
8	175.0	58.9	196.8	70.4	56.1
9	67.7	167.0	27.7	56.0	36.2
10	112.6	124.9	89.7	27.8	26.0
AGE	1988	1989	1990	1991	1992
1	324.9	891.5	71.8	278.7	191.7
2	2352.1	2608.6	5561.1	1963.0	4808.4
3	8368.3	3032.8	5373.4	3491.4	2286.3
4	1074.1	4254.4	1964.0	3160.5	1070.7
5	1575.6	383.5	2272.1	1442.1	1500.0
6	223.8	534.2	230.6	1088.0	448.1
7	150.3	81.4	229.4	141.3	356.0
8	218.0	51.2	24.6	89.7	44.1
9	46.5	60.2	23.2	27.5	36.4
10	52.5	21.3	40.4	26.0	10.4

Catch At Age - Input Data

AGE	1993	1994	1995	1996	1997
1	299.2	94.4	32.3	64.9	126.9
2	1534.9	614.6	652.8	287.3	685.2
3	4429.4	1543.4	1429.0	986.6	749.6
4	1224.8	1987.7	669.9	1269.8	1020.7
5	475.3	425.6	382.3	256.3	882.9
6	535.6	97.6	41.2	183.8	147.7
7	178.0	146.2	21.4	17.9	94.4
8	141.0	51.2	20.0	11.6	18.9
9	43.1	30.5	6.4	11.3	10.1
10	21.2	5.6	1.4	0.3	3.9
AGE	1998	1999	2000	2001	2002
1	63.3	47.7	113.5	11.7	33.6
2	918.9	356.3	943.2	719.8	113.0
3	1310.3	2021.8	741.1	2667.3	1182.7
4	494.3	852.6	1156.4	751.6	1516.2
5	385.6	286.6	315.8	698.7	365.4
6	285.2	125.8	88.0	180.4	371.5
7	40.2	143.8	46.3	54.8	84.7
8	16.0	22.2	38.8	25.8	18.7
9	5.6	5.0	4.2	14.8	10.6
10	2.9	3.4	1.0	1.3	6.5
AGE	2003	2004	2005	2006	2007
1	17.0	50.5	12.3	32.8	10.6
2	201.3	69.4	364.1	69.7	526.1
3	404.4	434.3	201.8	842.8	395.2
4	800.7	260.1	578.4	208.3	1175.8
5	910.4	313.6	144.5	366.1	71.9
6	156.0	253.0	106.0	70.8	129.2
7	142.4	58.2	85.3	31.2	16.2
8	28.2	49.2	18.0	28.5	10.4
9	6.5	11.8	8.9	3.8	8.6
10	2.9	5.0	3.7	3.4	1.1

Weight At Age - Input Data

AGE	1978	1979	1980	1981	1982
1	0.5787	0.6942	0.6438	0.5873	0.6430
2	1.2513	1.3643	1.4133	1.4411	1.3928
3	2.4408	1.8920	2.4308	2.3815	2.5397
4	3.4074	4.2804	3.5465	3.5294	3.7201
5	4.0144	4.9312	5.5826	5.0546	5.2823
6	5.6957	7.1757	6.7481	7.3032	6.5758
7	6.6453	9.6642	8.3051	8.7797	9.4656
8	8.7084	10.3497	9.9256	9.7997	9.7448
9	9.9364	10.4378	9.2950	14.0178	12.9721
10	13.8870	13.6108	14.8999	16.7990	15.6229
AGE	1983	1984	1985	1986	1987
1	0.6763	0.5405	0.8055	0.6738	0.5817
2	1.4363	1.4991	1.3855	1.3568	1.4684
3	2.3895	2.4762	2.0750	2.4477	2.4763
4	3.3518	3.6676	3.7198	3.6106	4.1715
5	4.7839	4.9374	4.9774	5.4941	5.7677
6	6.4468	6.5544	6.4394	7.1726	7.7772
7	8.4913	8.7376	8.2465	8.8770	8.9078
8	10.6665	10.3090	10.2787	9.9439	10.3361
9	11.6989	11.0933	11.7651	12.9472	12.0274
10	16.3190	14.6426	14.0475	14.5623	15.6415
AGE	1988	1989	1990	1991	1992
1	0.4918	0.4347	0.5311	0.6581	0.8296
2	1.3794	1.4362	1.4893	1.5196	1.4349
3	2.3728	2.2041	2.4630	2.4992	2.4077
4	3.5065	3.7324	3.5732	3.5198	3.7982
5	5.4118	5.1806	4.9668	4.8089	4.5200
6	6.7808	6.5629	6.4025	5.8249	6.0428
7	8.7219	7.9373	8.4042	7.3177	7.0854
8	10.4333	9.9761	11.1911	9.3877	9.4720
9	11.5348	11.2867	12.4247	9.6151	11.8412
10	14.9262	14.6514	14.5119	14.6490	18.8362



Weight At Age - Input Data

AGE	1993	1994	1995	1996	1997
1	0.2837	0.4771	0.3963	0.4867	0.5385
2	1.3063	1.1976	1.3467	1.4419	1.4631
3	2.2082	2.1531	1.9769	2.3910	2.3278
4	3.2271	3.5435	3.7206	3.2180	3.4446
5	4.9843	4.7869	5.2487	4.8754	4.0326
6	5.8198	7.0741	7.4302	6.4963	5.7339
7	7.3782	7.1760	9.3273	8.1007	7.7343
8	8.9218	9.1163	12.1972	9.6991	8.0901
9	11.1348	9.0029	11.8414	10.9742	11.4196
10	12.2279	15.7618	19.1176	8.6207	12.0867
AGE	1998	1999	2000	2001	2002
1	0.6185	0.5340	0.3879	0.6008	0.4900
2	1.4324	1.4313	1.5286	1.3651	1.3165
3	2.2614	2.1372	2.3862	2.2118	2.1052
4	3.4254	3.3549	3.3875	2.9372	2.9569
5	4.5713	4.5433	4.5495	4.1007	3.9493
6	5.5756	5.8669	5.4719	5.2650	5.1562
7	7.3994	6.6406	6.9962	5.9799	6.4745
8	7.7535	8.4061	8.0125	7.6805	8.0004
9	11.8255	9.5624	8.0492	9.0431	9.2479
10	12.3102	13.2010	12.5970	9.7372	11.7081
AGE	2003	2004	2005	2006	2007
1	0.6020	0.3318	0.4309	0.3791	0.4225
2	1.4576	1.5332	1.0351	1.0785	1.4203
3	2.2536	2.3640	2.1015	2.0931	1.9169
4	2.9071	3.0802	3.0681	3.1067	2.8988
5	3.8660	3.8831	4.0035	3.6792	3.6265
6	4.7097	4.8244	4.9245	4.5349	4.1726
7	5.7888	5.6511	5.4675	6.4617	5.9316
8	6.9183	7.3709	7.4969	6.3936	6.9569
9	8.2509	8.5524	8.7863	7.5189	6.9220
10	10.4481	11.1003	11.3704	9.0737	9.0701

JAN-1 Weights at Age - Input Data

AGE	1978	1979	1980	1981	1982
1	0.3769	0.4865	0.4303	0.3814	0.4302
2	1.0176	0.8885	0.9905	0.9632	0.9044
3	1.8431	1.5387	1.8211	1.8346	1.9131
4	2.8324	3.2323	2.5904	2.9290	2.9765
5	3.0026	4.0991	4.8883	4.2339	4.3178
6	4.3726	5.3671	5.7686	6.3852	5.7652
7	5.3249	7.4192	7.7198	7.6972	8.3144
8	7.9543	8.2932	9.7940	9.0215	9.2497
9	9.3022	9.5340	9.8082	11.7956	11.2749
10	13.8870	13.6108	14.8999	16.7990	15.6229
AGE	1983	1984	1985	1986	1987
1	0.4542	0.3376	0.6206	0.4564	0.3777
2	0.9610	1.0069	0.8654	1.0454	0.9947
3	1.8243	1.8859	1.7637	1.8415	1.8330
4	2.9176	2.9604	3.0350	2.7372	3.1954
5	4.2186	4.0681	4.2726	4.5207	4.5634
6	5.8356	5.5996	5.6386	5.9750	6.5367
7	7.4724	7.5053	7.3519	7.5606	7.9933
8	10.0481	9.3561	9.4769	9.0555	9.5788
9	10.6772	10.8778	11.0130	11.5361	10.9362
10	16.3190	14.6426	14.0475	14.5623	15.6415
AGE	1988	1989	1990	1991	1992
1	0.2878	0.2349	0.3140	0.4457	0.6611
2	0.8958	0.8404	0.8046	0.8984	0.9718
3	1.8666	1.7437	1.8808	1.9293	1.9128
4	2.9467	2.9759	2.8064	2.9444	3.0810
5	4.7514	4.2621	4.3056	4.1453	3.9887
6	6.2538	5.9596	5.7592	5.3788	5.3907
7	8.2360	7.3363	7.4267	6.8448	6.4243
8	9.6404	9.3279	9.4248	8.8823	8.3255
9	10.9190	10.8516	11.1333	10.3732	10.5433
10	14.9262	14.6514	14.5119	14.6490	18.8362

JAN-1 Weights at Age - Input Data

AGE	1993	1994	1995	1996	1997
1	0.1381	0.2840	0.2078	0.2807	0.3302
2	1.0410	0.5829	0.8016	0.7559	0.8439
3	1.7800	1.6771	1.5387	1.7944	1.8321
4	2.7875	2.7973	2.8303	2.5222	2.8699
5	4.3510	3.9304	4.3126	4.2590	3.6023
6	5.1289	5.9380	5.9639	5.8393	5.2873
7	6.6772	6.4624	8.1229	7.7582	7.0883
8	7.9508	8.2013	9.3556	9.5114	8.0954
9	10.2698	8.9623	10.3899	11.5696	10.5243
10	12.2279	15.7618	19.1176	8.6207	12.0867
AGE	1998	1999	2000	2001	2002
1	0.4066	0.3156	0.2068	0.4059	0.2841
2	0.8783	0.9409	0.9035	0.7277	0.8894
3	1.8190	1.7497	1.8481	1.8387	1.6952
4	2.8238	2.7544	2.6907	2.6474	2.5574
5	3.9682	3.9449	3.9068	3.7271	3.4059
6	4.7417	5.1787	4.9860	4.8942	4.5983
7	6.5136	6.0848	6.4067	5.7203	5.8385
8	7.7439	7.8867	7.2944	7.3304	6.9168
9	9.7811	8.6106	8.2257	8.5122	8.4278
10	12.3102	13.2010	12.5970	9.7372	11.7081
AGE	2003	2004	2005	2006	2007
1	0.3772	0.1879	0.2724	0.1959	0.2433
2	0.8451	0.9607	0.5860	0.6817	0.7338
3	1.7225	1.8563	1.7950	1.4719	1.4378
4	2.4739	2.6347	2.6931	2.5551	2.4632
5	3.3810	3.3598	3.5116	3.3598	3.3566
6	4.3128	4.3187	4.3729	4.2609	3.9181
7	5.4634	5.1590	5.1359	5.6410	5.1864
8	6.6927	6.5321	6.5089	5.9124	6.7047
9	8.1247	7.6921	8.0475	7.5079	6.6526
10	10.4481	11.1003	11.3704	9.0737	9.0701

JAN-1 Weights at Age - Input Data

AGE	2008
1	0.2553
2	0.7615
3	1.6567
4	2.5640
5	3.3938
6	4.2367
7	5.3171
8	6.4702
9	7.6050
10	10.2125

SSB Weight At Age - Input Data

AGE	1978	1979	1980	1981	1982
1	0.3769	0.4865	0.4303	0.3814	0.4302
2	1.0176	0.8885	0.9905	0.9632	0.9044
3	1.8431	1.5387	1.8211	1.8346	1.9131
4	2.8324	3.2323	2.5904	2.9290	2.9765
5	3.0026	4.0991	4.8883	4.2339	4.3178
6	4.3726	5.3671	5.7686	6.3852	5.7652
7	5.3249	7.4192	7.7198	7.6972	8.3144
8	7.9543	8.2932	9.7940	9.0215	9.2497
9	9.3022	9.5340	9.8082	11.7956	11.2749
10	13.8870	13.6108	14.8999	16.7990	15.6229

AGE	1983	1984	1985	1986	1987
1	0.4542	0.3376	0.6206	0.4564	0.3777
2	0.9610	1.0069	0.8654	1.0454	0.9947
3	1.8243	1.8859	1.7637	1.8415	1.8330
4	2.9176	2.9604	3.0350	2.7372	3.1954
5	4.2186	4.0681	4.2726	4.5207	4.5634
6	5.8356	5.5996	5.6386	5.9750	6.5367
7	7.4724	7.5053	7.3519	7.5606	7.9933
8	10.0481	9.3561	9.4769	9.0555	9.5788
9	10.6772	10.8778	11.0130	11.5361	10.9362
10	16.3190	14.6426	14.0475	14.5623	15.6415

AGE	1988	1989	1990	1991	1992
1	0.2878	0.2349	0.3140	0.4457	0.6611
2	0.8958	0.8404	0.8046	0.8984	0.9718
3	1.8666	1.7437	1.8808	1.9293	1.9128
4	2.9467	2.9759	2.8064	2.9444	3.0810

5	4.7514	4.2621	4.3056	4.1453	3.9887
6	6.2538	5.9596	5.7592	5.3788	5.3907
7	8.2360	7.3363	7.4267	6.8448	6.4243
8	9.6404	9.3279	9.4248	8.8823	8.3255
9	10.9190	10.8516	11.1333	10.3732	10.5433
10	14.9262	14.6514	14.5119	14.6490	18.8362

SSB Weight At Age - Input Data

AGE	1993	1994	1995	1996	1997
1	0.1381	0.2840	0.2078	0.2807	0.3302
2	1.0410	0.5829	0.8016	0.7559	0.8439
3	1.7800	1.6771	1.5387	1.7944	1.8321
4	2.7875	2.7973	2.8303	2.5222	2.8699
5	4.3510	3.9304	4.3126	4.2590	3.6023
6	5.1289	5.9380	5.9639	5.8393	5.2873
7	6.6772	6.4624	8.1229	7.7582	7.0883
8	7.9508	8.2013	9.3556	9.5114	8.0954
9	10.2698	8.9623	10.3899	11.5696	10.5243
10	12.2279	15.7618	19.1176	8.6207	12.0867
AGE	1998	1999	2000	2001	2002
1	0.4066	0.3156	0.2068	0.4059	0.2841
2	0.8783	0.9409	0.9035	0.7277	0.8894
3	1.8190	1.7497	1.8481	1.8387	1.6952
4	2.8238	2.7544	2.6907	2.6474	2.5574
5	3.9682	3.9449	3.9068	3.7271	3.4059
6	4.7417	5.1787	4.9860	4.8942	4.5983
7	6.5136	6.0848	6.4067	5.7203	5.8385
8	7.7439	7.8867	7.2944	7.3304	6.9168
9	9.7811	8.6106	8.2257	8.5122	8.4278
10	12.3102	13.2010	12.5970	9.7372	11.7081
AGE	2003	2004	2005	2006	2007
1	0.3772	0.1879	0.2724	0.1959	0.2433
2	0.8451	0.9607	0.5860	0.6817	0.7338
3	1.7225	1.8563	1.7950	1.4719	1.4378
4	2.4739	2.6347	2.6931	2.5551	2.4632
5	3.3810	3.3598	3.5116	3.3598	3.3566
6	4.3128	4.3187	4.3729	4.2609	3.9181
7	5.4634	5.1590	5.1359	5.6410	5.1864
8	6.6927	6.5321	6.5089	5.9124	6.7047
9	8.1247	7.6921	8.0475	7.5079	6.6526
10	10.4481	11.1003	11.3704	9.0737	9.0701

Natural Mortality - Input Data

AGE	1978	1979	1980	1981	1982
1	0.2000	0.2000	0.2000	0.2000	0.2000
2	0.2000	0.2000	0.2000	0.2000	0.2000
3	0.2000	0.2000	0.2000	0.2000	0.2000
4	0.2000	0.2000	0.2000	0.2000	0.2000
5	0.2000	0.2000	0.2000	0.2000	0.2000
6	0.2000	0.2000	0.2000	0.2000	0.2000
7	0.2000	0.2000	0.2000	0.2000	0.2000
8	0.2000	0.2000	0.2000	0.2000	0.2000
9	0.2000	0.2000	0.2000	0.2000	0.2000
10	0.2000	0.2000	0.2000	0.2000	0.2000
AGE	1983	1984	1985	1986	1987
1	0.2000	0.2000	0.2000	0.2000	0.2000
2	0.2000	0.2000	0.2000	0.2000	0.2000
3	0.2000	0.2000	0.2000	0.2000	0.2000
4	0.2000	0.2000	0.2000	0.2000	0.2000
5	0.2000	0.2000	0.2000	0.2000	0.2000
6	0.2000	0.2000	0.2000	0.2000	0.2000
7	0.2000	0.2000	0.2000	0.2000	0.2000
8	0.2000	0.2000	0.2000	0.2000	0.2000
9	0.2000	0.2000	0.2000	0.2000	0.2000
10	0.2000	0.2000	0.2000	0.2000	0.2000
AGE	1988	1989	1990	1991	1992
1	0.2000	0.2000	0.2000	0.2000	0.2000
2	0.2000	0.2000	0.2000	0.2000	0.2000
3	0.2000	0.2000	0.2000	0.2000	0.2000
4	0.2000	0.2000	0.2000	0.2000	0.2000
5	0.2000	0.2000	0.2000	0.2000	0.2000
6	0.2000	0.2000	0.2000	0.2000	0.2000
7	0.2000	0.2000	0.2000	0.2000	0.2000
8	0.2000	0.2000	0.2000	0.2000	0.2000
9	0.2000	0.2000	0.2000	0.2000	0.2000
10	0.2000	0.2000	0.2000	0.2000	0.2000

Natural Mortality - Input Data

AGE	1993	1994	1995	1996	1997
1	0.2000	0.2000	0.2000	0.2000	0.2000
2	0.2000	0.2000	0.2000	0.2000	0.2000
3	0.2000	0.2000	0.2000	0.2000	0.2000
4	0.2000	0.2000	0.2000	0.2000	0.2000
5	0.2000	0.2000	0.2000	0.2000	0.2000
6	0.2000	0.2000	0.2000	0.2000	0.2000
7	0.2000	0.2000	0.2000	0.2000	0.2000
8	0.2000	0.2000	0.2000	0.2000	0.2000
9	0.2000	0.2000	0.2000	0.2000	0.2000
10	0.2000	0.2000	0.2000	0.2000	0.2000
AGE	1998	1999	2000	2001	2002
1	0.2000	0.2000	0.2000	0.2000	0.2000
2	0.2000	0.2000	0.2000	0.2000	0.2000
3	0.2000	0.2000	0.2000	0.2000	0.2000
4	0.2000	0.2000	0.2000	0.2000	0.2000
5	0.2000	0.2000	0.2000	0.2000	0.2000
6	0.2000	0.2000	0.2000	0.2000	0.2000
7	0.2000	0.2000	0.2000	0.2000	0.2000
8	0.2000	0.2000	0.2000	0.2000	0.2000
9	0.2000	0.2000	0.2000	0.2000	0.2000
10	0.2000	0.2000	0.2000	0.2000	0.2000
AGE	2003	2004	2005	2006	2007
1	0.2000	0.2000	0.2000	0.2000	0.2000
2	0.2000	0.2000	0.2000	0.2000	0.2000
3	0.2000	0.2000	0.2000	0.2000	0.2000
4	0.2000	0.2000	0.2000	0.2000	0.2000
5	0.2000	0.2000	0.2000	0.2000	0.2000
6	0.2000	0.2000	0.2000	0.2000	0.2000
7	0.2000	0.2000	0.2000	0.2000	0.2000
8	0.2000	0.2000	0.2000	0.2000	0.2000
9	0.2000	0.2000	0.2000	0.2000	0.2000
10	0.2000	0.2000	0.2000	0.2000	0.2000

Proportion of Natural Mortality Before Spawning = 0.1667  
 Proportion of Fishing Mortality Before Spawning = 0.1667

Maturity - Input Data

AGE	1978	1979	1980	1981	1982
1	0.0800	0.0700	0.0900	0.0900	0.0800
2	0.3300	0.3400	0.3800	0.3800	0.3600
3	0.7500	0.7800	0.7900	0.7900	0.7900
4	0.9500	0.9600	0.9600	0.9600	0.9600
5	0.9900	0.9900	0.9900	0.9900	0.9900
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	1.0000
9	1.0000	1.0000	1.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000	1.0000
AGE	1983	1984	1985	1986	1987
1	0.0800	0.1300	0.1800	0.1600	0.2000
2	0.4100	0.4900	0.5900	0.5800	0.5900
3	0.8500	0.8700	0.9100	0.9100	0.8900
4	0.9800	0.9800	0.9900	0.9900	0.9800
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	1.0000
9	1.0000	1.0000	1.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000	1.0000
AGE	1988	1989	1990	1991	1992
1	0.2500	0.2000	0.1200	0.1300	0.0900
2	0.6400	0.6100	0.4600	0.5300	0.4700
3	0.9000	0.9100	0.8500	0.8900	0.8900
4	0.9800	0.9800	0.9700	0.9800	0.9900
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	1.0000
9	1.0000	1.0000	1.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000	1.0000



Maturity - Input Data

AGE	1993	1994	1995	1996	1997
1	0.0400	0.0400	0.0400	0.0500	0.1000
2	0.4300	0.4100	0.5000	0.4800	0.5700
3	0.9300	0.9200	0.9600	0.9500	0.9400
4	1.0000	1.0000	1.0000	1.0000	0.9900
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	1.0000
9	1.0000	1.0000	1.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000	1.0000
AGE	1998	1999	2000	2001	2002
1	0.0900	0.0700	0.0700	0.0800	0.0700
2	0.5600	0.5100	0.5100	0.5000	0.4300
3	0.9400	0.9300	0.9400	0.9300	0.8800
4	1.0000	0.9900	1.0000	0.9900	0.9900
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	1.0000
9	1.0000	1.0000	1.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000	1.0000
AGE	2003	2004	2005	2006	2007
1	0.0400	0.0700	0.0600	0.0500	0.0400
2	0.3300	0.3800	0.3600	0.3500	0.3700
3	0.8400	0.8300	0.8300	0.8400	0.8900
4	0.9800	0.9800	0.9800	0.9800	0.9900
5	1.0000	1.0000	1.0000	1.0000	1.0000
6	1.0000	1.0000	1.0000	1.0000	1.0000
7	1.0000	1.0000	1.0000	1.0000	1.0000
8	1.0000	1.0000	1.0000	1.0000	1.0000
9	1.0000	1.0000	1.0000	1.0000	1.0000
10	1.0000	1.0000	1.0000	1.0000	1.0000

Input Partial Recruitment

AGE

1	0.0100
2	0.1000
3	0.3900
4	0.7400
5	1.0000
6	1.0000
7	1.0000
8	1.0000
9	1.0000

Input F-Plus Ratio

YEAR

1978	1.0000
1979	1.0000
1980	1.0000
1981	1.0000
1982	1.0000
1983	1.0000
1984	1.0000
1985	1.0000
1986	1.0000
1987	1.0000
1988	1.0000
1989	1.0000
1990	1.0000
1991	1.0000
1992	1.0000
1993	1.0000
1994	1.0000
1995	1.0000
1996	1.0000
1997	1.0000
1998	1.0000
1999	1.0000
2000	1.0000
2001	1.0000
2002	1.0000
2003	1.0000
2004	1.0000
2005	1.0000
2006	1.0000
2007	1.0000

SURVEY - INPUT DATA

INDEX	1	2	3	4	5
SURVEY TAG	spr_36pr	spr_36pr	spr_36pr	spr_36pr	spr_36pr
AGE	1	2	3	4	5
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	0.0000	0.0000	0.0000	0.0000	0.0000
1979	0.0000	0.0000	0.0000	0.0000	0.0000
1980	0.0000	0.0000	0.0000	0.0000	0.0000
1981	0.0000	0.0000	0.0000	0.0000	0.0000
1982	693.8277	7425.1446	12980.2741	11371.7250	8480.5714
1983	452.8527	2666.2982	4121.4375	1087.6661	952.1518
1984	549.4339	588.7768	1039.1705	1691.4696	576.8920
1985	151.7705	3624.3241	906.1152	1516.7491	1929.3027
1986	1190.5313	558.7232	2519.5821	498.8893	737.6786
1987	26.9116	2202.7902	516.9214	1042.7223	84.8330
1988	983.8446	831.6643	4302.5786	558.4500	879.0670
1989	424.0286	1926.7071	910.3500	2162.6277	321.1634
1990	236.8768	1258.8348	2373.0027	921.0054	1245.7205
1991	1402.4089	721.0125	940.8134	1268.9438	654.0750
1992	167.6170	1710.8679	639.5946	229.6366	372.8009
1993	11.6116	544.7893	1784.2259	280.4545	122.2634
1994	170.4857	372.1179	273.2143	295.7545	45.3536
1995	0.0000	0.0000	0.0000	0.0000	0.0000
1996	0.0000	0.0000	0.0000	0.0000	0.0000
1997	0.0000	0.0000	0.0000	0.0000	0.0000
1998	0.0000	0.0000	0.0000	0.0000	0.0000
1999	0.0000	0.0000	0.0000	0.0000	0.0000
2000	0.0000	0.0000	0.0000	0.0000	0.0000
2001	0.0000	0.0000	0.0000	0.0000	0.0000
2002	0.0000	0.0000	0.0000	0.0000	0.0000
2003	0.0000	0.0000	0.0000	0.0000	0.0000
2004	0.0000	0.0000	0.0000	0.0000	0.0000
2005	0.0000	0.0000	0.0000	0.0000	0.0000
2006	0.0000	0.0000	0.0000	0.0000	0.0000
2007	0.0000	0.0000	0.0000	0.0000	0.0000
2008	0.0000	0.0000	0.0000	0.0000	0.0000

SURVEY - INPUT DATA

INDEX	6	7	8	9	10
SURVEY TAG	spr_36pr	spr_36pr	spr_36pr	spr_36po	spr_36po
AGE	6	7	8	1	2
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	0.0000	0.0000	0.0000	0.0000	0.0000
1979	0.0000	0.0000	0.0000	0.0000	0.0000
1980	0.0000	0.0000	0.0000	0.0000	0.0000
1981	0.0000	0.0000	0.0000	0.0000	0.0000
1982	400.1223	2548.6795	503.3973	0.0000	0.0000
1983	605.3063	37.1571	298.6232	0.0000	0.0000
1984	546.9750	285.2357	0.0000	0.0000	0.0000
1985	362.5554	262.1491	245.7563	0.0000	0.0000
1986	844.0955	84.2866	170.8955	0.0000	0.0000
1987	245.0732	185.1027	44.8071	0.0000	0.0000
1988	87.4286	50.5446	67.2107	0.0000	0.0000
1989	479.6277	68.9866	53.9598	0.0000	0.0000
1990	178.1357	195.4848	17.6223	0.0000	0.0000
1991	448.2080	73.9045	55.4625	0.0000	0.0000
1992	194.5286	216.7955	26.7750	0.0000	0.0000
1993	188.7911	40.0259	46.9929	0.0000	0.0000
1994	7.7866	60.2438	0.0000	0.0000	0.0000
1995	0.0000	0.0000	0.0000	67.6205	521.4295
1996	0.0000	0.0000	0.0000	99.7232	292.2027
1997	0.0000	0.0000	0.0000	397.2536	597.1098
1998	0.0000	0.0000	0.0000	152.0438	908.7107
1999	0.0000	0.0000	0.0000	290.0170	397.3902
2000	0.0000	0.0000	0.0000	301.4920	1101.8732
2001	0.0000	0.0000	0.0000	82.9205	320.4804
2002	0.0000	0.0000	0.0000	88.3848	126.9080
2003	0.0000	0.0000	0.0000	22.4036	290.7000
2004	0.0000	0.0000	0.0000	870.0509	79.2321
2005	0.0000	0.0000	0.0000	16.2563	660.9054
2006	0.0000	0.0000	0.0000	243.9804	315.5625
2007	0.0000	0.0000	0.0000	170.8955	872.7830
2008	0.0000	0.0000	0.0000	864.1768	1136.0250

SURVEY - INPUT DATA

INDEX	11	12	13	14	15
SURVEY TAG	spr_36po	spr_36po	spr_36po	spr_36po	spr_36po
AGE	3	4	5	6	7
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	0.0000	0.0000	0.0000	0.0000	0.0000
1979	0.0000	0.0000	0.0000	0.0000	0.0000
1980	0.0000	0.0000	0.0000	0.0000	0.0000
1981	0.0000	0.0000	0.0000	0.0000	0.0000
1982	0.0000	0.0000	0.0000	0.0000	0.0000
1983	0.0000	0.0000	0.0000	0.0000	0.0000
1984	0.0000	0.0000	0.0000	0.0000	0.0000
1985	0.0000	0.0000	0.0000	0.0000	0.0000
1986	0.0000	0.0000	0.0000	0.0000	0.0000
1987	0.0000	0.0000	0.0000	0.0000	0.0000
1988	0.0000	0.0000	0.0000	0.0000	0.0000
1989	0.0000	0.0000	0.0000	0.0000	0.0000
1990	0.0000	0.0000	0.0000	0.0000	0.0000
1991	0.0000	0.0000	0.0000	0.0000	0.0000
1992	0.0000	0.0000	0.0000	0.0000	0.0000
1993	0.0000	0.0000	0.0000	0.0000	0.0000
1994	0.0000	0.0000	0.0000	0.0000	0.0000
1995	1166.4884	729.4821	818.2768	145.7598	319.1143
1996	1005.7018	1703.7643	237.9696	284.8259	37.8402
1997	232.5054	667.4625	576.8920	68.0304	182.9170
1998	1773.1607	1158.1554	1031.2473	727.5696	138.7929
1999	831.9375	696.2866	325.3982	162.9723	86.8821
2000	1133.5661	1558.8241	505.8563	139.8857	34.8348
2001	1084.2509	218.8446	522.7955	241.2482	31.5563
2002	523.6152	1356.5089	327.0375	306.9563	53.2768
2003	370.4786	850.3795	951.3321	87.5652	108.6027
2004	790.8188	1921.3795	1849.5241	1219.2188	243.9804
2005	188.2446	861.9911	374.8500	280.4545	174.0375
2006	1783.9527	453.3991	988.2161	290.7000	165.7045
2007	513.0964	2450.3223	247.1223	285.7821	42.2116
2008	790.2723	479.9009	1312.2482	51.6375	61.4732

SURVEY - INPUT DATA

INDEX	16	17	18	19	20
SURVEY TAG	spr_36po	spr_41	spr_41	spr_41	spr_41
AGE	8	1	2	3	4
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	0.0000	477.9000	246.6000	7111.1571	1249.0714
1979	0.0000	550.6714	1668.4714	353.7000	2380.5000
1980	0.0000	40.1143	2850.4286	3458.0571	272.9571
1981	0.0000	2959.9714	2381.4000	3613.8857	2166.3000
1982	0.0000	0.0000	0.0000	0.0000	0.0000
1983	0.0000	0.0000	0.0000	0.0000	0.0000
1984	0.0000	0.0000	0.0000	0.0000	0.0000
1985	0.0000	0.0000	0.0000	0.0000	0.0000
1986	0.0000	0.0000	0.0000	0.0000	0.0000
1987	0.0000	0.0000	0.0000	0.0000	0.0000
1988	0.0000	0.0000	0.0000	0.0000	0.0000
1989	0.0000	0.0000	0.0000	0.0000	0.0000
1990	0.0000	0.0000	0.0000	0.0000	0.0000
1991	0.0000	0.0000	0.0000	0.0000	0.0000
1992	0.0000	0.0000	0.0000	0.0000	0.0000
1993	0.0000	0.0000	0.0000	0.0000	0.0000
1994	0.0000	0.0000	0.0000	0.0000	0.0000
1995	38.2500	0.0000	0.0000	0.0000	0.0000
1996	24.7259	0.0000	0.0000	0.0000	0.0000
1997	27.4580	0.0000	0.0000	0.0000	0.0000
1998	42.2116	0.0000	0.0000	0.0000	0.0000
1999	41.6652	0.0000	0.0000	0.0000	0.0000
2000	27.4580	0.0000	0.0000	0.0000	0.0000
2001	24.1795	0.0000	0.0000	0.0000	0.0000
2002	0.0000	0.0000	0.0000	0.0000	0.0000
2003	16.8027	0.0000	0.0000	0.0000	0.0000
2004	356.8179	0.0000	0.0000	0.0000	0.0000
2005	40.7089	0.0000	0.0000	0.0000	0.0000
2006	73.6313	0.0000	0.0000	0.0000	0.0000
2007	24.7259	0.0000	0.0000	0.0000	0.0000
2008	0.0000	0.0000	0.0000	0.0000	0.0000

SURVEY - INPUT DATA

INDEX	21	22	23	24	25
SURVEY TAG	spr_41	spr_41	spr_41	spr_41	sp_can_p
AGE	5	6	7	8	1
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	999.7714	182.0571	915.8143	83.7000	0.0000
1979	702.7714	302.7857	107.4857	178.2000	0.0000
1980	2192.1429	480.4714	238.5000	39.8571	0.0000
1981	136.1571	1129.6286	331.9714	169.8429	0.0000
1982	0.0000	0.0000	0.0000	0.0000	0.0000
1983	0.0000	0.0000	0.0000	0.0000	0.0000
1984	0.0000	0.0000	0.0000	0.0000	0.0000
1985	0.0000	0.0000	0.0000	0.0000	0.0000
1986	0.0000	0.0000	0.0000	0.0000	844.4316
1987	0.0000	0.0000	0.0000	0.0000	351.8465
1988	0.0000	0.0000	0.0000	0.0000	394.0681
1989	0.0000	0.0000	0.0000	0.0000	2294.0392
1990	0.0000	0.0000	0.0000	0.0000	591.1021
1991	0.0000	0.0000	0.0000	0.0000	1660.7155
1992	0.0000	0.0000	0.0000	0.0000	154.8125
1993	0.0000	0.0000	0.0000	0.0000	0.0000
1994	0.0000	0.0000	0.0000	0.0000	0.0000
1995	0.0000	0.0000	0.0000	0.0000	0.0000
1996	0.0000	0.0000	0.0000	0.0000	0.0000
1997	0.0000	0.0000	0.0000	0.0000	0.0000
1998	0.0000	0.0000	0.0000	0.0000	0.0000
1999	0.0000	0.0000	0.0000	0.0000	0.0000
2000	0.0000	0.0000	0.0000	0.0000	0.0000
2001	0.0000	0.0000	0.0000	0.0000	0.0000
2002	0.0000	0.0000	0.0000	0.0000	0.0000
2003	0.0000	0.0000	0.0000	0.0000	0.0000
2004	0.0000	0.0000	0.0000	0.0000	0.0000
2005	0.0000	0.0000	0.0000	0.0000	0.0000
2006	0.0000	0.0000	0.0000	0.0000	0.0000
2007	0.0000	0.0000	0.0000	0.0000	0.0000
2008	0.0000	0.0000	0.0000	0.0000	0.0000

SURVEY - INPUT DATA

INDEX	26	27	28	29	30
SURVEY TAG	sp_can_p	sp_can_p	sp_can_p	sp_can_p	sp_can_p
AGE	2	3	4	5	6
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	0.0000	0.0000	0.0000	0.0000	0.0000
1979	0.0000	0.0000	0.0000	0.0000	0.0000
1980	0.0000	0.0000	0.0000	0.0000	0.0000
1981	0.0000	0.0000	0.0000	0.0000	0.0000
1982	0.0000	0.0000	0.0000	0.0000	0.0000
1983	0.0000	0.0000	0.0000	0.0000	0.0000
1984	0.0000	0.0000	0.0000	0.0000	0.0000
1985	0.0000	0.0000	0.0000	0.0000	0.0000
1986	3194.7662	3954.7547	520.7328	914.8009	619.2498
1987	2997.7322	1308.8690	1534.0507	478.5112	168.8863
1988	1421.4599	6558.4188	816.2839	1435.5337	182.9602
1989	3912.5331	1942.1927	4011.0501	506.6590	591.1021
1990	3434.0218	5319.9191	2927.3629	5446.5838	591.1021
1991	1632.5678	2589.5902	3025.8799	1477.7553	1843.6757
1992	4025.1240	2491.0732	1125.9088	1379.2383	844.4316
1993	0.0000	0.0000	0.0000	0.0000	0.0000
1994	0.0000	0.0000	0.0000	0.0000	0.0000
1995	0.0000	0.0000	0.0000	0.0000	0.0000
1996	0.0000	0.0000	0.0000	0.0000	0.0000
1997	0.0000	0.0000	0.0000	0.0000	0.0000
1998	0.0000	0.0000	0.0000	0.0000	0.0000
1999	0.0000	0.0000	0.0000	0.0000	0.0000
2000	0.0000	0.0000	0.0000	0.0000	0.0000
2001	0.0000	0.0000	0.0000	0.0000	0.0000
2002	0.0000	0.0000	0.0000	0.0000	0.0000
2003	0.0000	0.0000	0.0000	0.0000	0.0000
2004	0.0000	0.0000	0.0000	0.0000	0.0000
2005	0.0000	0.0000	0.0000	0.0000	0.0000
2006	0.0000	0.0000	0.0000	0.0000	0.0000
2007	0.0000	0.0000	0.0000	0.0000	0.0000
2008	0.0000	0.0000	0.0000	0.0000	0.0000



SURVEY - INPUT DATA

INDEX	31	32	33	34	35
SURVEY TAG	sp_can_p	sp_can_p	sp_canpo	sp_canpo	sp_canpo
AGE	7	8	1	2	3
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	0.0000	0.0000	0.0000	0.0000	0.0000
1979	0.0000	0.0000	0.0000	0.0000	0.0000
1980	0.0000	0.0000	0.0000	0.0000	0.0000
1981	0.0000	0.0000	0.0000	0.0000	0.0000
1982	0.0000	0.0000	0.0000	0.0000	0.0000
1983	0.0000	0.0000	0.0000	0.0000	0.0000
1984	0.0000	0.0000	0.0000	0.0000	0.0000
1985	0.0000	0.0000	0.0000	0.0000	0.0000
1986	365.9204	0.0400	0.0000	0.0000	0.0000
1987	309.6249	0.0800	0.0000	0.0000	0.0000
1988	112.5909	0.1700	0.0000	0.0000	0.0000
1989	70.3693	0.1000	0.0000	0.0000	0.0000
1990	1308.8690	0.1200	0.0000	0.0000	0.0000
1991	225.1818	0.2200	0.0000	0.0000	0.0000
1992	605.1760	0.1200	0.0000	0.0000	0.0000
1993	0.0000	0.0000	0.0000	0.0000	0.0000
1994	0.0000	0.0000	0.0000	0.0000	0.0000
1995	0.0000	0.0000	98.5170	942.9486	2111.0790
1996	0.0000	0.0000	197.0340	689.6191	3251.0617
1997	0.0000	0.0000	450.3635	745.9146	774.0623
1998	0.0000	0.0000	14.0739	942.9486	1337.0167
1999	0.0000	0.0000	464.4374	450.3635	2097.0051
2000	0.0000	0.0000	140.7386	619.2498	1477.7553
2001	0.0000	0.0000	0.0000	84.4432	900.7270
2002	0.0000	0.0000	12.8934	121.7457	805.6169
2003	0.0000	0.0000	0.0000	31.3603	419.1448
2004	0.0000	0.0000	753.7760	134.4987	551.7156
2005	0.0000	0.0000	34.4185	1880.0260	661.9957
2006	0.0000	0.0000	0.0000	52.7756	1978.5841
2007	0.0000	0.0000	193.3181	730.7096	1329.3200
2008	0.0000	0.0000	12.2714	454.9284	1259.8226

SURVEY - INPUT DATA

INDEX	36	37	38	39	40
SURVEY TAG	sp_canpo	sp_canpo	sp_canpo	sp_canpo	sp_canpo
AGE	4	5	6	7	8
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	0.0000	0.0000	0.0000	0.0000	0.0000
1979	0.0000	0.0000	0.0000	0.0000	0.0000
1980	0.0000	0.0000	0.0000	0.0000	0.0000
1981	0.0000	0.0000	0.0000	0.0000	0.0000
1982	0.0000	0.0000	0.0000	0.0000	0.0000
1983	0.0000	0.0000	0.0000	0.0000	0.0000
1984	0.0000	0.0000	0.0000	0.0000	0.0000
1985	0.0000	0.0000	0.0000	0.0000	0.0000
1986	0.0000	0.0000	0.0000	0.0000	0.0000
1987	0.0000	0.0000	0.0000	0.0000	0.0000
1988	0.0000	0.0000	0.0000	0.0000	0.0000
1989	0.0000	0.0000	0.0000	0.0000	0.0000
1990	0.0000	0.0000	0.0000	0.0000	0.0000
1991	0.0000	0.0000	0.0000	0.0000	0.0000
1992	0.0000	0.0000	0.0000	0.0000	0.0000
1993	0.0000	0.0000	0.0000	0.0000	0.0000
1994	0.0000	0.0000	0.0000	0.0000	0.0000
1995	1210.3520	844.4316	267.4033	56.2954	0.0500
1996	5657.6917	1534.0507	1111.8349	464.4374	0.0800
1997	1759.2325	1731.0848	379.9942	84.4432	0.0300
1998	492.5851	492.5851	394.0681	98.5170	0.0200
1999	1534.0507	577.0283	365.9204	211.1079	0.0100
2000	5516.9531	2406.6301	1097.7611	562.9544	0.2400
2001	591.1021	1562.1985	731.8407	365.9204	0.1700
2002	2887.0783	961.5430	1718.1603	563.8122	0.1700
2003	912.1602	1706.7639	447.1511	474.4035	0.1600
2004	595.5775	634.6213	545.4536	103.8278	0.1175
2005	4092.5096	1591.4896	721.6604	583.5206	0.0100
2006	925.6215	2297.1633	982.6574	283.5685	0.1850
2007	4136.1066	545.8412	851.2446	135.4739	0.0757
2008	835.7757	3069.2880	196.4960	396.5004	0.0300

SURVEY - INPUT DATA

INDEX	41	42	43	44	45
SURVEY TAG	us0autpr	us1autpr	us2autpr	us3autpr	us4autpr
AGE	1	2	3	4	5
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	207.0964	323.4857	4690.4063	943.6821	345.3429
1979	540.0080	2520.9482	534.4071	5543.1080	1316.3464
1980	156.4152	2220.0027	2290.9018	221.4402	2303.8795
1981	382.0902	1120.0420	769.9179	1057.2027	71.7188
1982	356.5446	4815.4018	3073.6607	2129.7054	804.6161
1983	494.5179	788.6330	2608.5134	330.3161	92.6196
1984	1752.5330	1160.4777	1488.0616	1011.1661	94.3955
1985	244.6634	2607.9670	931.3875	1268.6705	1127.1455
1986	1368.6670	247.6688	1151.0518	91.1170	144.1205
1987	103.9580	3113.1402	175.5402	449.4375	11.2018
1988	278.2688	565.1438	1848.0214	147.5357	273.6241
1989	750.6563	1194.9027	596.9732	1234.6554	81.9643
1990	342.6107	3822.8143	1429.4571	220.0741	692.7348
1991	214.6098	496.7036	2219.0464	2478.1902	563.3679
1992	55.3259	556.8107	239.3357	374.5768	41.6652
1993	47.9491	563.3679	1296.2652	238.1063	136.6071
1994	243.7071	1324.9527	726.2036	522.6589	22.5402
1995	0.0000	0.0000	0.0000	0.0000	0.0000
1996	0.0000	0.0000	0.0000	0.0000	0.0000
1997	0.0000	0.0000	0.0000	0.0000	0.0000
1998	0.0000	0.0000	0.0000	0.0000	0.0000
1999	0.0000	0.0000	0.0000	0.0000	0.0000
2000	0.0000	0.0000	0.0000	0.0000	0.0000
2001	0.0000	0.0000	0.0000	0.0000	0.0000
2002	0.0000	0.0000	0.0000	0.0000	0.0000
2003	0.0000	0.0000	0.0000	0.0000	0.0000
2004	0.0000	0.0000	0.0000	0.0000	0.0000
2005	0.0000	0.0000	0.0000	0.0000	0.0000
2006	0.0000	0.0000	0.0000	0.0000	0.0000
2007	0.0000	0.0000	0.0000	0.0000	0.0000
2008	0.0000	0.0000	0.0000	0.0000	0.0000

SURVEY - INPUT DATA

INDEX	46	47	48	49	50
SURVEY TAG	us5autpr	us0autpo	us1autpo	us2autpo	us3autpo
AGE	6	1	2	3	4
TIME	JAN-1	JAN-1	JAN-1	JAN-1	JAN-1
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1	1	1	1
1978	236.4670	0.0000	0.0000	0.0000	0.0000
1979	458.3170	0.0000	0.0000	0.0000	0.0000
1980	437.9625	0.0000	0.0000	0.0000	0.0000
1981	361.7357	0.0000	0.0000	0.0000	0.0000
1982	73.7679	0.0000	0.0000	0.0000	0.0000
1983	157.3714	0.0000	0.0000	0.0000	0.0000
1984	44.8071	0.0000	0.0000	0.0000	0.0000
1985	33.0589	0.0000	0.0000	0.0000	0.0000
1986	104.6411	0.0000	0.0000	0.0000	0.0000
1987	66.5277	0.0000	0.0000	0.0000	0.0000
1988	38.2500	0.0000	0.0000	0.0000	0.0000
1989	264.6080	0.0000	0.0000	0.0000	0.0000
1990	74.7241	0.0000	0.0000	0.0000	0.0000
1991	390.0134	0.0000	0.0000	0.0000	0.0000
1992	39.6161	0.0000	0.0000	0.0000	0.0000
1993	59.6973	0.0000	0.0000	0.0000	0.0000
1994	34.5616	0.0000	0.0000	0.0000	0.0000
1995	0.0000	91.2536	554.0786	907.4813	592.0554
1996	0.0000	218.4348	334.2777	2473.4089	1705.5402
1997	0.0000	29.5071	327.7205	267.4768	566.1000
1998	0.0000	8.7429	322.6661	438.3723	149.3116
1999	0.0000	95.7616	458.3170	1401.8625	480.5839
2000	0.0000	95.7616	190.8402	210.6482	422.9357
2001	0.0000	26.6384	780.0268	734.6732	96.3080
2002	0.0000	38.7964	64.3420	520.2000	627.0268
2003	0.0000	319.6607	652.9821	965.8125	1907.0357
2004	0.0000	446.5688	227.1777	422.3893	273.8973
2005	0.0000	2302.2402	1017.4500	185.5125	970.0473
2006	0.0000	71.1723	75.5438	791.5018	176.0866
2007	0.0000	135.7875	590.8259	221.0304	702.4339
2008	0.0000	102.3188	156.6884	282.5036	68.8500

SURVEY - INPUT DATA

INDEX	51	52			
SURVEY TAG	us4autpo	us5autpo			
AGE	5	6	NUMBERS	NUMBERS	NUMBERS
TIME	JAN-1	JAN-1	NUMBERS	NUMBERS	NUMBERS
TYPE	NUMBERS	NUMBERS	NUMBERS	NUMBERS	NUMBERS
RETRO FLAG	1	1			

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1978	0.0000	0.0000
1979	0.0000	0.0000
1980	0.0000	0.0000
1981	0.0000	0.0000
1982	0.0000	0.0000
1983	0.0000	0.0000
1984	0.0000	0.0000
1985	0.0000	0.0000
1986	0.0000	0.0000
1987	0.0000	0.0000
1988	0.0000	0.0000
1989	0.0000	0.0000
1990	0.0000	0.0000
1991	0.0000	0.0000
1992	0.0000	0.0000
1993	0.0000	0.0000
1994	0.0000	0.0000
1995	209.5554	92.7563
1996	119.1214	73.9045
1997	195.3482	81.5545
1998	176.4964	66.3911
1999	56.1455	48.3589
2000	348.2116	118.9848
2001	107.6464	41.8018
2002	81.1446	74.5875
2003	2222.5982	161.1964
2004	212.5607	112.5643
2005	344.2500	439.1920
2006	239.8821	35.3813
2007	46.1732	170.4857
2008	177.9991	8.7429

Additional Output Files

Population File C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10P\_SWPT\_SPLIT\10P-SWPT-SPLT\_A  
 Auxilliary File C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10P\_SWPT\_SPLIT\10P-SWPT-SPLT\_A  
 Covariance File C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10P\_SWPT\_SPLIT\10P-SWPT-SPLT\_A  
 Residuals File C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10P\_SWPT\_SPLIT\10P-SWPT-SPLT\_A

Log File C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10P\_SWPT\_SPLIT\10P-SWPT-SPLT\_A

Bootstrap Files

Bootstrap Stock Numbers

C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10P\_SWPT\_SPLIT\10P-SWPT-SPLT\_A

Bootstrap Fishing Mortality

C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10P\_SWPT\_SPLIT\10P-SWPT-SPLT\_A

Bootstrap Biomass

C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10P\_SWPT\_SPLIT\10P-SWPT-SPLT\_A

Bootstrap Catchability

C:\LOB\GBCOD\ASSESS\_2008\VPA\TY07\10P\_SWPT\_SPLIT\10P-SWPT-SPLT\_A

Estimation Results

JAN-1 Population Numbers

AGE	1978	1979	1980	1981	1982
1	28705.	25943.	22914.	45891.	19863.
2	4707.	23365.	20988.	18453.	36471.
3	25333.	3478.	17107.	13370.	11591.
4	7660.	13468.	1991.	8669.	6701.
5	2967.	4093.	6916.	1141.	4688.
6	1264.	1624.	2267.	3454.	649.
7	1212.	874.	926.	978.	1570.
8	82.	776.	572.	385.	428.
9	174.	47.	363.	405.	169.
10	44.	127.	37.	173.	192.
=====					
Total	72148.	73793.	74082.	92919.	82323.
AGE	1983	1984	1985	1986	1987
=====					
1	11305.	29021.	9615.	44505.	17898.
2	15562.	8691.	23506.	7713.	35744.
3	20473.	8096.	5723.	12569.	4881.
4	5520.	8936.	3512.	2063.	6191.
5	2817.	2128.	4336.	1367.	920.
6	2015.	1273.	916.	1678.	649.
7	266.	982.	541.	308.	823.
8	654.	133.	402.	205.	176.
9	173.	378.	56.	153.	105.
10	288.	283.	182.	76.	75.
=====					
Total	59073.	59920.	48789.	70638.	67462.
AGE	1988	1989	1990	1991	1992

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1	24854.	17849.	10204.	19796.	7470.
2	14560.	20056.	13809.	8290.	15956.
3	22111.	9803.	14070.	6330.	5023.
4	2637.	10610.	5305.	6709.	2076.
5	3124.	1198.	4880.	2584.	2671.
6	484.	1153.	637.	1967.	833.
7	308.	197.	467.	315.	642.
8	425.	118.	88.	178.	132.
9	93.	154.	51.	50.	66.
10	105.	54.	88.	47.	19.

=====  
Total        68702.        61191.        49599.        46266.        34886.

JAN-1 Population Numbers

AGE	1993	1994	1995	1996	1997
1	9871.	6316.	3925.	6675.	10621.
2	5943.	7812.	5086.	3185.	5407.
3	8749.	3487.	5841.	3575.	2348.
4	2070.	3214.	1475.	3498.	2041.
5	745.	607.	868.	610.	1727.
6	853.	189.	121.	369.	270.
7	283.	223.	68.	62.	138.
8	209.	74.	53.	36.	35.
9	68.	46.	15.	26.	19.
10	34.	9.	3.	1.	7.

=====  
Total        28824.        21975.        17456.        18037.        22614.

AGE	1998	1999	2000	2001	2002
1	4944.	12234.	5977.	2295.	4239.
2	8581.	3991.	9973.	4791.	1868.
3	3809.	6197.	2946.	7315.	3274.
4	1250.	1944.	3261.	1746.	3600.
5	761.	581.	830.	1634.	758.
6	627.	279.	220.	397.	713.
7	90.	258.	116.	102.	164.
8	30.	37.	84.	54.	34.
9	12.	10.	11.	34.	21.
10	6.	7.	3.	3.	13.

=====  
Total        20110.        25540.        23421.        18370.        14685.

AGE	2003	2004	2005	2006	2007
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1	1461.	10802.	2523.	6490.	7037.
2	3441.	1181.	8798.	2054.	5284.
3	1428.	2635.	904.	6874.	1619.
4	1621.	806.	1767.	559.	4869.
5	1591.	613.	427.	928.	271.
6	294.	493.	223.	220.	432.
7	253.	102.	179.	88.	116.
8	59.	80.	32.	70.	44.
9	11.	23.	22.	10.	32.
10	5.	10.	9.	9.	5.
=====					
Total	10164.	16745.	14882.	17301.	19708.

JAN-1 Population Numbers

AGE	2008
<hr/>	
1	4875.
2	5752.
3	3852.
4	970.
5	2930.
6	157.
7	238.
8	81.
9	26.
10	22.
=====	
Total	18902.



Fishing Mortality Calculated

AGE	1978	1979	1980	1981	1982
1	0.0058	0.0119	0.0165	0.0297	0.0440
2	0.1026	0.1117	0.2509	0.2650	0.3774
3	0.4318	0.3577	0.4797	0.4908	0.5419
4	0.4269	0.4664	0.3569	0.4147	0.6667
5	0.4024	0.3905	0.4942	0.3647	0.6443
6	0.1688	0.3620	0.6411	0.5883	0.6924
7	0.2463	0.2239	0.6785	0.6268	0.6760
8	0.3601	0.5597	0.1456	0.6208	0.7059
9	0.3083	0.3598	0.5414	0.5446	0.6558
10	0.3083	0.3598	0.5414	0.5446	0.6558
AGE	1983	1984	1985	1986	1987
1	0.0630	0.0107	0.0204	0.0192	0.0064
2	0.4535	0.2179	0.4261	0.2575	0.2803
3	0.6290	0.6351	0.8203	0.5081	0.4158
4	0.7533	0.5232	0.7433	0.6078	0.4840
5	0.5944	0.6425	0.7493	0.5448	0.4415
6	0.5194	0.6547	0.8897	0.5129	0.5462
7	0.4937	0.6939	0.7714	0.3628	0.4606
8	0.3474	0.6618	0.7637	0.4717	0.4309
9	0.5587	0.6574	0.7723	0.5108	0.4756
10	0.5587	0.6574	0.7723	0.5108	0.4756
AGE	1988	1989	1990	1991	1992
1	0.0145	0.0566	0.0078	0.0157	0.0287
2	0.1956	0.1545	0.5800	0.3011	0.4009
3	0.5343	0.4140	0.5406	0.9151	0.6864
4	0.5889	0.5766	0.5192	0.7209	0.8245
5	0.7968	0.4318	0.7087	0.9323	0.9419
6	0.7013	0.7038	0.5044	0.9193	0.8797
7	0.7592	0.6020	0.7662	0.6727	0.9223
8	0.8176	0.6421	0.3653	0.7979	0.4573
9	0.7815	0.5595	0.6891	0.9081	0.9261
10	0.7815	0.5595	0.6891	0.9081	0.9261

Fishing Mortality Calculated

AGE	1993	1994	1995	1996	1997
1	0.0340	0.0166	0.0091	0.0108	0.0133
2	0.3332	0.0907	0.1523	0.1047	0.1502
3	0.8014	0.6600	0.3127	0.3604	0.4303
4	1.0272	1.1091	0.6839	0.5061	0.7865
5	1.1730	1.4129	0.6554	0.6147	0.8135
6	1.1405	0.8274	0.4668	0.7821	0.9036
7	1.1436	1.2330	0.4262	0.3799	1.3379
8	1.3043	1.3803	0.5290	0.4335	0.8944
9	1.1537	1.2384	0.6159	0.6543	0.8515
10	1.1537	1.2384	0.6159	0.6543	0.8515
AGE	1998	1999	2000	2001	2002
1	0.0142	0.0043	0.0212	0.0056	0.0088
2	0.1255	0.1035	0.1100	0.1806	0.0690
3	0.4725	0.4421	0.3230	0.5091	0.5029
4	0.5659	0.6513	0.4912	0.6348	0.6162
5	0.8021	0.7704	0.5380	0.6293	0.7456
6	0.6861	0.6757	0.5739	0.6852	0.8374
7	0.6733	0.9285	0.5704	0.8835	0.8281
8	0.8821	1.0337	0.7057	0.7381	0.8951
9	0.7434	0.7794	0.5479	0.6503	0.7929
10	0.7434	0.7794	0.5479	0.6503	0.7929
AGE	2003	2004	2005	2006	2007
1	0.0129	0.0052	0.0054	0.0056	0.0017
2	0.0667	0.0670	0.0467	0.0381	0.1161
3	0.3719	0.2000	0.2811	0.1450	0.3119
4	0.7723	0.4362	0.4441	0.5236	0.3080
5	0.9709	0.8136	0.4635	0.5645	0.3439
6	0.8593	0.8168	0.7325	0.4354	0.3973
7	0.9477	0.9661	0.7358	0.4941	0.1662
8	0.7441	1.0957	0.9542	0.5883	0.3025
9	0.9521	0.8269	0.5855	0.5353	0.3025
10	0.9521	0.8269	0.5855	0.5353	0.3025

Average Fishing Mortality For Ages 5- 8

Year            Average F    N Weighted    Biomass Wtd    Catch Wtd

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1978	0.2944	0.3141	0.2944	0.3425
1979	0.3840	0.3823	0.3842	0.3962
1980	0.4898	0.5227	0.5158	0.5442
1981	0.5501	0.5539	0.5704	0.5667
1982	0.6796	0.6589	0.6647	0.6594
1983	0.4887	0.5354	0.5104	0.5443
1984	0.6633	0.6577	0.6626	0.6581
1985	0.7935	0.7729	0.7769	0.7749
1986	0.4730	0.5098	0.5017	0.5137
1987	0.4698	0.4734	0.4746	0.4765
1988	0.7687	0.7855	0.7846	0.7864
1989	0.5949	0.5713	0.5934	0.5936
1990	0.5862	0.6867	0.6799	0.6933
1991	0.8305	0.9063	0.8960	0.9095
1992	0.8003	0.9119	0.8982	0.9180
1993	1.1904	1.1689	1.1749	1.1699
1994	1.2134	1.2728	1.2444	1.2948
1995	0.5193	0.6148	0.5964	0.6227
1996	0.5526	0.6525	0.6479	0.6668
1997	0.9873	0.8594	0.8881	0.8697
1998	0.7609	0.7478	0.7431	0.7512
1999	0.8521	0.7914	0.8041	0.7992
2000	0.5970	0.5586	0.5671	0.5609
2001	0.7340	0.6539	0.6625	0.6572
2002	0.8265	0.7960	0.8045	0.7978
2003	0.8805	0.9473	0.9397	0.9490
2004	0.9231	0.8445	0.8584	0.8486
2005	0.7215	0.6079	0.6340	0.6347
2006	0.5206	0.5393	0.5351	0.5431
2007	0.3025	0.3446	0.3356	0.3597

Back Calculated Partial Recruitment

AGE	1978	1979	1980	1981	1982
1	0.0135	0.0213	0.0243	0.0474	0.0623
2	0.2377	0.1996	0.3698	0.4228	0.5347
3	1.0000	0.6391	0.7070	0.7830	0.7676
4	0.9886	0.8332	0.5260	0.6616	0.9444
5	0.9319	0.6976	0.7284	0.5819	0.9127
6	0.3909	0.6467	0.9449	0.9386	0.9809
7	0.5705	0.4000	1.0000	1.0000	0.9576
8	0.8339	1.0000	0.2145	0.9905	1.0000
9	0.7139	0.6428	0.7979	0.8689	0.9291
10	0.7139	0.6428	0.7979	0.8689	0.9291
AGE	1983	1984	1985	1986	1987
1	0.0836	0.0155	0.0229	0.0316	0.0118
2	0.6021	0.3140	0.4789	0.4237	0.5132
3	0.8350	0.9152	0.9220	0.8359	0.7613
4	1.0000	0.7540	0.8355	1.0000	0.8861
5	0.7891	0.9259	0.8422	0.8963	0.8083
6	0.6895	0.9435	1.0000	0.8438	1.0000
7	0.6554	1.0000	0.8671	0.5969	0.8433
8	0.4613	0.9537	0.8584	0.7760	0.7890
9	0.7417	0.9473	0.8681	0.8404	0.8707
10	0.7417	0.9473	0.8681	0.8404	0.8707
AGE	1988	1989	1990	1991	1992
1	0.0178	0.0805	0.0102	0.0168	0.0305
2	0.2392	0.2195	0.7570	0.3229	0.4256
3	0.6534	0.5882	0.7056	0.9815	0.7287
4	0.7203	0.8193	0.6776	0.7732	0.8753
5	0.9745	0.6135	0.9249	1.0000	1.0000
6	0.8578	1.0000	0.6583	0.9860	0.9340
7	0.9286	0.8553	1.0000	0.7215	0.9792
8	1.0000	0.9123	0.4767	0.8558	0.4856
9	0.9558	0.7949	0.8994	0.9740	0.9832
10	0.9558	0.7949	0.8994	0.9740	0.9832

Back Calculated Partial Recruitment

AGE	1993	1994	1995	1996	1997
1	0.0261	0.0118	0.0133	0.0138	0.0099
2	0.2555	0.0642	0.2227	0.1338	0.1123
3	0.6144	0.4671	0.4572	0.4609	0.3216
4	0.7875	0.7850	1.0000	0.6471	0.5879
5	0.8994	1.0000	0.9583	0.7860	0.6080
6	0.8744	0.5856	0.6825	1.0000	0.6754
7	0.8768	0.8727	0.6232	0.4858	1.0000
8	1.0000	0.9769	0.7736	0.5543	0.6685
9	0.8846	0.8765	0.9006	0.8367	0.6364
10	0.8846	0.8765	0.9006	0.8367	0.6364
AGE	1998	1999	2000	2001	2002
1	0.0161	0.0042	0.0300	0.0064	0.0098
2	0.1422	0.1001	0.1559	0.2045	0.0771
3	0.5357	0.4277	0.4578	0.5762	0.5618
4	0.6416	0.6301	0.6960	0.7185	0.6884
5	0.9093	0.7453	0.7624	0.7123	0.8329
6	0.7778	0.6537	0.8132	0.7756	0.9355
7	0.7633	0.8982	0.8083	1.0000	0.9251
8	1.0000	1.0000	1.0000	0.8354	1.0000
9	0.8427	0.7540	0.7764	0.7361	0.8857
10	0.8427	0.7540	0.7764	0.7361	0.8857
AGE	2003	2004	2005	2006	2007
1	0.0133	0.0047	0.0057	0.0095	0.0042
2	0.0686	0.0611	0.0489	0.0648	0.2923
3	0.3830	0.1825	0.2946	0.2464	0.7850
4	0.7954	0.3981	0.4654	0.8900	0.7751
5	1.0000	0.7426	0.4857	0.9596	0.8654
6	0.8850	0.7455	0.7677	0.7401	1.0000
7	0.9761	0.8818	0.7711	0.8399	0.4184
8	0.7664	1.0000	1.0000	1.0000	0.7613
9	0.9806	0.7547	0.6136	0.9098	0.7613
10	0.9806	0.7547	0.6136	0.9098	0.7613

JAN-1 Biomass

AGE	1978	1979	1980	1981	1982
1	10819.	12621.	9860.	17503.	8545.
2	4790.	20760.	20788.	17774.	32985.
3	46691.	5351.	31154.	24529.	22175.
4	21697.	43531.	5158.	25392.	19946.
5	8908.	16776.	33810.	4830.	20244.
6	5526.	8718.	13080.	22058.	3739.
7	6453.	6485.	7149.	7527.	13058.
8	652.	6432.	5603.	3470.	3957.
9	1621.	446.	3558.	4776.	1909.
10	615.	1729.	553.	2905.	2999.
=====					
Total	107772.	122849.	130713.	130763.	129555.
=====					
AGE	1983	1984	1985	1986	1987
1	5135.	9797.	5967.	20312.	6760.
2	14955.	8751.	20342.	8064.	35555.
3	37349.	15268.	10093.	23145.	8947.
4	16105.	26455.	10660.	5647.	19783.
5	11883.	8656.	18524.	6182.	4197.
6	11761.	7127.	5167.	10026.	4244.
7	1985.	7367.	3981.	2330.	6575.
8	6572.	1242.	3805.	1856.	1681.
9	1846.	4115.	618.	1767.	1145.
10	4693.	4143.	2551.	1107.	1176.
=====					
Total	112284.	92921.	81708.	80435.	90064.
=====					
AGE	1988	1989	1990	1991	1992
1	7153.	4193.	3204.	8823.	4938.
2	13043.	16855.	11111.	7447.	15506.
3	41273.	17093.	26462.	12212.	9607.
4	7770.	31575.	14888.	19753.	6395.
5	14844.	5106.	21013.	10713.	10655.
6	3028.	6871.	3668.	10580.	4490.
7	2536.	1442.	3468.	2155.	4126.
8	4096.	1100.	831.	1578.	1095.
9	1020.	1667.	566.	520.	691.
10	1574.	796.	1284.	694.	353.
=====					
Total	96336.	86699.	86495.	74476.	57855.

JAN-1 Biomass

AGE	1993	1994	1995	1996	1997
1	1363.	1794.	816.	1874.	3507.
2	6186.	4553.	4077.	2407.	4563.
3	15573.	5847.	8988.	6416.	4302.
4	5770.	8991.	4176.	8823.	5859.
5	3242.	2385.	3743.	2596.	6220.
6	4373.	1121.	721.	2155.	1427.
7	1889.	1442.	549.	482.	980.
8	1662.	605.	498.	344.	281.
9	700.	416.	158.	297.	202.
10	410.	134.	64.	6.	89.
Total	41170.	27289.	23789.	25400.	27430.
AGE	1998	1999	2000	2001	2002
1	2010.	3861.	1236.	932.	1204.
2	7537.	3755.	9011.	3486.	1662.
3	6929.	10843.	5445.	13450.	5550.
4	3530.	5356.	8774.	4623.	9206.
5	3021.	2293.	3243.	6089.	2581.
6	2972.	1447.	1098.	1942.	3278.
7	583.	1572.	746.	581.	956.
8	230.	295.	610.	395.	238.
9	114.	87.	90.	288.	178.
10	74.	90.	33.	29.	151.
Total	27000.	29599.	30284.	31814.	25004.
AGE	2003	2004	2005	2006	2007
1	551.	2030.	687.	1271.	1712.
2	2908.	1135.	5156.	1400.	3877.
3	2459.	4892.	1623.	10119.	2328.
4	4011.	2123.	4758.	1428.	11993.
5	5380.	2060.	1498.	3117.	910.
6	1270.	2131.	973.	936.	1692.
7	1380.	527.	917.	494.	604.
8	392.	524.	207.	414.	293.
9	93.	175.	177.	75.	212.
10	54.	108.	104.	81.	42.
Total	18498.	15704.	16099.	19336.	23663.

JAN-1 Biomass

AGE 2008

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1	1245.
2	4380.
3	6381.
4	2488.
5	9942.
6	667.
7	1264.
8	522.
9	201.
10	225.

=====  
Total 27315.

Mean Biomass

AGE 1978 1979 1980 1981 1982

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1	15013.	16229.	13264.	24080.	11333.
2	5082.	27387.	23876.	21266.	38590.
3	45837.	5044.	30176.	22993.	20784.
4	19392.	42080.	5415.	22857.	16673.
5	8946.	15241.	27839.	4406.	16724.
6	6020.	8917.	10347.	17455.	2821.
7	6496.	6885.	5118.	5841.	9903.
8	547.	5623.	4801.	2571.	2742.
9	1357.	374.	2381.	4003.	1476.
10	482.	1324.	391.	2048.	2015.

=====  
Total 109174. 129103. 123607. 127520. 123060.

AGE 1983 1984 1985 1986 1987

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1	6723.	14143.	6951.	26928.	9407.
2	16410.	10649.	24205.	8398.	41679.
3	33254.	13591.	7443.	22045.	9025.
4	11927.	23330.	8458.	5110.	18705.
5	9298.	7100.	13935.	5297.	3915.
6	9264.	5608.	3594.	8606.	3558.
7	1627.	5670.	2856.	2092.	5363.
8	5372.	917.	2649.	1484.	1346.
9	1418.	2818.	422.	1419.	916.
10	3289.	2782.	1632.	793.	855.

=====  
Total 98582. 86608. 72144. 82173. 94769.



AGE	1988	1989	1990	1991	1992
1	11001.	6843.	4893.	11719.	5539.
2	16587.	24252.	14280.	9908.	17210.
3	37166.	16145.	24480.	9535.	8020.
4	6395.	27538.	13518.	15432.	4933.
5	10701.	4601.	15924.	7438.	7198.
6	2164.	4981.	2927.	6894.	3078.
7	1727.	1073.	2516.	1537.	2735.
8	2782.	795.	754.	1055.	913.
9	686.	1214.	418.	291.	465.
10	1003.	558.	851.	419.	212.
=====					
Total	90212.	88002.	80559.	64230.	50303.

Mean Biomass

AGE	1993	1994	1995	1996	1997
1	2497.	2709.	1404.	2929.	5151.
2	6017.	8118.	5772.	3958.	6674.
3	12205.	5035.	9035.	6545.	4055.
4	3848.	6350.	3645.	8074.	4470.
5	2020.	1442.	3062.	2033.	4377.
6	2733.	834.	656.	1527.	937.
7	1148.	851.	468.	382.	546.
8	964.	338.	461.	260.	171.
9	416.	222.	123.	190.	135.
10	225.	71.	43.	4.	55.
=====					
Total	32073.	25972.	24669.	25901.	26571.

AGE	1998	1999	2000	2001	2002
1	2753.	5909.	2080.	1246.	1875.
2	10492.	4927.	13108.	5439.	2157.
3	6271.	9773.	5474.	11589.	4951.
4	2992.	4392.	7975.	3478.	7275.
5	2198.	1690.	2670.	4553.	1936.
6	2318.	1092.	839.	1386.	2288.
7	442.	1028.	568.	371.	662.
8	141.	181.	441.	268.	167.
9	89.	61.	62.	206.	124.
10	48.	58.	23.	19.	96.
=====					
Total	27742.	29111.	33240.	28556.	21530.

AGE	2003	2004	2005	2006	2007
1	792.	3240.	983.	2224.	2692.
2	4402.	1589.	8070.	1971.	6434.
3	2451.	5135.	1509.	12170.	2429.
4	3014.	1837.	3996.	1236.	11066.
5	3625.	1496.	1248.	2386.	758.
6	855.	1494.	713.	737.	1357.
7	870.	340.	634.	408.	578.
8	262.	331.	141.	310.	239.
9	56.	122.	134.	53.	173.
10	32.	67.	72.	58.	33.
=====					
Total	16359.	15652.	17499.	21553.	25760.

Spawning Stock Biomass

AGE	1978	1979	1980	1981	1982
1	836.	853.	856.	1516.	656.
2	1503.	6701.	7328.	6250.	10785.
3	31517.	3803.	21975.	17270.	15480.
4	18567.	37396.	4512.	22002.	16572.
5	7977.	15051.	29814.	4352.	17410.
6	5197.	7938.	11369.	19341.	3223.
7	5990.	6042.	6175.	6557.	11284.
8	594.	5667.	5289.	3026.	3402.
9	1489.	407.	3145.	4219.	1655.
10	565.	1575.	489.	2566.	2600.
=====					
Total	74235.	85433.	90951.	87101.	83067.

AGE	1983	1984	1985	1986	1987
1	393.	1230.	1035.	3133.	1306.
2	5499.	3999.	10813.	4333.	19363.
3	27649.	11557.	7748.	18717.	7186.
4	13464.	22981.	9017.	4886.	17298.
5	10409.	7522.	15813.	5460.	3771.
6	10432.	6181.	4308.	8903.	3748.
7	1769.	6347.	3385.	2121.	5890.
8	5999.	1076.	3240.	1659.	1514.
9	1627.	3567.	525.	1570.	1023.
10	4135.	3591.	2170.	984.	1051.
=====					
Total	81375.	68051.	58056.	51766.	62150.

AGE	1988	1989	1990	1991	1992
1	1725.	803.	371.	1107.	428.
2	7815.	9691.	4488.	3631.	6593.
3	32866.	14041.	19881.	9025.	7376.
4	6676.	27186.	12810.	16603.	5337.
5	12571.	4596.	18059.	8870.	8808.
6	2606.	5910.	3262.	8779.	3750.
7	2161.	1262.	2952.	1863.	3422.
8	3457.	956.	756.	1336.	982.
9	866.	1468.	488.	432.	572.
10	1336.	701.	1107.	577.	292.
Total	72080.	66616.	64173.	52224.	37560.

Spawning Stock Biomass

AGE	1993	1994	1995	1996	1997
1	52.	69.	32.	90.	338.
2	2434.	1779.	1922.	1098.	2453.
3	12256.	4661.	7922.	5551.	3641.
4	4703.	7228.	3604.	7844.	4921.
5	2579.	1823.	3246.	2267.	5253.
6	3498.	944.	645.	1829.	1187.
7	1510.	1136.	494.	437.	758.
8	1294.	465.	441.	309.	234.
9	559.	328.	138.	258.	169.
10	327.	106.	55.	5.	75.
Total	29211.	18538.	18499.	19689.	19030.

AGE	1998	1999	2000	2001	2002
1	175.	261.	83.	72.	81.
2	3998.	1821.	4364.	1636.	683.
3	5823.	9061.	4691.	11114.	4344.
4	3107.	4601.	7819.	3982.	7954.
5	2556.	1950.	2867.	5303.	2205.
6	2564.	1251.	965.	1675.	2757.
7	504.	1302.	656.	485.	805.
8	192.	240.	524.	338.	198.
9	97.	74.	79.	250.	151.
10	63.	77.	29.	25.	128.
Total	19078.	20637.	22078.	24880.	19308.

AGE	2003	2004	2005	2006	2007
1	21.	137.	40.	61.	66.
2	918.	412.	1781.	471.	1361.
3	1878.	3798.	1243.	8025.	1902.
4	3342.	1872.	4188.	1241.	10909.
5	4426.	1740.	1341.	2744.	831.
6	1064.	1799.	833.	842.	1532.
7	1140.	434.	784.	440.	568.
8	335.	422.	171.	363.	270.
9	77.	148.	155.	67.	195.
10	44.	91.	91.	72.	39.
=====					
Total	13246.	10852.	10627.	14325.	17672.

Catch Biomass

AGE	1978	1979	1980	1981	1982
1	88.	194.	219.	716.	499.
2	522.	3060.	5991.	5636.	14565.
3	19793.	1804.	14476.	11284.	11262.
4	8279.	19626.	1932.	9478.	11116.
5	3600.	5951.	13759.	1607.	10775.
6	1016.	3228.	6633.	10268.	1954.
7	1600.	1541.	3472.	3661.	6694.
8	197.	3147.	699.	1596.	1935.
9	418.	135.	1289.	2180.	968.
10	149.	476.	212.	1115.	1322.
=====					
Total	35661.	39162.	48682.	47542.	61088.

AGE	1983	1984	1985	1986	1987
1	423.	152.	142.	518.	60.
2	7442.	2320.	10313.	2163.	11683.
3	20916.	8631.	6105.	11201.	3753.
4	8984.	12207.	6287.	3106.	9053.
5	5527.	4562.	10441.	2886.	1729.
6	4812.	3672.	3197.	4414.	1944.
7	803.	3935.	2203.	759.	2470.
8	1867.	607.	2023.	700.	580.
9	792.	1853.	326.	725.	435.
10	1838.	1829.	1260.	405.	407.
=====					
Total	53404.	39767.	42297.	26877.	32113.

AGE	1988	1989	1990	1991	1992
1	160.	388.	38.	183.	159.
2	3244.	3746.	8282.	2983.	6900.
3	19856.	6685.	13235.	8726.	5505.
4	3766.	15879.	7018.	11124.	4067.
5	8527.	1987.	11285.	6935.	6780.
6	1518.	3506.	1476.	6337.	2708.
7	1311.	646.	1928.	1034.	2522.
8	2274.	511.	275.	842.	418.
9	536.	679.	288.	264.	431.
10	784.	312.	586.	381.	196.
Total	41977.	34339.	44412.	38810.	29685.

Catch Biomass

AGE	1993	1994	1995	1996	1997
1	85.	45.	13.	32.	68.
2	2005.	736.	879.	414.	1003.
3	9781.	3323.	2825.	2359.	1745.
4	3953.	7043.	2492.	4086.	3516.
5	2369.	2037.	2007.	1250.	3560.
6	3117.	690.	306.	1194.	847.
7	1313.	1049.	200.	145.	730.
8	1258.	467.	244.	113.	153.
9	480.	275.	76.	124.	115.
10	259.	88.	27.	3.	47.
Total	24620.	15754.	9068.	9719.	11784.

AGE	1998	1999	2000	2001	2002
1	39.	25.	44.	7.	16.
2	1316.	510.	1442.	983.	149.
3	2963.	4321.	1768.	5900.	2490.
4	1693.	2860.	3917.	2208.	4483.
5	1763.	1302.	1437.	2865.	1443.
6	1590.	738.	482.	950.	1916.
7	297.	955.	324.	328.	548.
8	124.	187.	311.	198.	150.
9	66.	48.	34.	134.	98.
10	36.	45.	13.	13.	76.
Total	9888.	10991.	9771.	13584.	11369.

AGE	2003	2004	2005	2006	2007
1	10.	17.	5.	12.	4.
2	293.	106.	377.	75.	747.
3	911.	1027.	424.	1764.	758.
4	2328.	801.	1775.	647.	3408.
5	3520.	1218.	579.	1347.	261.
6	735.	1221.	522.	321.	539.
7	824.	329.	466.	202.	96.
8	195.	363.	135.	182.	72.
9	54.	101.	78.	29.	60.
10	30.	56.	42.	31.	10.
=====					
Total	8900.	5238.	4403.	4610.	5955.

Catch Numbers

AGE	1978	1979	1980	1981	1982
1	151.6	279.2	339.9	1219.2	775.4
2	416.8	2242.7	4238.7	3910.7	10457.1
3	8109.1	953.6	5955.4	4738.2	4434.4
4	2429.6	4585.0	544.9	2685.5	2988.0
5	896.8	1206.9	2464.6	317.9	2039.8
6	178.4	449.8	983.0	1406.0	297.1
7	240.8	159.5	418.1	417.0	707.2
8	22.6	304.1	70.4	162.9	198.6
9	42.1	12.9	138.7	155.5	74.6
10	10.7	35.0	14.2	66.4	84.6
=====					
Total	12498.5	10228.7	15167.9	15079.3	22056.8

AGE	1983	1984	1985	1986	1987
1	626.2	280.9	176.0	768.3	103.8
2	5181.7	1547.7	7443.7	1594.1	7956.1
3	8753.3	3485.7	2942.2	4576.3	1515.5
4	2680.4	3328.4	1690.1	860.2	2170.1
5	1155.3	923.9	2097.7	525.3	299.7
6	746.4	560.2	496.5	615.4	249.9
7	94.6	450.3	267.2	85.5	277.3
8	175.0	58.9	196.8	70.4	56.1
9	67.7	167.0	27.7	56.0	36.2
10	112.6	124.9	89.7	27.8	26.0
=====					
Total	19593.2	10927.9	15427.6	9179.3	12690.7

AGE	1988	1989	1990	1991	1992
1	324.9	891.5	71.8	278.7	191.7
2	2352.1	2608.6	5561.1	1963.0	4808.4
3	8368.3	3032.8	5373.4	3491.4	2286.3
4	1074.1	4254.4	1964.0	3160.5	1070.7
5	1575.6	383.5	2272.1	1442.1	1500.0
6	223.8	534.2	230.6	1088.0	448.1
7	150.3	81.4	229.4	141.3	356.0
8	218.0	51.2	24.6	89.7	44.1
9	46.5	60.2	23.2	27.5	36.4
10	52.5	21.3	40.4	26.0	10.4
Total	14386.1	11919.1	15790.6	11708.2	10752.1

Catch Numbers

AGE	1993	1994	1995	1996	1997
1	299.2	94.4	32.3	64.9	126.9
2	1534.9	614.6	652.8	287.3	685.2
3	4429.4	1543.4	1429.0	986.6	749.6
4	1224.8	1987.7	669.9	1269.8	1020.7
5	475.3	425.6	382.3	256.3	882.9
6	535.6	97.6	41.2	183.8	147.7
7	178.0	146.2	21.4	17.9	94.4
8	141.0	51.2	20.0	11.6	18.9
9	43.1	30.5	6.4	11.3	10.1
10	21.2	5.6	1.4	0.3	3.9
Total	8882.5	4996.8	3256.7	3089.8	3740.3

AGE	1998	1999	2000	2001	2002
1	63.3	47.7	113.5	11.7	33.6
2	918.9	356.3	943.2	719.8	113.0
3	1310.3	2021.8	741.1	2667.3	1182.7
4	494.3	852.6	1156.4	751.6	1516.2
5	385.6	286.6	315.8	698.7	365.4
6	285.2	125.8	88.0	180.4	371.5
7	40.2	143.8	46.3	54.8	84.7
8	16.0	22.2	38.8	25.8	18.7
9	5.6	5.0	4.2	14.8	10.6
10	2.9	3.4	1.0	1.3	6.5
Total	3522.3	3865.2	3448.3	5126.2	3702.9

AGE	2003	2004	2005	2006	2007
1	17.0	50.5	12.3	32.8	10.6
2	201.3	69.4	364.1	69.7	526.1
3	404.4	434.3	201.8	842.8	395.2
4	800.7	260.1	578.4	208.3	1175.8
5	910.4	313.6	144.5	366.1	71.9
6	156.0	253.0	106.0	70.8	129.2
7	142.4	58.2	85.3	31.2	16.2
8	28.2	49.2	18.0	28.5	10.4
9	6.5	11.8	8.9	3.8	8.6
10	2.9	5.0	3.7	3.4	1.1
Total	2669.8	1505.2	1523.0	1657.4	2345.1

Surplus Production

Average Adjustment Factor (Delta) = 1.0000

Year	Biomass	Delta Biomass	Catch Biomass	Surplus Production
1978	107771.534	15077.374	35660.721	50738.095
1979	122848.908	7864.015	39162.286	47026.301
1980	130712.922	50.259	48682.434	48732.693
1981	130763.181	-1207.795	47541.857	46334.062
1982	129555.386	-17271.699	61088.247	43816.548
1983	112283.687	-19362.224	53404.330	34042.106
1984	92921.463	-11213.858	39767.136	28553.278
1985	81707.605	-1272.252	42297.434	41025.182
1986	80435.353	9628.743	26876.781	36505.524
1987	90064.095	6272.358	32112.683	38385.042
1988	96336.453	-9637.788	41976.636	32338.849
1989	86698.666	-204.079	34338.791	34134.713
1990	86494.587	-12018.713	44411.969	32393.257
1991	74475.874	-16620.379	38810.185	22189.806
1992	57855.495	-16685.545	29684.877	12999.332
1993	41169.950	-13880.833	24620.033	10739.201
1994	27289.117	-3500.057	15754.070	12254.013
1995	23789.060	1610.467	9068.146	10678.613
1996	25399.527	2030.589	9718.713	11749.303
1997	27430.116	-430.234	11784.450	11354.216
1998	26999.882	2599.052	9887.960	12487.012
1999	29598.934	684.951	10991.218	11676.169
2000	30283.885	1529.855	9770.992	11300.847
2001	31813.740	-6809.653	13584.079	6774.425
2002	25004.087	-6506.016	11369.031	4863.015
2003	18498.071	-2794.267	8900.391	6106.124
2004	15703.804	394.698	5237.603	5632.301
2005	16098.502	3237.519	4402.945	7640.464
2006	19336.021	4326.664	4610.067	8936.731
2007	23662.684	3652.084	5955.462	9607.545
2008	27314.768			



Summary of Survey Indices Used in the Estimate

INDEX	Survey Tag	Age	Time	Type	Catchability	Std. Error	CV
1	spr_36pr	1	JAN-1	NUMBER	0.1784E-01	0.6011E-02	0.3370E+00
2	spr_36pr	2	JAN-1	NUMBER	0.9185E-01	0.1112E-01	0.1210E+00
3	spr_36pr	3	JAN-1	NUMBER	0.1687E+00	0.3031E-01	0.1797E+00
4	spr_36pr	4	JAN-1	NUMBER	0.2156E+00	0.4330E-01	0.2008E+00
5	spr_36pr	5	JAN-1	NUMBER	0.2642E+00	0.5941E-01	0.2248E+00
6	spr_36pr	6	JAN-1	NUMBER	0.2787E+00	0.5238E-01	0.1880E+00
7	spr_36pr	7	JAN-1	NUMBER	0.2976E+00	0.5275E-01	0.1773E+00
8	spr_36pr	8	JAN-1	NUMBER	0.3631E+00	0.7104E-01	0.1957E+00
9	spr_36po	1	JAN-1	NUMBER	0.2930E-01	0.6283E-02	0.2145E+00
10	spr_36po	2	JAN-1	NUMBER	0.1011E+00	0.9212E-02	0.9107E-01
11	spr_36po	3	JAN-1	NUMBER	0.2253E+00	0.2569E-01	0.1140E+00
12	spr_36po	4	JAN-1	NUMBER	0.5063E+00	0.8675E-01	0.1714E+00
13	spr_36po	5	JAN-1	NUMBER	0.6888E+00	0.1139E+00	0.1654E+00
14	spr_36po	6	JAN-1	NUMBER	0.7018E+00	0.1226E+00	0.1747E+00
15	spr_36po	7	JAN-1	NUMBER	0.7231E+00	0.1815E+00	0.2510E+00
16	spr_36po	8	JAN-1	NUMBER	0.8168E+00	0.1743E+00	0.2134E+00
17	spr_41	1	JAN-1	NUMBER	0.1413E-01	0.1069E-01	0.7560E+00
18	spr_41	2	JAN-1	NUMBER	0.8999E-01	0.2087E-01	0.2319E+00
19	spr_41	3	JAN-1	NUMBER	0.1987E+00	0.4671E-01	0.2350E+00
20	spr_41	4	JAN-1	NUMBER	0.1773E+00	0.2236E-01	0.1261E+00
21	spr_41	5	JAN-1	NUMBER	0.2163E+00	0.5405E-01	0.2499E+00
22	spr_41	6	JAN-1	NUMBER	0.2077E+00	0.3557E-01	0.1713E+00
23	spr_41	7	JAN-1	NUMBER	0.3002E+00	0.1126E+00	0.3750E+00
24	spr_41	8	JAN-1	NUMBER	0.2915E+00	0.1651E+00	0.5663E+00
25	sp_can_p	1	JAN-1	NUMBER	0.3588E-01	0.1150E-01	0.3205E+00
26	sp_can_p	2	JAN-1	NUMBER	0.1876E+00	0.3961E-01	0.2112E+00
27	sp_can_p	3	JAN-1	NUMBER	0.3247E+00	0.3702E-01	0.1140E+00
28	sp_can_p	4	JAN-1	NUMBER	0.3721E+00	0.4750E-01	0.1277E+00
29	sp_can_p	5	JAN-1	NUMBER	0.5808E+00	0.7103E-01	0.1223E+00
30	sp_can_p	6	JAN-1	NUMBER	0.5559E+00	0.1150E+00	0.2068E+00
31	sp_can_p	7	JAN-1	NUMBER	0.7300E+00	0.2118E+00	0.2902E+00
32	sp_can_p	8	JAN-1	NUMBER	0.6448E-03	0.1711E-03	0.2653E+00
33	sp_canpo	1	JAN-1	NUMBER	0.1586E-01	0.5673E-02	0.3576E+00
34	sp_canpo	2	JAN-1	NUMBER	0.7794E-01	0.2001E-01	0.2567E+00
35	sp_canpo	3	JAN-1	NUMBER	0.3626E+00	0.5277E-01	0.1455E+00
36	sp_canpo	4	JAN-1	NUMBER	0.8883E+00	0.1309E+00	0.1473E+00
37	sp_canpo	5	JAN-1	NUMBER	0.1408E+01	0.1994E+00	0.1416E+00
38	sp_canpo	6	JAN-1	NUMBER	0.1934E+01	0.2942E+00	0.1521E+00
39	sp_canpo	7	JAN-1	NUMBER	0.1901E+01	0.3915E+00	0.2059E+00
40	sp_canpo	8	JAN-1	NUMBER	0.1278E-02	0.3201E-03	0.2505E+00
41	us0autpr	1	JAN-1	NUMBER	0.1638E-01	0.3271E-02	0.1998E+00
42	us1autpr	2	JAN-1	NUMBER	0.8110E-01	0.1148E-01	0.1415E+00
43	us2autpr	3	JAN-1	NUMBER	0.1191E+00	0.1798E-01	0.1510E+00
44	us3autpr	4	JAN-1	NUMBER	0.1269E+00	0.2259E-01	0.1779E+00
45	us4autpr	5	JAN-1	NUMBER	0.8865E-01	0.2152E-01	0.2428E+00
46	us5autpr	6	JAN-1	NUMBER	0.1041E+00	0.1621E-01	0.1557E+00
47	us0autpo	1	JAN-1	NUMBER	0.2015E-01	0.8594E-02	0.4264E+00
48	us1autpo	2	JAN-1	NUMBER	0.7415E-01	0.1521E-01	0.2051E+00
49	us2autpo	3	JAN-1	NUMBER	0.1630E+00	0.3016E-01	0.1850E+00
50	us3autpo	4	JAN-1	NUMBER	0.2333E+00	0.5204E-01	0.2231E+00
51	us4autpo	5	JAN-1	NUMBER	0.2120E+00	0.5110E-01	0.2410E+00
52	us5autpo	6	JAN-1	NUMBER	0.2530E+00	0.6462E-01	0.2554E+00

Survey Index: 1 Tag: spr\_36pr AGE = 1  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.178394E-01 % Variance Contribution = 5.4693  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.512080E+03	N/A
1979	N/A	0.462799E+03	N/A
1980	N/A	0.408763E+03	N/A
1981	N/A	0.818660E+03	N/A
1982	0.693828E+03	0.354341E+03	0.671963E+00
1983	0.452853E+03	0.201680E+03	0.808885E+00
1984	0.549434E+03	0.517710E+03	0.594732E-01
1985	0.151770E+03	0.171530E+03	-0.122390E+00
1986	0.119053E+04	0.793951E+03	0.405134E+00
1987	0.269116E+02	0.319290E+03	-0.247354E+01
1988	0.983845E+03	0.443386E+03	0.797027E+00
1989	0.424029E+03	0.318410E+03	0.286461E+00
1990	0.236877E+03	0.182036E+03	0.263334E+00
1991	0.140241E+04	0.353152E+03	0.137905E+01
1992	0.167617E+03	0.133256E+03	0.229412E+00
1993	0.116116E+02	0.176095E+03	-0.271902E+01
1994	0.170486E+03	0.112667E+03	0.414217E+00
1995	N/A	0.700245E+02	N/A
1996	N/A	0.119086E+03	N/A
1997	N/A	0.189472E+03	N/A
1998	N/A	0.882021E+02	N/A
1999	N/A	0.218245E+03	N/A
2000	N/A	0.106623E+03	N/A
2001	N/A	0.409422E+02	N/A
2002	N/A	0.756296E+02	N/A
2003	N/A	0.260685E+02	N/A
2004	N/A	0.192693E+03	N/A
2005	N/A	0.450014E+02	N/A
2006	N/A	0.115776E+03	N/A
2007	N/A	0.125534E+03	N/A
2008	N/A	0.869611E+02	N/A

Survey Index: 2 Tag: spr\_36pr AGE = 2  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.918544E-01 % Variance Contribution = 0.7054  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.432354E+03	N/A
1979	N/A	0.214616E+04	N/A
1980	N/A	0.192782E+04	N/A
1981	N/A	0.169499E+04	N/A
1982	0.742514E+04	0.335004E+04	0.795899E+00
1983	0.266630E+04	0.142948E+04	0.623383E+00

1984	0.588777E+03	0.798301E+03	-0.304439E+00
1985	0.362432E+04	0.215916E+04	0.517947E+00
1986	0.558723E+03	0.708508E+03	-0.237507E+00
1987	0.220279E+04	0.328326E+04	-0.399113E+00
1988	0.831664E+03	0.133739E+04	-0.475049E+00
1989	0.192671E+04	0.184219E+04	0.448548E-01
1990	0.125883E+04	0.126839E+04	-0.756392E-02
1991	0.721013E+03	0.761439E+03	-0.545535E-01
1992	0.171087E+04	0.146564E+04	0.154711E+00
1993	0.544789E+03	0.545856E+03	-0.195628E-02
1994	0.372118E+03	0.717536E+03	-0.656613E+00
1995	N/A	0.467129E+03	N/A
1996	N/A	0.292517E+03	N/A
1997	N/A	0.496638E+03	N/A
1998	N/A	0.788213E+03	N/A
1999	N/A	0.366575E+03	N/A
2000	N/A	0.916079E+03	N/A
2001	N/A	0.440068E+03	N/A
2002	N/A	0.171626E+03	N/A
2003	N/A	0.316038E+03	N/A
2004	N/A	0.108484E+03	N/A
2005	N/A	0.808129E+03	N/A
2006	N/A	0.188688E+03	N/A
2007	N/A	0.485344E+03	N/A
2008	N/A	0.528324E+03	N/A

Survey Index: 3 Tag: spr\_36pr AGE = 3  
Time = JAN-1 Type = NUMBER  
Catchability = 0.168705E+00 % Variance Contribution = 1.5548  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.427374E+04	N/A
1979	N/A	0.586731E+03	N/A
1980	N/A	0.288609E+04	N/A
1981	N/A	0.225564E+04	N/A
1982	0.129803E+05	0.195545E+04	0.189281E+01
1983	0.412144E+04	0.345387E+04	0.176706E+00
1984	0.103917E+04	0.136578E+04	-0.273301E+00
1985	0.906115E+03	0.965416E+03	-0.633923E-01
1986	0.251958E+04	0.212038E+04	0.172498E+00
1987	0.516921E+03	0.823504E+03	-0.465678E+00
1988	0.430258E+04	0.373028E+04	0.142731E+00
1989	0.910350E+03	0.165379E+04	-0.596994E+00
1990	0.237300E+04	0.237364E+04	-0.267003E-03
1991	0.940813E+03	0.106790E+04	-0.126708E+00
1992	0.639595E+03	0.847334E+03	-0.281260E+00
1993	0.178423E+04	0.147599E+04	0.189657E+00
1994	0.273214E+03	0.588195E+03	-0.766803E+00
1995	N/A	0.985457E+03	N/A
1996	N/A	0.603202E+03	N/A
1997	N/A	0.396158E+03	N/A
1998	N/A	0.642647E+03	N/A
1999	N/A	0.104551E+04	N/A

2000	N/A	0.497023E+03	N/A
2001	N/A	0.123406E+04	N/A
2002	N/A	0.552376E+03	N/A
2003	N/A	0.240878E+03	N/A
2004	N/A	0.444591E+03	N/A
2005	N/A	0.152560E+03	N/A
2006	N/A	0.115976E+04	N/A
2007	N/A	0.273120E+03	N/A
2008	N/A	0.649804E+03	N/A

Survey Index: 4 Tag: spr\_36pr AGE = 4  
Time = JAN-1 Type = NUMBER  
Catchability = 0.215614E+00 % Variance Contribution = 1.9428  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.165169E+04	N/A
1979	N/A	0.290382E+04	N/A
1980	N/A	0.429311E+03	N/A
1981	N/A	0.186919E+04	N/A
1982	0.113717E+05	0.144487E+04	0.206311E+01
1983	0.108767E+04	0.119016E+04	-0.900524E-01
1984	0.169147E+04	0.192678E+04	-0.130253E+00
1985	0.151675E+04	0.757288E+03	0.694581E+00
1986	0.498889E+03	0.444800E+03	0.114761E+00
1987	0.104272E+04	0.133486E+04	-0.246992E+00
1988	0.558450E+03	0.568553E+03	-0.179289E-01
1989	0.216263E+04	0.228773E+04	-0.562382E-01
1990	0.921005E+03	0.114383E+04	-0.216675E+00
1991	0.126894E+04	0.144646E+04	-0.130936E+00
1992	0.229637E+03	0.447514E+03	-0.667209E+00
1993	0.280454E+03	0.446337E+03	-0.464662E+00
1994	0.295755E+03	0.693005E+03	-0.851508E+00
1995	N/A	0.318120E+03	N/A
1996	N/A	0.754280E+03	N/A
1997	N/A	0.440166E+03	N/A
1998	N/A	0.269571E+03	N/A
1999	N/A	0.419235E+03	N/A
2000	N/A	0.703092E+03	N/A
2001	N/A	0.376504E+03	N/A
2002	N/A	0.776139E+03	N/A
2003	N/A	0.349550E+03	N/A
2004	N/A	0.173769E+03	N/A
2005	N/A	0.380896E+03	N/A
2006	N/A	0.120515E+03	N/A
2007	N/A	0.104980E+04	N/A
2008	N/A	0.209212E+03	N/A

Survey Index: 5 Tag: spr\_36pr AGE = 5  
Time = JAN-1 Type = NUMBER  
Catchability = 0.264241E+00 % Variance Contribution = 2.4352  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.783962E+03	N/A
1979	N/A	0.108141E+04	N/A
1980	N/A	0.182761E+04	N/A
1981	N/A	0.301462E+03	N/A
1982	0.848057E+04	0.123887E+04	0.192358E+01
1983	0.952152E+03	0.744309E+03	0.246268E+00
1984	0.576892E+03	0.562246E+03	0.257159E-01
1985	0.192930E+04	0.114565E+04	0.521187E+00
1986	0.737679E+03	0.361323E+03	0.713735E+00
1987	0.848330E+02	0.243023E+03	-0.105247E+01
1988	0.879067E+03	0.825502E+03	0.628697E-01
1989	0.321163E+03	0.316568E+03	0.144114E-01
1990	0.124572E+04	0.128957E+04	-0.345941E-01
1991	0.654075E+03	0.682901E+03	-0.431286E-01
1992	0.372801E+03	0.705838E+03	-0.638342E+00
1993	0.122263E+03	0.196884E+03	-0.476439E+00
1994	0.453536E+02	0.160338E+03	-0.126279E+01
1995	N/A	0.229354E+03	N/A
1996	N/A	0.161082E+03	N/A
1997	N/A	0.456255E+03	N/A
1998	N/A	0.201140E+03	N/A
1999	N/A	0.153590E+03	N/A
2000	N/A	0.219310E+03	N/A
2001	N/A	0.431670E+03	N/A
2002	N/A	0.200239E+03	N/A
2003	N/A	0.420507E+03	N/A
2004	N/A	0.162015E+03	N/A
2005	N/A	0.112715E+03	N/A
2006	N/A	0.245131E+03	N/A
2007	N/A	0.716297E+02	N/A
2008	N/A	0.774113E+03	N/A

Survey Index: 6 Tag: spr\_36pr AGE = 6  
Time = JAN-1 Type = NUMBER  
Catchability = 0.278657E+00 % Variance Contribution = 1.7018  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.352174E+03	N/A
1979	N/A	0.452630E+03	N/A
1980	N/A	0.631851E+03	N/A
1981	N/A	0.962621E+03	N/A
1982	0.400122E+03	0.180743E+03	0.794694E+00
1983	0.605306E+03	0.561605E+03	0.749358E-01
1984	0.546975E+03	0.354663E+03	0.433234E+00
1985	0.362555E+03	0.255329E+03	0.350623E+00
1986	0.844096E+03	0.467585E+03	0.590685E+00
1987	0.245073E+03	0.180923E+03	0.303486E+00
1988	0.874286E+02	0.134935E+03	-0.433971E+00
1989	0.479628E+03	0.321282E+03	0.400691E+00

1990	0.178136E+03	0.177478E+03	0.369799E-02
1991	0.448208E+03	0.548113E+03	-0.201224E+00
1992	0.194529E+03	0.232101E+03	-0.176592E+00
1993	0.188791E+03	0.237606E+03	-0.229974E+00
1994	0.778660E+01	0.525986E+02	-0.191029E+01
1995	N/A	0.337007E+02	N/A
1996	N/A	0.102825E+03	N/A
1997	N/A	0.752134E+02	N/A
1998	N/A	0.174633E+03	N/A
1999	N/A	0.778703E+02	N/A
2000	N/A	0.613743E+02	N/A
2001	N/A	0.110563E+03	N/A
2002	N/A	0.198643E+03	N/A
2003	N/A	0.820283E+02	N/A
2004	N/A	0.137503E+03	N/A
2005	N/A	0.620035E+02	N/A
2006	N/A	0.612222E+02	N/A
2007	N/A	0.120347E+03	N/A
2008	N/A	0.438493E+02	N/A

Survey Index: 7 Tag: spr\_36pr AGE = 7  
Time = JAN-1 Type = NUMBER  
Catchability = 0.297561E+00 % Variance Contribution = 1.5138  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.360604E+03	N/A
1979	N/A	0.260077E+03	N/A
1980	N/A	0.275541E+03	N/A
1981	N/A	0.290962E+03	N/A
1982	0.254868E+04	0.467318E+03	0.169632E+01
1983	0.371571E+02	0.790646E+02	-0.755111E+00
1984	0.285236E+03	0.292082E+03	-0.237182E-01
1985	0.262149E+03	0.161109E+03	0.486832E+00
1986	0.842866E+02	0.916993E+02	-0.842922E-01
1987	0.185103E+03	0.244776E+03	-0.279434E+00
1988	0.505446E+02	0.916073E+02	-0.594655E+00
1989	0.689866E+02	0.585039E+02	0.164819E+00
1990	0.195485E+03	0.138951E+03	0.341362E+00
1991	0.739045E+02	0.936948E+02	-0.237269E+00
1992	0.216796E+03	0.191112E+03	0.126092E+00
1993	0.400259E+02	0.841940E+02	-0.743597E+00
1994	0.602438E+02	0.664035E+02	-0.973499E-01
1995	N/A	0.201046E+02	N/A
1996	N/A	0.184744E+02	N/A
1997	N/A	0.411231E+02	N/A
1998	N/A	0.266383E+02	N/A
1999	N/A	0.768777E+02	N/A
2000	N/A	0.346396E+02	N/A
2001	N/A	0.302269E+02	N/A
2002	N/A	0.487155E+02	N/A
2003	N/A	0.751719E+02	N/A
2004	N/A	0.303690E+02	N/A
2005	N/A	0.531161E+02	N/A

2006	N/A	0.260568E+02	N/A
2007	N/A	0.346308E+02	N/A
2008	N/A	0.707155E+02	N/A

Survey Index: 8 Tag: spr\_36pr AGE = 8  
Time = JAN-1 Type = NUMBER  
Catchability = 0.363074E+00 % Variance Contribution = 1.3004  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.297623E+02	N/A
1979	N/A	0.281585E+03	N/A
1980	N/A	0.207696E+03	N/A
1981	N/A	0.139660E+03	N/A
1982	0.503397E+03	0.155309E+03	0.117597E+01
1983	0.298623E+03	0.237470E+03	0.229141E+00
1984	N/A	0.482106E+02	N/A
1985	0.245756E+03	0.145777E+03	0.522261E+00
1986	0.170895E+03	0.744148E+02	0.831398E+00
1987	0.448071E+02	0.637330E+02	-0.352336E+00
1988	0.672107E+02	0.154272E+03	-0.830886E+00
1989	0.539598E+02	0.428313E+02	0.230971E+00
1990	0.176223E+02	0.320115E+02	-0.596931E+00
1991	0.554625E+02	0.645142E+02	-0.151178E+00
1992	0.267750E+02	0.477680E+02	-0.578887E+00
1993	0.469929E+02	0.759075E+02	-0.479519E+00
1994	N/A	0.268018E+02	N/A
1995	N/A	0.193318E+02	N/A
1996	N/A	0.131150E+02	N/A
1997	N/A	0.126219E+02	N/A
1998	N/A	0.107794E+02	N/A
1999	N/A	0.135722E+02	N/A
2000	N/A	0.303475E+02	N/A
2001	N/A	0.195617E+02	N/A
2002	N/A	0.124814E+02	N/A
2003	N/A	0.212615E+02	N/A
2004	N/A	0.291097E+02	N/A
2005	N/A	0.115453E+02	N/A
2006	N/A	0.254226E+02	N/A
2007	N/A	0.158810E+02	N/A
2008	N/A	0.292973E+02	N/A

Survey Index: 9 Tag: spr\_36po AGE = 1  
Time = JAN-1 Type = NUMBER  
Catchability = 0.292985E-01 % Variance Contribution = 2.5848  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.841015E+03	N/A
1979	N/A	0.760078E+03	N/A
1980	N/A	0.671332E+03	N/A

1981	N/A	0.134453E+04	N/A
1982	N/A	0.581953E+03	N/A
1983	N/A	0.331229E+03	N/A
1984	N/A	0.850261E+03	N/A
1985	N/A	0.281713E+03	N/A
1986	N/A	0.130394E+04	N/A
1987	N/A	0.524386E+03	N/A
1988	N/A	0.728195E+03	N/A
1989	N/A	0.522941E+03	N/A
1990	N/A	0.298967E+03	N/A
1991	N/A	0.580000E+03	N/A
1992	N/A	0.218852E+03	N/A
1993	N/A	0.289209E+03	N/A
1994	N/A	0.185038E+03	N/A
1995	0.676205E+02	0.115005E+03	-0.531063E+00
1996	0.997232E+02	0.195581E+03	-0.673578E+00
1997	0.397254E+03	0.311179E+03	0.244207E+00
1998	0.152044E+03	0.144859E+03	0.484103E-01
1999	0.290017E+03	0.358434E+03	-0.211806E+00
2000	0.301492E+03	0.175112E+03	0.543315E+00
2001	0.829205E+02	0.672415E+02	0.209592E+00
2002	0.883848E+02	0.124210E+03	-0.340275E+00
2003	0.224036E+02	0.428135E+02	-0.647632E+00
2004	0.870051E+03	0.316469E+03	0.101133E+01
2005	0.162563E+02	0.739080E+02	-0.151434E+01
2006	0.243980E+03	0.190144E+03	0.249306E+00
2007	0.170895E+03	0.206171E+03	-0.187652E+00
2008	0.864177E+03	0.142821E+03	0.180019E+01

Survey Index: 10 Tag: spr\_36po AGE = 2  
Time = JAN-1 Type = NUMBER  
Catchability = 0.101150E+00 % Variance Contribution = 0.4661  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.476107E+03	N/A
1979	N/A	0.236334E+04	N/A
1980	N/A	0.212291E+04	N/A
1981	N/A	0.186652E+04	N/A
1982	N/A	0.368906E+04	N/A
1983	N/A	0.157414E+04	N/A
1984	N/A	0.879087E+03	N/A
1985	N/A	0.237767E+04	N/A
1986	N/A	0.780207E+03	N/A
1987	N/A	0.361552E+04	N/A
1988	N/A	0.147273E+04	N/A
1989	N/A	0.202862E+04	N/A
1990	N/A	0.139675E+04	N/A
1991	N/A	0.838494E+03	N/A
1992	N/A	0.161396E+04	N/A
1993	N/A	0.601095E+03	N/A
1994	N/A	0.790149E+03	N/A
1995	0.521429E+03	0.514402E+03	0.135697E-01
1996	0.292203E+03	0.322119E+03	-0.974731E-01



1997	0.597110E+03	0.546897E+03	0.878413E-01
1998	0.908711E+03	0.867978E+03	0.458604E-01
1999	0.397390E+03	0.403671E+03	-0.156827E-01
2000	0.110187E+04	0.100878E+04	0.882662E-01
2001	0.320480E+03	0.484602E+03	-0.413506E+00
2002	0.126908E+03	0.188994E+03	-0.398254E+00
2003	0.290700E+03	0.348020E+03	-0.179968E+00
2004	0.792321E+02	0.119463E+03	-0.410622E+00
2005	0.660905E+03	0.889910E+03	-0.297509E+00
2006	0.315562E+03	0.207783E+03	0.417864E+00
2007	0.872783E+03	0.534460E+03	0.490430E+00
2008	0.113603E+04	0.581788E+03	0.669184E+00

Survey Index: 11 Tag: spr\_36po AGE = 3  
Time = JAN-1 Type = NUMBER  
Catchability = 0.225276E+00 % Variance Contribution = 0.7310  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.570683E+04	N/A
1979	N/A	0.783476E+03	N/A
1980	N/A	0.385386E+04	N/A
1981	N/A	0.301201E+04	N/A
1982	N/A	0.261116E+04	N/A
1983	N/A	0.461204E+04	N/A
1984	N/A	0.182376E+04	N/A
1985	N/A	0.128914E+04	N/A
1986	N/A	0.283139E+04	N/A
1987	N/A	0.109964E+04	N/A
1988	N/A	0.498113E+04	N/A
1989	N/A	0.220834E+04	N/A
1990	N/A	0.316957E+04	N/A
1991	N/A	0.142600E+04	N/A
1992	N/A	0.113146E+04	N/A
1993	N/A	0.197092E+04	N/A
1994	N/A	0.785431E+03	N/A
1995	0.116649E+04	0.131590E+04	-0.120526E+00
1996	0.100570E+04	0.805470E+03	0.222014E+00
1997	0.232505E+03	0.529000E+03	-0.822074E+00
1998	0.177316E+04	0.858141E+03	0.725750E+00
1999	0.831938E+03	0.139610E+04	-0.517678E+00
2000	0.113357E+04	0.663687E+03	0.535313E+00
2001	0.108425E+04	0.164786E+04	-0.418590E+00
2002	0.523615E+03	0.737601E+03	-0.342645E+00
2003	0.370479E+03	0.321650E+03	0.141333E+00
2004	0.790819E+03	0.593673E+03	0.286740E+00
2005	0.188245E+03	0.203717E+03	-0.789908E-01
2006	0.178395E+04	0.154866E+04	0.141444E+00
2007	0.513096E+03	0.364704E+03	0.341379E+00
2008	0.790272E+03	0.867699E+03	-0.934675E-01

Survey Index: 12 Tag: spr\_36po AGE = 4  
Time = JAN-1 Type = NUMBER  
Catchability = 0.506259E+00 % Variance Contribution = 1.6502

Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.387814E+04	N/A
1979	N/A	0.681812E+04	N/A
1980	N/A	0.100802E+04	N/A
1981	N/A	0.438883E+04	N/A
1982	N/A	0.339252E+04	N/A
1983	N/A	0.279447E+04	N/A
1984	N/A	0.452405E+04	N/A
1985	N/A	0.177810E+04	N/A
1986	N/A	0.104438E+04	N/A
1987	N/A	0.313423E+04	N/A
1988	N/A	0.133495E+04	N/A
1989	N/A	0.537156E+04	N/A
1990	N/A	0.268570E+04	N/A
1991	N/A	0.339627E+04	N/A
1992	N/A	0.105076E+04	N/A
1993	N/A	0.104799E+04	N/A
1994	N/A	0.162716E+04	N/A
1995	0.729482E+03	0.746942E+03	-0.236520E-01
1996	0.170376E+04	0.177104E+04	-0.387246E-01
1997	0.667462E+03	0.103350E+04	-0.437225E+00
1998	0.115816E+04	0.632947E+03	0.604197E+00
1999	0.696287E+03	0.984357E+03	-0.346227E+00
2000	0.155882E+04	0.165085E+04	-0.573575E-01
2001	0.218845E+03	0.884026E+03	-0.139612E+01
2002	0.135651E+04	0.182236E+04	-0.295219E+00
2003	0.850380E+03	0.820738E+03	0.354789E-01
2004	0.192138E+04	0.408008E+03	0.154951E+01
2005	0.861991E+03	0.894338E+03	-0.368391E-01
2006	0.453399E+03	0.282967E+03	0.471443E+00
2007	0.245032E+04	0.246491E+04	-0.593506E-02
2008	0.479901E+03	0.491227E+03	-0.233271E-01

Survey Index: 13 Tag: spr\_36po AGE = 5  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.688799E+00 % Variance Contribution = 1.5379  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.204356E+04	N/A
1979	N/A	0.281893E+04	N/A
1980	N/A	0.476405E+04	N/A
1981	N/A	0.785824E+03	N/A
1982	N/A	0.322937E+04	N/A
1983	N/A	0.194020E+04	N/A
1984	N/A	0.146561E+04	N/A
1985	N/A	0.298637E+04	N/A
1986	N/A	0.941864E+03	N/A
1987	N/A	0.633490E+03	N/A

1988	N/A	0.215184E+04	N/A
1989	N/A	0.825201E+03	N/A
1990	N/A	0.336153E+04	N/A
1991	N/A	0.178012E+04	N/A
1992	N/A	0.183991E+04	N/A
1993	N/A	0.513220E+03	N/A
1994	N/A	0.417953E+03	N/A
1995	0.818277E+03	0.597858E+03	0.313847E+00
1996	0.237970E+03	0.419894E+03	-0.567859E+00
1997	0.576892E+03	0.118932E+04	-0.723484E+00
1998	0.103125E+04	0.524313E+03	0.676436E+00
1999	0.325398E+03	0.400365E+03	-0.207328E+00
2000	0.505856E+03	0.571678E+03	-0.122323E+00
2001	0.522795E+03	0.112524E+04	-0.766560E+00
2002	0.327038E+03	0.521964E+03	-0.467524E+00
2003	0.951332E+03	0.109614E+04	-0.141687E+00
2004	0.184952E+04	0.422326E+03	0.147691E+01
2005	0.374850E+03	0.293814E+03	0.243579E+00
2006	0.988216E+03	0.638986E+03	0.436019E+00
2007	0.247122E+03	0.186718E+03	0.280286E+00
2008	0.131225E+04	0.201789E+04	-0.430308E+00

Survey Index: 14 Tag: spr\_36po AGE = 6  
Time = JAN-1 Type = NUMBER  
Catchability = 0.701770E+00 % Variance Contribution = 1.7150  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
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1978	N/A	0.886915E+03	N/A
1979	N/A	0.113990E+04	N/A
1980	N/A	0.159125E+04	N/A
1981	N/A	0.242426E+04	N/A
1982	N/A	0.455183E+03	N/A
1983	N/A	0.141435E+04	N/A
1984	N/A	0.893184E+03	N/A
1985	N/A	0.643021E+03	N/A
1986	N/A	0.117756E+04	N/A
1987	N/A	0.455636E+03	N/A
1988	N/A	0.339820E+03	N/A
1989	N/A	0.809116E+03	N/A
1990	N/A	0.446961E+03	N/A
1991	N/A	0.138037E+04	N/A
1992	N/A	0.584522E+03	N/A
1993	N/A	0.598388E+03	N/A
1994	N/A	0.132464E+03	N/A
1995	0.145760E+03	0.848718E+02	0.540818E+00
1996	0.284826E+03	0.258955E+03	0.952237E-01
1997	0.680304E+02	0.189417E+03	-0.102400E+01
1998	0.727570E+03	0.439796E+03	0.503398E+00
1999	0.162972E+03	0.196109E+03	-0.185088E+00
2000	0.139886E+03	0.154565E+03	-0.997887E-01
2001	0.241248E+03	0.278442E+03	-0.143383E+00
2002	0.306956E+03	0.500262E+03	-0.488427E+00
2003	0.875652E+02	0.206580E+03	-0.858303E+00

2004	0.121922E+04	0.346287E+03	0.125870E+01
2005	0.280454E+03	0.156150E+03	0.585597E+00
2006	0.290700E+03	0.154182E+03	0.634159E+00
2007	0.285782E+03	0.303082E+03	-0.587728E-01
2008	0.516375E+02	0.110430E+03	-0.760133E+00

Survey Index: 15 Tag: spr\_36po AGE = 7  
Time = JAN-1 Type = NUMBER  
Catchability = 0.723118E+00 % Variance Contribution = 3.5393  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.876323E+03	N/A
1979	N/A	0.632027E+03	N/A
1980	N/A	0.669607E+03	N/A
1981	N/A	0.707082E+03	N/A
1982	N/A	0.113566E+04	N/A
1983	N/A	0.192139E+03	N/A
1984	N/A	0.709804E+03	N/A
1985	N/A	0.391520E+03	N/A
1986	N/A	0.222844E+03	N/A
1987	N/A	0.594844E+03	N/A
1988	N/A	0.222620E+03	N/A
1989	N/A	0.142174E+03	N/A
1990	N/A	0.337672E+03	N/A
1991	N/A	0.227693E+03	N/A
1992	N/A	0.464433E+03	N/A
1993	N/A	0.204604E+03	N/A
1994	N/A	0.161371E+03	N/A
1995	0.319114E+03	0.488573E+02	0.187665E+01
1996	0.378402E+02	0.448957E+02	-0.170970E+00
1997	0.182917E+03	0.999355E+02	0.604508E+00
1998	0.138793E+03	0.647353E+02	0.762676E+00
1999	0.868821E+02	0.186825E+03	-0.765618E+00
2000	0.348348E+02	0.841796E+02	-0.882335E+00
2001	0.315563E+02	0.734561E+02	-0.844914E+00
2002	0.532768E+02	0.118386E+03	-0.798452E+00
2003	0.108603E+03	0.182679E+03	-0.520036E+00
2004	0.243980E+03	0.738014E+02	0.119571E+01
2005	0.174037E+03	0.129080E+03	0.298836E+00
2006	0.165704E+03	0.633221E+02	0.961972E+00
2007	0.422116E+02	0.841583E+02	-0.690004E+00
2008	0.614732E+02	0.171850E+03	-0.102802E+01

Survey Index: 16 Tag: spr\_36po AGE = 8  
Time = JAN-1 Type = NUMBER  
Catchability = 0.816798E+00 % Variance Contribution = 1.8560  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.669555E+02	N/A

1979	N/A	0.633475E+03	N/A
1980	N/A	0.467249E+03	N/A
1981	N/A	0.314189E+03	N/A
1982	N/A	0.349393E+03	N/A
1983	N/A	0.534230E+03	N/A
1984	N/A	0.108458E+03	N/A
1985	N/A	0.327951E+03	N/A
1986	N/A	0.167409E+03	N/A
1987	N/A	0.143378E+03	N/A
1988	N/A	0.347062E+03	N/A
1989	N/A	0.963563E+02	N/A
1990	N/A	0.720154E+02	N/A
1991	N/A	0.145136E+03	N/A
1992	N/A	0.107462E+03	N/A
1993	N/A	0.170767E+03	N/A
1994	N/A	0.602952E+02	N/A
1995	0.382500E+02	0.434902E+02	-0.128393E+00
1996	0.247259E+02	0.295044E+02	-0.176688E+00
1997	0.274580E+02	0.283950E+02	-0.335569E-01
1998	0.422116E+02	0.242502E+02	0.554272E+00
1999	0.416652E+02	0.305331E+02	0.310855E+00
2000	0.274580E+02	0.682718E+02	-0.910840E+00
2001	0.241795E+02	0.440075E+02	-0.598854E+00
2002	N/A	0.280790E+02	N/A
2003	0.168027E+02	0.478314E+02	-0.104614E+01
2004	0.356818E+03	0.654872E+02	0.169537E+01
2005	0.407089E+02	0.259731E+02	0.449385E+00
2006	0.736313E+02	0.571926E+02	0.252646E+00
2007	0.247259E+02	0.357269E+02	-0.368054E+00
2008	N/A	0.659093E+02	N/A

Survey Index: 17 Tag: spr\_41 AGE = 1  
Time = JAN-1 Type = NUMBER  
Catchability = 0.141338E-01 % Variance Contribution = 2.1179  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.477900E+03	0.405710E+03	0.163763E+00
1979	0.550671E+03	0.366665E+03	0.406688E+00
1980	0.401143E+02	0.323854E+03	-0.208856E+01
1981	0.295997E+04	0.648606E+03	0.151811E+01
1982	N/A	0.280737E+03	N/A
1983	N/A	0.159787E+03	N/A
1984	N/A	0.410170E+03	N/A
1985	N/A	0.135900E+03	N/A
1986	N/A	0.629030E+03	N/A
1987	N/A	0.252967E+03	N/A
1988	N/A	0.351285E+03	N/A
1989	N/A	0.252269E+03	N/A
1990	N/A	0.144223E+03	N/A
1991	N/A	0.279795E+03	N/A
1992	N/A	0.105576E+03	N/A
1993	N/A	0.139516E+03	N/A
1994	N/A	0.892634E+02	N/A

1995	N/A	0.554789E+02	N/A
1996	N/A	0.943495E+02	N/A
1997	N/A	0.150114E+03	N/A
1998	N/A	0.698806E+02	N/A
1999	N/A	0.172911E+03	N/A
2000	N/A	0.844751E+02	N/A
2001	N/A	0.324376E+02	N/A
2002	N/A	0.599196E+02	N/A
2003	N/A	0.206535E+02	N/A
2004	N/A	0.152666E+03	N/A
2005	N/A	0.356536E+02	N/A
2006	N/A	0.917265E+02	N/A
2007	N/A	0.994578E+02	N/A
2008	N/A	0.688974E+02	N/A

Survey Index: 18 Tag: spr\_41 AGE = 2  
Time = JAN-1 Type = NUMBER  
Catchability = 0.899870E-01 % Variance Contribution = 0.1993  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.246600E+03	0.423564E+03	-0.540937E+00
1979	0.166847E+04	0.210252E+04	-0.231231E+00
1980	0.285043E+04	0.188863E+04	0.411618E+00
1981	0.238140E+04	0.166053E+04	0.360549E+00
1982	N/A	0.328194E+04	N/A
1983	N/A	0.140041E+04	N/A
1984	N/A	0.782072E+03	N/A
1985	N/A	0.211527E+04	N/A
1986	N/A	0.694104E+03	N/A
1987	N/A	0.321651E+04	N/A
1988	N/A	0.131020E+04	N/A
1989	N/A	0.180474E+04	N/A
1990	N/A	0.124261E+04	N/A
1991	N/A	0.745959E+03	N/A
1992	N/A	0.143584E+04	N/A
1993	N/A	0.534759E+03	N/A
1994	N/A	0.702949E+03	N/A
1995	N/A	0.457633E+03	N/A
1996	N/A	0.286570E+03	N/A
1997	N/A	0.486541E+03	N/A
1998	N/A	0.772189E+03	N/A
1999	N/A	0.359123E+03	N/A
2000	N/A	0.897455E+03	N/A
2001	N/A	0.431121E+03	N/A
2002	N/A	0.168137E+03	N/A
2003	N/A	0.309613E+03	N/A
2004	N/A	0.106279E+03	N/A
2005	N/A	0.791700E+03	N/A
2006	N/A	0.184852E+03	N/A
2007	N/A	0.475477E+03	N/A
2008	N/A	0.517583E+03	N/A

Survey Index: 19 Tag: spr\_41 AGE = 3

Time = JAN-1                      Type = NUMBER  
 Catchability = 0.198731E+00    % Variance Contribution = 0.2047  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.711116E+04	0.503439E+04	0.345372E+00
1979	0.353700E+03	0.691159E+03	-0.669921E+00
1980	0.345806E+04	0.339976E+04	0.170022E-01
1981	0.361389E+04	0.265710E+04	0.307547E+00
1982	N/A	0.230348E+04	N/A
1983	N/A	0.406860E+04	N/A
1984	N/A	0.160886E+04	N/A
1985	N/A	0.113724E+04	N/A
1986	N/A	0.249777E+04	N/A
1987	N/A	0.970073E+03	N/A
1988	N/A	0.439420E+04	N/A
1989	N/A	0.194813E+04	N/A
1990	N/A	0.279610E+04	N/A
1991	N/A	0.125797E+04	N/A
1992	N/A	0.998144E+03	N/A
1993	N/A	0.173869E+04	N/A
1994	N/A	0.692883E+03	N/A
1995	N/A	0.116085E+04	N/A
1996	N/A	0.710561E+03	N/A
1997	N/A	0.466667E+03	N/A
1998	N/A	0.757026E+03	N/A
1999	N/A	0.123159E+04	N/A
2000	N/A	0.585485E+03	N/A
2001	N/A	0.145369E+04	N/A
2002	N/A	0.650689E+03	N/A
2003	N/A	0.283750E+03	N/A
2004	N/A	0.523720E+03	N/A
2005	N/A	0.179713E+03	N/A
2006	N/A	0.136618E+04	N/A
2007	N/A	0.321730E+03	N/A
2008	N/A	0.765458E+03	N/A

Survey Index: 20 Tag: spr\_41 AGE = 4  
 Time = JAN-1                      Type = NUMBER  
 Catchability = 0.177261E+00    % Variance Contribution = 0.0590  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.124907E+04	0.135789E+04	-0.835318E-01
1979	0.238050E+04	0.238729E+04	-0.284902E-02
1980	0.272957E+03	0.352946E+03	-0.257001E+00
1981	0.216630E+04	0.153670E+04	0.343382E+00
1982	N/A	0.118786E+04	N/A
1983	N/A	0.978455E+03	N/A
1984	N/A	0.158405E+04	N/A
1985	N/A	0.622583E+03	N/A

1986	N/A	0.365679E+03	N/A
1987	N/A	0.109742E+04	N/A
1988	N/A	0.467420E+03	N/A
1989	N/A	0.188080E+04	N/A
1990	N/A	0.940371E+03	N/A
1991	N/A	0.118917E+04	N/A
1992	N/A	0.367911E+03	N/A
1993	N/A	0.366943E+03	N/A
1994	N/A	0.569735E+03	N/A
1995	N/A	0.261534E+03	N/A
1996	N/A	0.620110E+03	N/A
1997	N/A	0.361870E+03	N/A
1998	N/A	0.221620E+03	N/A
1999	N/A	0.344662E+03	N/A
2000	N/A	0.578027E+03	N/A
2001	N/A	0.309532E+03	N/A
2002	N/A	0.638081E+03	N/A
2003	N/A	0.287373E+03	N/A
2004	N/A	0.142860E+03	N/A
2005	N/A	0.313143E+03	N/A
2006	N/A	0.990779E+02	N/A
2007	N/A	0.863062E+03	N/A
2008	N/A	0.171998E+03	N/A

Survey Index: 21 Tag: spr\_41 AGE = 5  
Time = JAN-1 Type = NUMBER  
Catchability = 0.216299E+00 % Variance Contribution = 0.2314  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.999771E+03	0.641727E+03	0.443364E+00
1979	0.702771E+03	0.885211E+03	-0.230795E+00
1980	0.219214E+04	0.149602E+04	0.382068E+00
1981	0.136157E+03	0.246768E+03	-0.594637E+00
1982	N/A	0.101410E+04	N/A
1983	N/A	0.609268E+03	N/A
1984	N/A	0.460237E+03	N/A
1985	N/A	0.937793E+03	N/A
1986	N/A	0.295768E+03	N/A
1987	N/A	0.198931E+03	N/A
1988	N/A	0.675730E+03	N/A
1989	N/A	0.259133E+03	N/A
1990	N/A	0.105560E+04	N/A
1991	N/A	0.559002E+03	N/A
1992	N/A	0.577777E+03	N/A
1993	N/A	0.161163E+03	N/A
1994	N/A	0.131247E+03	N/A
1995	N/A	0.187742E+03	N/A
1996	N/A	0.131857E+03	N/A
1997	N/A	0.373476E+03	N/A
1998	N/A	0.164647E+03	N/A
1999	N/A	0.125724E+03	N/A
2000	N/A	0.179521E+03	N/A
2001	N/A	0.353352E+03	N/A



2002	N/A	0.163909E+03	N/A
2003	N/A	0.344214E+03	N/A
2004	N/A	0.132620E+03	N/A
2005	N/A	0.922646E+02	N/A
2006	N/A	0.200657E+03	N/A
2007	N/A	0.586338E+02	N/A
2008	N/A	0.633664E+03	N/A

Survey Index: 22 Tag: spr\_41 AGE = 6  
Time = JAN-1 Type = NUMBER  
Catchability = 0.207689E+00 % Variance Contribution = 0.1087  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.182057E+03	0.262483E+03	-0.365866E+00
1979	0.302786E+03	0.337355E+03	-0.108111E+00
1980	0.480471E+03	0.470932E+03	0.200532E-01
1981	0.112963E+04	0.717462E+03	0.453924E+00
1982	N/A	0.134712E+03	N/A
1983	N/A	0.418576E+03	N/A
1984	N/A	0.264338E+03	N/A
1985	N/A	0.190302E+03	N/A
1986	N/A	0.348501E+03	N/A
1987	N/A	0.134846E+03	N/A
1988	N/A	0.100570E+03	N/A
1989	N/A	0.239458E+03	N/A
1990	N/A	0.132278E+03	N/A
1991	N/A	0.408520E+03	N/A
1992	N/A	0.172990E+03	N/A
1993	N/A	0.177093E+03	N/A
1994	N/A	0.392029E+02	N/A
1995	N/A	0.251179E+02	N/A
1996	N/A	0.766379E+02	N/A
1997	N/A	0.560581E+02	N/A
1998	N/A	0.130158E+03	N/A
1999	N/A	0.580384E+02	N/A
2000	N/A	0.457436E+02	N/A
2001	N/A	0.824050E+02	N/A
2002	N/A	0.148053E+03	N/A
2003	N/A	0.611374E+02	N/A
2004	N/A	0.102484E+03	N/A
2005	N/A	0.462126E+02	N/A
2006	N/A	0.456302E+02	N/A
2007	N/A	0.896972E+02	N/A
2008	N/A	0.326818E+02	N/A

Survey Index: 23 Tag: spr\_41 AGE = 7  
Time = JAN-1 Type = NUMBER  
Catchability = 0.300243E+00 % Variance Contribution = 0.5210  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
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1978	0.915814E+03	0.363855E+03	0.923058E+00
1979	0.107486E+03	0.262422E+03	-0.892596E+00
1980	0.238500E+03	0.278025E+03	-0.153343E+00
1981	0.331971E+03	0.293585E+03	0.122881E+00
1982	N/A	0.471532E+03	N/A
1983	N/A	0.797775E+02	N/A
1984	N/A	0.294715E+03	N/A
1985	N/A	0.162562E+03	N/A
1986	N/A	0.925261E+02	N/A
1987	N/A	0.246983E+03	N/A
1988	N/A	0.924333E+02	N/A
1989	N/A	0.590314E+02	N/A
1990	N/A	0.140204E+03	N/A
1991	N/A	0.945396E+02	N/A
1992	N/A	0.192836E+03	N/A
1993	N/A	0.849532E+02	N/A
1994	N/A	0.670022E+02	N/A
1995	N/A	0.202859E+02	N/A
1996	N/A	0.186410E+02	N/A
1997	N/A	0.414939E+02	N/A
1998	N/A	0.268785E+02	N/A
1999	N/A	0.775708E+02	N/A
2000	N/A	0.349519E+02	N/A
2001	N/A	0.304994E+02	N/A
2002	N/A	0.491548E+02	N/A
2003	N/A	0.758497E+02	N/A
2004	N/A	0.306428E+02	N/A
2005	N/A	0.535950E+02	N/A
2006	N/A	0.262917E+02	N/A
2007	N/A	0.349431E+02	N/A
2008	N/A	0.713531E+02	N/A

Survey Index: 24 Tag: spr\_41 AGE = 8  
Time = JAN-1 Type = NUMBER  
Catchability = 0.291472E+00 % Variance Contribution = 1.1884  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.837000E+02	0.238929E+02	0.125366E+01
1979	0.178200E+03	0.226054E+03	-0.237867E+00
1980	0.398571E+02	0.166737E+03	-0.143111E+01
1981	0.169843E+03	0.112118E+03	0.415324E+00
1982	N/A	0.124680E+03	N/A
1983	N/A	0.190639E+03	N/A
1984	N/A	0.387030E+02	N/A
1985	N/A	0.117028E+03	N/A
1986	N/A	0.597394E+02	N/A
1987	N/A	0.511642E+02	N/A
1988	N/A	0.123848E+03	N/A
1989	N/A	0.343845E+02	N/A
1990	N/A	0.256985E+02	N/A
1991	N/A	0.517913E+02	N/A
1992	N/A	0.383476E+02	N/A

1993	N/A	0.609378E+02	N/A
1994	N/A	0.215162E+02	N/A
1995	N/A	0.155194E+02	N/A
1996	N/A	0.105286E+02	N/A
1997	N/A	0.101327E+02	N/A
1998	N/A	0.865361E+01	N/A
1999	N/A	0.108957E+02	N/A
2000	N/A	0.243626E+02	N/A
2001	N/A	0.157040E+02	N/A
2002	N/A	0.100199E+02	N/A
2003	N/A	0.170685E+02	N/A
2004	N/A	0.233689E+02	N/A
2005	N/A	0.926844E+01	N/A
2006	N/A	0.204090E+02	N/A
2007	N/A	0.127491E+02	N/A
2008	N/A	0.235196E+02	N/A

Survey Index: 25 Tag: sp\_can\_p AGE = 1  
Time = JAN-1 Type = NUMBER  
Catchability = 0.358799E-01 % Variance Contribution = 1.3324  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.102993E+04	N/A
1979	N/A	0.930816E+03	N/A
1980	N/A	0.822135E+03	N/A
1981	N/A	0.164655E+04	N/A
1982	N/A	0.712678E+03	N/A
1983	N/A	0.405634E+03	N/A
1984	N/A	0.104126E+04	N/A
1985	N/A	0.344995E+03	N/A
1986	0.844432E+03	0.159685E+04	-0.637126E+00
1987	0.351846E+03	0.642180E+03	-0.601674E+00
1988	0.394068E+03	0.891771E+03	-0.816686E+00
1989	0.229404E+04	0.640410E+03	0.127596E+01
1990	0.591102E+03	0.366125E+03	0.479014E+00
1991	0.166072E+04	0.710287E+03	0.849335E+00
1992	0.154812E+03	0.268014E+03	-0.548823E+00
1993	N/A	0.354175E+03	N/A
1994	N/A	0.226604E+03	N/A
1995	N/A	0.140839E+03	N/A
1996	N/A	0.239515E+03	N/A
1997	N/A	0.381080E+03	N/A
1998	N/A	0.177399E+03	N/A
1999	N/A	0.438950E+03	N/A
2000	N/A	0.214448E+03	N/A
2001	N/A	0.823461E+02	N/A
2002	N/A	0.152112E+03	N/A
2003	N/A	0.524308E+02	N/A
2004	N/A	0.387558E+03	N/A
2005	N/A	0.905101E+02	N/A
2006	N/A	0.232857E+03	N/A
2007	N/A	0.252483E+03	N/A
2008	N/A	0.174903E+03	N/A

Survey Index: 26 Tag: sp\_can\_p AGE = 2  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.187587E+00 % Variance Contribution = 0.5784  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.882961E+03	N/A
1979	N/A	0.438292E+04	N/A
1980	N/A	0.393704E+04	N/A
1981	N/A	0.346155E+04	N/A
1982	N/A	0.684153E+04	N/A
1983	N/A	0.291931E+04	N/A
1984	N/A	0.163031E+04	N/A
1985	N/A	0.440949E+04	N/A
1986	0.319477E+04	0.144693E+04	0.792071E+00
1987	0.299773E+04	0.670515E+04	-0.805019E+00
1988	0.142146E+04	0.273125E+04	-0.653076E+00
1989	0.391253E+04	0.376217E+04	0.391899E-01
1990	0.343402E+04	0.259034E+04	0.281944E+00
1991	0.163257E+04	0.155503E+04	0.486618E-01
1992	0.402512E+04	0.299315E+04	0.296228E+00
1993	N/A	0.111476E+04	N/A
1994	N/A	0.146537E+04	N/A
1995	N/A	0.953981E+03	N/A
1996	N/A	0.597384E+03	N/A
1997	N/A	0.101424E+04	N/A
1998	N/A	0.160970E+04	N/A
1999	N/A	0.748627E+03	N/A
2000	N/A	0.187084E+04	N/A
2001	N/A	0.898715E+03	N/A
2002	N/A	0.350498E+03	N/A
2003	N/A	0.645419E+03	N/A
2004	N/A	0.221549E+03	N/A
2005	N/A	0.165038E+04	N/A
2006	N/A	0.385343E+03	N/A
2007	N/A	0.991180E+03	N/A
2008	N/A	0.107895E+04	N/A

Survey Index: 27 Tag: sp\_can\_p AGE = 3  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.324684E+00 % Variance Contribution = 0.1686  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.822510E+04	N/A
1979	N/A	0.112920E+04	N/A
1980	N/A	0.555447E+04	N/A
1981	N/A	0.434113E+04	N/A
1982	N/A	0.376339E+04	N/A
1983	N/A	0.664720E+04	N/A

1984	N/A	0.262853E+04	N/A
1985	N/A	0.185801E+04	N/A
1986	0.395475E+04	0.408081E+04	-0.313768E-01
1987	0.130887E+04	0.158489E+04	-0.191350E+00
1988	0.655842E+04	0.717917E+04	-0.904340E-01
1989	0.194219E+04	0.318282E+04	-0.493951E+00
1990	0.531992E+04	0.456822E+04	0.152335E+00
1991	0.258959E+04	0.205525E+04	0.231102E+00
1992	0.249107E+04	0.163075E+04	0.423674E+00
1993	N/A	0.284064E+04	N/A
1994	N/A	0.113202E+04	N/A
1995	N/A	0.189658E+04	N/A
1996	N/A	0.116090E+04	N/A
1997	N/A	0.762433E+03	N/A
1998	N/A	0.123682E+04	N/A
1999	N/A	0.201216E+04	N/A
2000	N/A	0.956554E+03	N/A
2001	N/A	0.237502E+04	N/A
2002	N/A	0.106308E+04	N/A
2003	N/A	0.463585E+03	N/A
2004	N/A	0.855645E+03	N/A
2005	N/A	0.293612E+03	N/A
2006	N/A	0.223204E+04	N/A
2007	N/A	0.525637E+03	N/A
2008	N/A	0.125059E+04	N/A

Survey Index: 28 Tag: sp\_can\_p AGE = 4  
Time = JAN-1 Type = NUMBER  
Catchability = 0.372132E+00 % Variance Contribution = 0.2113  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.285067E+04	N/A
1979	N/A	0.501174E+04	N/A
1980	N/A	0.740954E+03	N/A
1981	N/A	0.322606E+04	N/A
1982	N/A	0.249371E+04	N/A
1983	N/A	0.205411E+04	N/A
1984	N/A	0.332546E+04	N/A
1985	N/A	0.130701E+04	N/A
1986	0.520733E+03	0.767685E+03	-0.388143E+00
1987	0.153405E+04	0.230385E+04	-0.406671E+00
1988	0.816284E+03	0.981272E+03	-0.184088E+00
1989	0.401105E+04	0.394843E+04	0.157348E-01
1990	0.292736E+04	0.197416E+04	0.393960E+00
1991	0.302588E+04	0.249647E+04	0.192325E+00
1992	0.112591E+04	0.772370E+03	0.376882E+00
1993	N/A	0.770338E+03	N/A
1994	N/A	0.119607E+04	N/A
1995	N/A	0.549048E+03	N/A
1996	N/A	0.130182E+04	N/A
1997	N/A	0.759687E+03	N/A
1998	N/A	0.465255E+03	N/A
1999	N/A	0.723563E+03	N/A

2000	N/A	0.121348E+04	N/A
2001	N/A	0.649814E+03	N/A
2002	N/A	0.133955E+04	N/A
2003	N/A	0.603293E+03	N/A
2004	N/A	0.299911E+03	N/A
2005	N/A	0.657394E+03	N/A
2006	N/A	0.207998E+03	N/A
2007	N/A	0.181186E+04	N/A
2008	N/A	0.361082E+03	N/A

Survey Index: 29 Tag: sp\_can\_p AGE = 5  
Time = JAN-1 Type = NUMBER  
Catchability = 0.580779E+00 % Variance Contribution = 0.1940  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.172308E+04	N/A
1979	N/A	0.237686E+04	N/A
1980	N/A	0.401693E+04	N/A
1981	N/A	0.662589E+03	N/A
1982	N/A	0.272293E+04	N/A
1983	N/A	0.163593E+04	N/A
1984	N/A	0.123577E+04	N/A
1985	N/A	0.251804E+04	N/A
1986	0.914801E+03	0.794158E+03	0.141424E+00
1987	0.478511E+03	0.534144E+03	-0.109986E+00
1988	0.143553E+04	0.181438E+04	-0.234209E+00
1989	0.506659E+03	0.695790E+03	-0.317210E+00
1990	0.544658E+04	0.283436E+04	0.653171E+00
1991	0.147776E+04	0.150096E+04	-0.155807E-01
1992	0.137924E+04	0.155137E+04	-0.117609E+00
1993	N/A	0.432735E+03	N/A
1994	N/A	0.352408E+03	N/A
1995	N/A	0.504100E+03	N/A
1996	N/A	0.354045E+03	N/A
1997	N/A	0.100281E+04	N/A
1998	N/A	0.442089E+03	N/A
1999	N/A	0.337579E+03	N/A
2000	N/A	0.482026E+03	N/A
2001	N/A	0.948775E+03	N/A
2002	N/A	0.440108E+03	N/A
2003	N/A	0.924240E+03	N/A
2004	N/A	0.356095E+03	N/A
2005	N/A	0.247737E+03	N/A
2006	N/A	0.538778E+03	N/A
2007	N/A	0.157436E+03	N/A
2008	N/A	0.170143E+04	N/A

Survey Index: 30 Tag: sp\_can\_p AGE = 6  
Time = JAN-1 Type = NUMBER  
Catchability = 0.555873E+00 % Variance Contribution = 0.5549  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.702526E+03	N/A
1979	N/A	0.902919E+03	N/A
1980	N/A	0.126043E+04	N/A
1981	N/A	0.192026E+04	N/A
1982	N/A	0.360551E+03	N/A
1983	N/A	0.112030E+04	N/A
1984	N/A	0.707492E+03	N/A
1985	N/A	0.509337E+03	N/A
1986	0.619250E+03	0.932750E+03	-0.409629E+00
1987	0.168886E+03	0.360910E+03	-0.759402E+00
1988	0.182960E+03	0.269172E+03	-0.386082E+00
1989	0.591102E+03	0.640901E+03	-0.808866E-01
1990	0.591102E+03	0.354038E+03	0.512584E+00
1991	0.184368E+04	0.109339E+04	0.522479E+00
1992	0.844432E+03	0.463000E+03	0.600936E+00
1993	N/A	0.473983E+03	N/A
1994	N/A	0.104925E+03	N/A
1995	N/A	0.672270E+02	N/A
1996	N/A	0.205119E+03	N/A
1997	N/A	0.150038E+03	N/A
1998	N/A	0.348363E+03	N/A
1999	N/A	0.155338E+03	N/A
2000	N/A	0.122431E+03	N/A
2001	N/A	0.220554E+03	N/A
2002	N/A	0.396258E+03	N/A
2003	N/A	0.163632E+03	N/A
2004	N/A	0.274294E+03	N/A
2005	N/A	0.123686E+03	N/A
2006	N/A	0.122128E+03	N/A
2007	N/A	0.240071E+03	N/A
2008	N/A	0.874717E+02	N/A

Survey Index: 31 Tag: sp\_can\_p AGE = 7  
Time = JAN-1 Type = NUMBER  
Catchability = 0.730017E+00 % Variance Contribution = 1.0921  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.884683E+03	N/A
1979	N/A	0.638057E+03	N/A
1980	N/A	0.675996E+03	N/A
1981	N/A	0.713828E+03	N/A
1982	N/A	0.114649E+04	N/A
1983	N/A	0.193972E+03	N/A
1984	N/A	0.716576E+03	N/A
1985	N/A	0.395255E+03	N/A
1986	0.365920E+03	0.224970E+03	0.486450E+00
1987	0.309625E+03	0.600519E+03	-0.662433E+00
1988	0.112591E+03	0.224744E+03	-0.691200E+00
1989	0.703693E+02	0.143530E+03	-0.712787E+00

1990	0.130887E+04	0.340894E+03	0.134535E+01
1991	0.225182E+03	0.229865E+03	-0.205853E-01
1992	0.605176E+03	0.468864E+03	0.255207E+00
1993	N/A	0.206557E+03	N/A
1994	N/A	0.162910E+03	N/A
1995	N/A	0.493234E+02	N/A
1996	N/A	0.453240E+02	N/A
1997	N/A	0.100889E+03	N/A
1998	N/A	0.653529E+02	N/A
1999	N/A	0.188607E+03	N/A
2000	N/A	0.849827E+02	N/A
2001	N/A	0.741569E+02	N/A
2002	N/A	0.119516E+03	N/A
2003	N/A	0.184422E+03	N/A
2004	N/A	0.745055E+02	N/A
2005	N/A	0.130312E+03	N/A
2006	N/A	0.639262E+02	N/A
2007	N/A	0.849612E+02	N/A
2008	N/A	0.173489E+03	N/A

Survey Index: 32 Tag: sp\_can\_p AGE = 8  
Time = JAN-1 Type = NUMBER  
Catchability = 0.644843E-03 % Variance Contribution = 0.9126  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.528599E-01	N/A
1979	N/A	0.500114E+00	N/A
1980	N/A	0.368883E+00	N/A
1981	N/A	0.248046E+00	N/A
1982	N/A	0.275838E+00	N/A
1983	N/A	0.421762E+00	N/A
1984	N/A	0.856253E-01	N/A
1985	N/A	0.258910E+00	N/A
1986	0.400000E-01	0.132166E+00	-0.119518E+01
1987	0.800000E-01	0.113194E+00	-0.347077E+00
1988	0.170000E+00	0.273998E+00	-0.477321E+00
1989	0.100000E+00	0.760712E-01	0.273501E+00
1990	0.120000E+00	0.568546E-01	0.746995E+00
1991	0.220000E+00	0.114581E+00	0.652342E+00
1992	0.120000E+00	0.848391E-01	0.346736E+00
1993	N/A	0.134817E+00	N/A
1994	N/A	0.476017E-01	N/A
1995	N/A	0.343346E-01	N/A
1996	N/A	0.232931E-01	N/A
1997	N/A	0.224173E-01	N/A
1998	N/A	0.191450E-01	N/A
1999	N/A	0.241052E-01	N/A
2000	N/A	0.538991E-01	N/A
2001	N/A	0.347429E-01	N/A
2002	N/A	0.221678E-01	N/A
2003	N/A	0.377618E-01	N/A
2004	N/A	0.517007E-01	N/A
2005	N/A	0.205052E-01	N/A



2006	N/A	0.451523E-01	N/A
2007	N/A	0.282056E-01	N/A
2008	N/A	0.520339E-01	N/A

Survey Index: 33 Tag: sp\_canpo AGE = 1  
Time = JAN-1 Type = NUMBER  
Catchability = 0.158633E-01 % Variance Contribution = 4.3436  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.455356E+03	N/A
1979	N/A	0.411533E+03	N/A
1980	N/A	0.363483E+03	N/A
1981	N/A	0.727975E+03	N/A
1982	N/A	0.315090E+03	N/A
1983	N/A	0.179339E+03	N/A
1984	N/A	0.460362E+03	N/A
1985	N/A	0.152529E+03	N/A
1986	N/A	0.706002E+03	N/A
1987	N/A	0.283922E+03	N/A
1988	N/A	0.394271E+03	N/A
1989	N/A	0.283139E+03	N/A
1990	N/A	0.161872E+03	N/A
1991	N/A	0.314033E+03	N/A
1992	N/A	0.118495E+03	N/A
1993	N/A	0.156588E+03	N/A
1994	N/A	0.100186E+03	N/A
1995	0.985170E+02	0.622677E+02	0.458786E+00
1996	0.197034E+03	0.105895E+03	0.620930E+00
1997	0.450363E+03	0.168483E+03	0.983218E+00
1998	0.140739E+02	0.784317E+02	-0.171791E+01
1999	0.464437E+03	0.194069E+03	0.872612E+00
2000	0.140739E+03	0.948121E+02	0.395007E+00
2001	N/A	0.364069E+02	N/A
2002	0.128934E+02	0.672519E+02	-0.165173E+01
2003	N/A	0.231808E+02	N/A
2004	0.753776E+03	0.171348E+03	0.148140E+01
2005	0.344185E+02	0.400164E+02	-0.150696E+00
2006	N/A	0.102951E+03	N/A
2007	0.193318E+03	0.111628E+03	0.549163E+00
2008	0.122714E+02	0.773281E+02	-0.184079E+01

Survey Index: 34 Tag: sp\_canpo AGE = 2  
Time = JAN-1 Type = NUMBER  
Catchability = 0.779414E-01 % Variance Contribution = 3.7046  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.366866E+03	N/A
1979	N/A	0.182108E+04	N/A
1980	N/A	0.163582E+04	N/A

1981	N/A	0.143826E+04	N/A
1982	N/A	0.284262E+04	N/A
1983	N/A	0.121296E+04	N/A
1984	N/A	0.677384E+03	N/A
1985	N/A	0.183212E+04	N/A
1986	N/A	0.601191E+03	N/A
1987	N/A	0.278595E+04	N/A
1988	N/A	0.113482E+04	N/A
1989	N/A	0.156316E+04	N/A
1990	N/A	0.107627E+04	N/A
1991	N/A	0.646105E+03	N/A
1992	N/A	0.124364E+04	N/A
1993	N/A	0.463176E+03	N/A
1994	N/A	0.608852E+03	N/A
1995	0.942949E+03	0.396374E+03	0.866653E+00
1996	0.689619E+03	0.248210E+03	0.102186E+01
1997	0.745915E+03	0.421413E+03	0.570997E+00
1998	0.942949E+03	0.668824E+03	0.343491E+00
1999	0.450363E+03	0.311051E+03	0.370100E+00
2000	0.619250E+03	0.777322E+03	-0.227346E+00
2001	0.844432E+02	0.373412E+03	-0.148660E+01
2002	0.121746E+03	0.145630E+03	-0.179136E+00
2003	0.313603E+02	0.268168E+03	-0.214607E+01
2004	0.134499E+03	0.920524E+02	0.379197E+00
2005	0.188003E+04	0.685723E+03	0.100857E+01
2006	0.527756E+02	0.160108E+03	-0.110980E+01
2007	0.730710E+03	0.411830E+03	0.573405E+00
2008	0.454928E+03	0.448299E+03	0.146790E-01

Survey Index: 35 Tag: sp\_canpo AGE = 3  
Time = JAN-1 Type = NUMBER  
Catchability = 0.362628E+00 % Variance Contribution = 1.1901  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.918634E+04	N/A
1979	N/A	0.126117E+04	N/A
1980	N/A	0.620359E+04	N/A
1981	N/A	0.484846E+04	N/A
1982	N/A	0.420320E+04	N/A
1983	N/A	0.742403E+04	N/A
1984	N/A	0.293572E+04	N/A
1985	N/A	0.207514E+04	N/A
1986	N/A	0.455772E+04	N/A
1987	N/A	0.177011E+04	N/A
1988	N/A	0.801817E+04	N/A
1989	N/A	0.355479E+04	N/A
1990	N/A	0.510209E+04	N/A
1991	N/A	0.229544E+04	N/A
1992	N/A	0.182133E+04	N/A
1993	N/A	0.317261E+04	N/A
1994	N/A	0.126432E+04	N/A
1995	0.211108E+04	0.211822E+04	-0.337802E-02
1996	0.325106E+04	0.129657E+04	0.919257E+00

1997	0.774062E+03	0.851535E+03	-0.953887E-01
1998	0.133702E+04	0.138136E+04	-0.326260E-01
1999	0.209701E+04	0.224731E+04	-0.692234E-01
2000	0.147776E+04	0.106834E+04	0.324415E+00
2001	0.900727E+03	0.265258E+04	-0.108009E+01
2002	0.805617E+03	0.118732E+04	-0.387847E+00
2003	0.419145E+03	0.517762E+03	-0.211300E+00
2004	0.551716E+03	0.955641E+03	-0.549349E+00
2005	0.661996E+03	0.327925E+03	0.702473E+00
2006	0.197858E+04	0.249289E+04	-0.231060E+00
2007	0.132932E+04	0.587067E+03	0.817285E+00
2008	0.125982E+04	0.139674E+04	-0.103172E+00

Survey Index: 36 Tag: sp\_canpo AGE = 4  
Time = JAN-1 Type = NUMBER  
Catchability = 0.888325E+00 % Variance Contribution = 1.2196  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.680491E+04	N/A
1979	N/A	0.119636E+05	N/A
1980	N/A	0.176875E+04	N/A
1981	N/A	0.770101E+04	N/A
1982	N/A	0.595280E+04	N/A
1983	N/A	0.490342E+04	N/A
1984	N/A	0.793828E+04	N/A
1985	N/A	0.312000E+04	N/A
1986	N/A	0.183256E+04	N/A
1987	N/A	0.549958E+04	N/A
1988	N/A	0.234242E+04	N/A
1989	N/A	0.942540E+04	N/A
1990	N/A	0.471256E+04	N/A
1991	N/A	0.595938E+04	N/A
1992	N/A	0.184374E+04	N/A
1993	N/A	0.183889E+04	N/A
1994	N/A	0.285516E+04	N/A
1995	0.121035E+04	0.131065E+04	-0.796090E-01
1996	0.565769E+04	0.310761E+04	0.599163E+00
1997	0.175923E+04	0.181347E+04	-0.303637E-01
1998	0.492585E+03	0.111062E+04	-0.813008E+00
1999	0.153405E+04	0.172724E+04	-0.118610E+00
2000	0.551695E+04	0.289672E+04	0.644248E+00
2001	0.591102E+03	0.155119E+04	-0.964786E+00
2002	0.288708E+04	0.319767E+04	-0.102177E+00
2003	0.912160E+03	0.144014E+04	-0.456677E+00
2004	0.595577E+03	0.715925E+03	-0.184044E+00
2005	0.409251E+04	0.156928E+04	0.958541E+00
2006	0.925621E+03	0.496517E+03	0.622847E+00
2007	0.413611E+04	0.432513E+04	-0.446883E-01
2008	0.835776E+03	0.861948E+03	-0.308351E-01

Survey Index: 37 Tag: sp\_canpo AGE = 5  
Time = JAN-1 Type = NUMBER  
Catchability = 0.140774E+01 % Variance Contribution = 1.1272

Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.417655E+04	N/A
1979	N/A	0.576122E+04	N/A
1980	N/A	0.973658E+04	N/A
1981	N/A	0.160604E+04	N/A
1982	N/A	0.660006E+04	N/A
1983	N/A	0.396530E+04	N/A
1984	N/A	0.299536E+04	N/A
1985	N/A	0.610344E+04	N/A
1986	N/A	0.192495E+04	N/A
1987	N/A	0.129470E+04	N/A
1988	N/A	0.439785E+04	N/A
1989	N/A	0.168651E+04	N/A
1990	N/A	0.687017E+04	N/A
1991	N/A	0.363815E+04	N/A
1992	N/A	0.376034E+04	N/A
1993	N/A	0.104890E+04	N/A
1994	N/A	0.854196E+03	N/A
1995	0.844432E+03	0.122188E+04	-0.369482E+00
1996	0.153405E+04	0.858163E+03	0.580873E+00
1997	0.173108E+04	0.243069E+04	-0.339428E+00
1998	0.492585E+03	0.107157E+04	-0.777213E+00
1999	0.577028E+03	0.818251E+03	-0.349278E+00
2000	0.240663E+04	0.116837E+04	0.722615E+00
2001	0.156220E+04	0.229972E+04	-0.386693E+00
2002	0.961543E+03	0.106677E+04	-0.103852E+00
2003	0.170676E+04	0.224025E+04	-0.271987E+00
2004	0.634621E+03	0.863133E+03	-0.307541E+00
2005	0.159149E+04	0.600486E+03	0.974687E+00
2006	0.229716E+04	0.130593E+04	0.564756E+00
2007	0.545841E+03	0.381606E+03	0.357939E+00
2008	0.306929E+04	0.412408E+04	-0.295397E+00

Survey Index: 38 Tag: sp\_canpo AGE = 6  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.193422E+01 % Variance Contribution = 1.2999  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.244451E+04	N/A
1979	N/A	0.314180E+04	N/A
1980	N/A	0.438581E+04	N/A
1981	N/A	0.668175E+04	N/A
1982	N/A	0.125457E+04	N/A
1983	N/A	0.389821E+04	N/A
1984	N/A	0.246179E+04	N/A
1985	N/A	0.177229E+04	N/A
1986	N/A	0.324560E+04	N/A
1987	N/A	0.125582E+04	N/A

1988	N/A	0.936611E+03	N/A
1989	N/A	0.223008E+04	N/A
1990	N/A	0.123191E+04	N/A
1991	N/A	0.380456E+04	N/A
1992	N/A	0.161106E+04	N/A
1993	N/A	0.164927E+04	N/A
1994	N/A	0.365098E+03	N/A
1995	0.267403E+03	0.233923E+03	0.133765E+00
1996	0.111183E+04	0.713731E+03	0.443261E+00
1997	0.379994E+03	0.522071E+03	-0.317647E+00
1998	0.394068E+03	0.121216E+04	-0.112364E+01
1999	0.365920E+03	0.540514E+03	-0.390104E+00
2000	0.109776E+04	0.426011E+03	0.946562E+00
2001	0.731841E+03	0.767440E+03	-0.474979E-01
2002	0.171816E+04	0.137882E+04	0.220025E+00
2003	0.447151E+03	0.569375E+03	-0.241642E+00
2004	0.545454E+03	0.954435E+03	-0.559502E+00
2005	0.721660E+03	0.430379E+03	0.516889E+00
2006	0.982657E+03	0.424956E+03	0.838276E+00
2007	0.851245E+03	0.835353E+03	0.188456E-01
2008	0.196496E+03	0.304367E+03	-0.437591E+00

Survey Index: 39 Tag: sp\_canpo AGE = 7  
Time = JAN-1 Type = NUMBER  
Catchability = 0.190133E+01 % Variance Contribution = 2.3828  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
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1978	N/A	0.230416E+04	N/A
1979	N/A	0.166182E+04	N/A
1980	N/A	0.176063E+04	N/A
1981	N/A	0.185916E+04	N/A
1982	N/A	0.298603E+04	N/A
1983	N/A	0.505201E+03	N/A
1984	N/A	0.186632E+04	N/A
1985	N/A	0.102944E+04	N/A
1986	N/A	0.585933E+03	N/A
1987	N/A	0.156405E+04	N/A
1988	N/A	0.585345E+03	N/A
1989	N/A	0.373824E+03	N/A
1990	N/A	0.887857E+03	N/A
1991	N/A	0.598684E+03	N/A
1992	N/A	0.122116E+04	N/A
1993	N/A	0.537976E+03	N/A
1994	N/A	0.424300E+03	N/A
1995	0.562954E+02	0.128463E+03	-0.825026E+00
1996	0.464437E+03	0.118046E+03	0.136975E+01
1997	0.844432E+02	0.262765E+03	-0.113518E+01
1998	0.985170E+02	0.170212E+03	-0.546813E+00
1999	0.211108E+03	0.491227E+03	-0.844536E+00
2000	0.562954E+03	0.221337E+03	0.933511E+00
2001	0.365920E+03	0.193141E+03	0.638993E+00
2002	0.563812E+03	0.311279E+03	0.594033E+00
2003	0.474404E+03	0.480327E+03	-0.124098E-01

2004	0.103828E+03	0.194050E+03	-0.625380E+00
2005	0.583521E+03	0.339397E+03	0.541909E+00
2006	0.283568E+03	0.166496E+03	0.532484E+00
2007	0.135474E+03	0.221281E+03	-0.490656E+00
2008	0.396500E+03	0.451852E+03	-0.130678E+00

Survey Index: 40 Tag: sp\_canpo AGE = 8  
Time = JAN-1 Type = NUMBER  
Catchability = 0.127804E-02 % Variance Contribution = 3.5252  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
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1978	N/A	0.104765E+00	N/A
1979	N/A	0.991198E+00	N/A
1980	N/A	0.731104E+00	N/A
1981	N/A	0.491612E+00	N/A
1982	N/A	0.546696E+00	N/A
1983	N/A	0.835909E+00	N/A
1984	N/A	0.169704E+00	N/A
1985	N/A	0.513145E+00	N/A
1986	N/A	0.261945E+00	N/A
1987	N/A	0.224344E+00	N/A
1988	N/A	0.543048E+00	N/A
1989	N/A	0.150769E+00	N/A
1990	N/A	0.112683E+00	N/A
1991	N/A	0.227094E+00	N/A
1992	N/A	0.168146E+00	N/A
1993	N/A	0.267199E+00	N/A
1994	N/A	0.943439E-01	N/A
1995	0.500000E-01	0.680492E-01	-0.308208E+00
1996	0.800000E-01	0.461655E-01	0.549793E+00
1997	0.300000E-01	0.444297E-01	-0.392711E+00
1998	0.200000E-01	0.379442E-01	-0.640385E+00
1999	0.100000E-01	0.477752E-01	-0.156392E+01
2000	0.240000E+00	0.106825E+00	0.809447E+00
2001	0.170000E+00	0.688585E-01	0.903745E+00
2002	0.170000E+00	0.439352E-01	0.135308E+01
2003	0.160000E+00	0.748417E-01	0.759798E+00
2004	0.117500E+00	0.102468E+00	0.136890E+00
2005	0.100000E-01	0.406401E-01	-0.140217E+01
2006	0.185000E+00	0.894892E-01	0.726237E+00
2007	0.757000E-01	0.559019E-01	0.303179E+00
2008	0.300000E-01	0.103128E+00	-0.123478E+01

Survey Index: 41 Tag: us0autpr AGE = 1  
Time = JAN-1 Type = NUMBER  
Catchability = 0.163752E-01 % Variance Contribution = 3.3522  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
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1978	0.207096E+03	0.470051E+03	-0.819657E+00
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1979	0.540008E+03	0.424815E+03	0.239931E+00
1980	0.156415E+03	0.375214E+03	-0.874982E+00
1981	0.382090E+03	0.751469E+03	-0.676373E+00
1982	0.356545E+03	0.325259E+03	0.918379E-01
1983	0.494518E+03	0.185127E+03	0.982541E+00
1984	0.175253E+04	0.475219E+03	0.130504E+01
1985	0.244663E+03	0.157452E+03	0.440763E+00
1986	0.136867E+04	0.728787E+03	0.630211E+00
1987	0.103958E+03	0.293085E+03	-0.103647E+01
1988	0.278269E+03	0.406995E+03	-0.380214E+00
1989	0.750656E+03	0.292277E+03	0.943247E+00
1990	0.342611E+03	0.167096E+03	0.718028E+00
1991	0.214610E+03	0.324168E+03	-0.412439E+00
1992	0.553259E+02	0.122319E+03	-0.793389E+00
1993	0.479491E+02	0.161642E+03	-0.121524E+01
1994	0.243707E+03	0.103420E+03	0.857172E+00
1995	N/A	0.642773E+02	N/A
1996	N/A	0.109312E+03	N/A
1997	N/A	0.173921E+03	N/A
1998	N/A	0.809629E+02	N/A
1999	N/A	0.200332E+03	N/A
2000	N/A	0.978720E+02	N/A
2001	N/A	0.375819E+02	N/A
2002	N/A	0.694223E+02	N/A
2003	N/A	0.239289E+02	N/A
2004	N/A	0.176878E+03	N/A
2005	N/A	0.413079E+02	N/A
2006	N/A	0.106273E+03	N/A
2007	N/A	0.115231E+03	N/A
2008	N/A	0.798238E+02	N/A

Survey Index: 42 Tag: uslautpr AGE = 2  
Time = JAN-1 Type = NUMBER  
Catchability = 0.811005E-01 % Variance Contribution = 1.6827  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.323486E+03	0.381735E+03	-0.165573E+00
1979	0.252095E+04	0.189489E+04	0.285473E+00
1980	0.222000E+04	0.170212E+04	0.265634E+00
1981	0.112004E+04	0.149655E+04	-0.289797E+00
1982	0.481540E+04	0.295784E+04	0.487362E+00
1983	0.788633E+03	0.126212E+04	-0.470246E+00
1984	0.116048E+04	0.704839E+03	0.498617E+00
1985	0.260797E+04	0.190638E+04	0.313366E+00
1986	0.247669E+03	0.625558E+03	-0.926552E+00
1987	0.311314E+04	0.289887E+04	0.713103E-01
1988	0.565144E+03	0.118082E+04	-0.736882E+00
1989	0.119490E+04	0.162652E+04	-0.308377E+00
1990	0.382281E+04	0.111989E+04	0.122775E+01
1991	0.496704E+03	0.672293E+03	-0.302701E+00
1992	0.556811E+03	0.129405E+04	-0.843304E+00
1993	0.563368E+03	0.481950E+03	0.156093E+00
1994	0.132495E+04	0.633530E+03	0.737824E+00

1995	N/A	0.412440E+03	N/A
1996	N/A	0.258270E+03	N/A
1997	N/A	0.438494E+03	N/A
1998	N/A	0.695932E+03	N/A
1999	N/A	0.323658E+03	N/A
2000	N/A	0.808828E+03	N/A
2001	N/A	0.388547E+03	N/A
2002	N/A	0.151533E+03	N/A
2003	N/A	0.279037E+03	N/A
2004	N/A	0.957835E+02	N/A
2005	N/A	0.713517E+03	N/A
2006	N/A	0.166597E+03	N/A
2007	N/A	0.428522E+03	N/A
2008	N/A	0.466470E+03	N/A

Survey Index: 43 Tag: us2autpr AGE = 3  
Time = JAN-1 Type = NUMBER  
Catchability = 0.119082E+00 % Variance Contribution = 1.9147  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.469041E+04	0.301665E+04	0.441371E+00
1979	0.534407E+03	0.414148E+03	0.254934E+00
1980	0.229090E+04	0.203717E+04	0.117386E+00
1981	0.769918E+03	0.159216E+04	-0.726563E+00
1982	0.307366E+04	0.138027E+04	0.800592E+00
1983	0.260851E+04	0.243794E+04	0.676275E-01
1984	0.148806E+04	0.964044E+03	0.434093E+00
1985	0.931388E+03	0.681445E+03	0.312459E+00
1986	0.115105E+04	0.149668E+04	-0.262576E+00
1987	0.175540E+03	0.581276E+03	-0.119736E+01
1988	0.184802E+04	0.263304E+04	-0.354025E+00
1989	0.596973E+03	0.116734E+04	-0.670609E+00
1990	0.142946E+04	0.167545E+04	-0.158786E+00
1991	0.221905E+04	0.753787E+03	0.107972E+01
1992	0.239336E+03	0.598096E+03	-0.915885E+00
1993	0.129627E+04	0.104184E+04	0.218502E+00
1994	0.726204E+03	0.415182E+03	0.559114E+00
1995	N/A	0.695592E+03	N/A
1996	N/A	0.425775E+03	N/A
1997	N/A	0.279631E+03	N/A
1998	N/A	0.453617E+03	N/A
1999	N/A	0.737982E+03	N/A
2000	N/A	0.350827E+03	N/A
2001	N/A	0.871067E+03	N/A
2002	N/A	0.389898E+03	N/A
2003	N/A	0.170025E+03	N/A
2004	N/A	0.313818E+03	N/A
2005	N/A	0.107686E+03	N/A
2006	N/A	0.818626E+03	N/A
2007	N/A	0.192784E+03	N/A
2008	N/A	0.458669E+03	N/A

Survey Index: 44 Tag: us3autpr AGE = 4



Time = JAN-1                      Type = NUMBER  
 Catchability = 0.126944E+00    % Variance Contribution = 2.6588  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.943682E+03	0.972437E+03	-0.300155E-01
1979	0.554311E+04	0.170963E+04	0.117628E+01
1980	0.221440E+03	0.252758E+03	-0.132281E+00
1981	0.105720E+04	0.110049E+04	-0.401295E-01
1982	0.212971E+04	0.850669E+03	0.917716E+00
1983	0.330316E+03	0.700709E+03	-0.752042E+00
1984	0.101117E+04	0.113440E+04	-0.114997E+00
1985	0.126867E+04	0.445855E+03	0.104573E+01
1986	0.911170E+02	0.261877E+03	-0.105573E+01
1987	0.449438E+03	0.785902E+03	-0.558836E+00
1988	0.147536E+03	0.334737E+03	-0.819275E+00
1989	0.123466E+04	0.134691E+04	-0.870210E-01
1990	0.220074E+03	0.673435E+03	-0.111843E+01
1991	0.247819E+04	0.851609E+03	0.106816E+01
1992	0.374577E+03	0.263475E+03	0.351839E+00
1993	0.238106E+03	0.262782E+03	-0.986068E-01
1994	0.522659E+03	0.408009E+03	0.247641E+00
1995	N/A	0.187294E+03	N/A
1996	N/A	0.444084E+03	N/A
1997	N/A	0.259149E+03	N/A
1998	N/A	0.158710E+03	N/A
1999	N/A	0.246826E+03	N/A
2000	N/A	0.413947E+03	N/A
2001	N/A	0.221668E+03	N/A
2002	N/A	0.456954E+03	N/A
2003	N/A	0.205799E+03	N/A
2004	N/A	0.102307E+03	N/A
2005	N/A	0.224254E+03	N/A
2006	N/A	0.709534E+02	N/A
2007	N/A	0.618071E+03	N/A
2008	N/A	0.123174E+03	N/A

Survey Index: 45 Tag: us4autpr AGE = 5  
 Time = JAN-1                      Type = NUMBER  
 Catchability = 0.886514E-01    % Variance Contribution = 4.9511  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.345343E+03	0.263015E+03	0.272327E+00
1979	0.131635E+04	0.362808E+03	0.128874E+01
1980	0.230388E+04	0.613153E+03	0.132373E+01
1981	0.717188E+02	0.101139E+03	-0.343742E+00
1982	0.804616E+03	0.415633E+03	0.660562E+00
1983	0.926196E+02	0.249712E+03	-0.991806E+00
1984	0.943955E+02	0.188630E+03	-0.692296E+00
1985	0.112715E+04	0.384359E+03	0.107587E+01

1986	0.144120E+03	0.121222E+03	0.173027E+00
1987	0.112018E+02	0.815329E+02	-0.198493E+01
1988	0.273624E+03	0.276951E+03	-0.120861E-01
1989	0.819643E+02	0.106207E+03	-0.259105E+00
1990	0.692735E+03	0.432643E+03	0.470734E+00
1991	0.563368E+03	0.229110E+03	0.899732E+00
1992	0.416652E+02	0.236805E+03	-0.173757E+01
1993	0.136607E+03	0.660536E+02	0.726642E+00
1994	0.225402E+02	0.537923E+02	-0.869831E+00
1995	N/A	0.769469E+02	N/A
1996	N/A	0.540421E+02	N/A
1997	N/A	0.153071E+03	N/A
1998	N/A	0.674813E+02	N/A
1999	N/A	0.515287E+02	N/A
2000	N/A	0.735774E+02	N/A
2001	N/A	0.144823E+03	N/A
2002	N/A	0.671790E+02	N/A
2003	N/A	0.141078E+03	N/A
2004	N/A	0.543551E+02	N/A
2005	N/A	0.378151E+02	N/A
2006	N/A	0.822402E+02	N/A
2007	N/A	0.240314E+02	N/A
2008	N/A	0.259710E+03	N/A

Survey Index: 46 Tag: us5autpr AGE = 6  
Time = JAN-1 Type = NUMBER  
Catchability = 0.104097E+00 % Variance Contribution = 2.0355  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	0.236467E+03	0.131560E+03	0.586346E+00
1979	0.458317E+03	0.169087E+03	0.997149E+00
1980	0.437962E+03	0.236037E+03	0.618143E+00
1981	0.361736E+03	0.359601E+03	0.591760E-02
1982	0.737679E+02	0.675192E+02	0.885110E-01
1983	0.157371E+03	0.209796E+03	-0.287527E+00
1984	0.448071E+02	0.132490E+03	-0.108414E+01
1985	0.330589E+02	0.953821E+02	-0.105960E+01
1986	0.104641E+03	0.174673E+03	-0.512381E+00
1987	0.665277E+02	0.675865E+02	-0.157893E-01
1988	0.382500E+02	0.504070E+02	-0.275986E+00
1989	0.264608E+03	0.120020E+03	0.790594E+00
1990	0.747241E+02	0.662996E+02	0.119619E+00
1991	0.390013E+03	0.204756E+03	0.644364E+00
1992	0.396161E+02	0.867047E+02	-0.783272E+00
1993	0.596973E+02	0.887614E+02	-0.396665E+00
1994	0.345616E+02	0.196490E+02	0.564717E+00
1995	N/A	0.125894E+02	N/A
1996	N/A	0.384119E+02	N/A
1997	N/A	0.280971E+02	N/A
1998	N/A	0.652369E+02	N/A
1999	N/A	0.290896E+02	N/A
2000	N/A	0.229273E+02	N/A
2001	N/A	0.413025E+02	N/A

2002	N/A	0.742061E+02	N/A
2003	N/A	0.306429E+02	N/A
2004	N/A	0.513663E+02	N/A
2005	N/A	0.231623E+02	N/A
2006	N/A	0.228705E+02	N/A
2007	N/A	0.449574E+02	N/A
2008	N/A	0.163806E+02	N/A

Survey Index: 47 Tag: us0autpo AGE = 1  
Time = JAN-1 Type = NUMBER  
Catchability = 0.201548E-01 % Variance Contribution = 10.2185  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.578545E+03	N/A
1979	N/A	0.522867E+03	N/A
1980	N/A	0.461818E+03	N/A
1981	N/A	0.924917E+03	N/A
1982	N/A	0.400333E+03	N/A
1983	N/A	0.227857E+03	N/A
1984	N/A	0.584905E+03	N/A
1985	N/A	0.193794E+03	N/A
1986	N/A	0.897000E+03	N/A
1987	N/A	0.360732E+03	N/A
1988	N/A	0.500935E+03	N/A
1989	N/A	0.359738E+03	N/A
1990	N/A	0.205664E+03	N/A
1991	N/A	0.398989E+03	N/A
1992	N/A	0.150551E+03	N/A
1993	N/A	0.198951E+03	N/A
1994	N/A	0.127290E+03	N/A
1995	0.912536E+02	0.791133E+02	0.142762E+00
1996	0.218435E+03	0.134543E+03	0.484604E+00
1997	0.295071E+02	0.214064E+03	-0.198164E+01
1998	0.874290E+01	0.996501E+02	-0.243342E+01
1999	0.957616E+02	0.246572E+03	-0.945791E+00
2000	0.957616E+02	0.120462E+03	-0.229473E+00
2001	0.266384E+02	0.462563E+02	-0.551843E+00
2002	0.387964E+02	0.854458E+02	-0.789555E+00
2003	0.319661E+03	0.294520E+02	0.238450E+01
2004	0.446569E+03	0.217703E+03	0.718462E+00
2005	0.230224E+04	0.508423E+02	0.381291E+01
2006	0.711723E+02	0.130803E+03	-0.608585E+00
2007	0.135787E+03	0.141827E+03	-0.435200E-01
2008	0.102319E+03	0.982481E+02	0.405978E-01

Survey Index: 48 Tag: us1autpo AGE = 2  
Time = JAN-1 Type = NUMBER  
Catchability = 0.741493E-01 % Variance Contribution = 2.3641  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
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1978	N/A	0.349017E+03	N/A
1979	N/A	0.173248E+04	N/A
1980	N/A	0.155623E+04	N/A
1981	N/A	0.136828E+04	N/A
1982	N/A	0.270432E+04	N/A
1983	N/A	0.115394E+04	N/A
1984	N/A	0.644427E+03	N/A
1985	N/A	0.174298E+04	N/A
1986	N/A	0.571941E+03	N/A
1987	N/A	0.265041E+04	N/A
1988	N/A	0.107961E+04	N/A
1989	N/A	0.148711E+04	N/A
1990	N/A	0.102391E+04	N/A
1991	N/A	0.614670E+03	N/A
1992	N/A	0.118313E+04	N/A
1993	N/A	0.440641E+03	N/A
1994	N/A	0.579230E+03	N/A
1995	0.554079E+03	0.377089E+03	0.384824E+00
1996	0.334278E+03	0.236134E+03	0.347573E+00
1997	0.327721E+03	0.400910E+03	-0.201576E+00
1998	0.322666E+03	0.636283E+03	-0.679026E+00
1999	0.458317E+03	0.295917E+03	0.437482E+00
2000	0.190840E+03	0.739503E+03	-0.135454E+01
2001	0.780027E+03	0.355244E+03	0.786524E+00
2002	0.643420E+02	0.138545E+03	-0.766981E+00
2003	0.652982E+03	0.255121E+03	0.939812E+00
2004	0.227178E+03	0.875738E+02	0.953251E+00
2005	0.101745E+04	0.652361E+03	0.444457E+00
2006	0.755438E+02	0.152318E+03	-0.701258E+00
2007	0.590826E+03	0.391793E+03	0.410787E+00
2008	0.156688E+03	0.426488E+03	-0.100133E+01

Survey Index: 49 Tag: us2autpo AGE = 3  
Time = JAN-1 Type = NUMBER  
Catchability = 0.162972E+00 % Variance Contribution = 1.9241  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
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1978	N/A	0.412850E+04	N/A
1979	N/A	0.566792E+03	N/A
1980	N/A	0.278801E+04	N/A
1981	N/A	0.217898E+04	N/A
1982	N/A	0.188899E+04	N/A
1983	N/A	0.333649E+04	N/A
1984	N/A	0.131936E+04	N/A
1985	N/A	0.932606E+03	N/A
1986	N/A	0.204832E+04	N/A
1987	N/A	0.795518E+03	N/A
1988	N/A	0.360351E+04	N/A
1989	N/A	0.159758E+04	N/A
1990	N/A	0.229297E+04	N/A
1991	N/A	0.103161E+04	N/A
1992	N/A	0.818537E+03	N/A

1993	N/A	0.142583E+04	N/A
1994	N/A	0.568206E+03	N/A
1995	0.907481E+03	0.951967E+03	-0.478571E-01
1996	0.247341E+04	0.582703E+03	0.144568E+01
1997	0.267477E+03	0.382695E+03	-0.358206E+00
1998	0.438372E+03	0.620807E+03	-0.347951E+00
1999	0.140186E+04	0.100998E+04	0.327870E+00
2000	0.210648E+03	0.480132E+03	-0.823872E+00
2001	0.734673E+03	0.119212E+04	-0.484060E+00
2002	0.520200E+03	0.533604E+03	-0.254400E-01
2003	0.965812E+03	0.232692E+03	0.142326E+01
2004	0.422389E+03	0.429482E+03	-0.166521E-01
2005	0.185512E+03	0.147376E+03	0.230138E+00
2006	0.791502E+03	0.112035E+04	-0.347462E+00
2007	0.221030E+03	0.263838E+03	-0.177035E+00
2008	0.282504E+03	0.627721E+03	-0.798405E+00

Survey Index: 50 Tag: us3autpo AGE = 4  
Time = JAN-1 Type = NUMBER  
Catchability = 0.233271E+00 % Variance Contribution = 2.7971  
Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.178695E+04	N/A
1979	N/A	0.314161E+04	N/A
1980	N/A	0.464468E+03	N/A
1981	N/A	0.202226E+04	N/A
1982	N/A	0.156319E+04	N/A
1983	N/A	0.128762E+04	N/A
1984	N/A	0.208457E+04	N/A
1985	N/A	0.819302E+03	N/A
1986	N/A	0.481224E+03	N/A
1987	N/A	0.144417E+04	N/A
1988	N/A	0.615112E+03	N/A
1989	N/A	0.247508E+04	N/A
1990	N/A	0.123750E+04	N/A
1991	N/A	0.156491E+04	N/A
1992	N/A	0.484161E+03	N/A
1993	N/A	0.482887E+03	N/A
1994	N/A	0.749755E+03	N/A
1995	0.592055E+03	0.344171E+03	0.542461E+00
1996	0.170554E+04	0.816047E+03	0.737165E+00
1997	0.566100E+03	0.476211E+03	0.172910E+00
1998	0.149312E+03	0.291646E+03	-0.669504E+00
1999	0.480584E+03	0.453566E+03	0.578607E-01
2000	0.422936E+03	0.760668E+03	-0.586977E+00
2001	0.963080E+02	0.407336E+03	-0.144209E+01
2002	0.627027E+03	0.839697E+03	-0.292052E+00
2003	0.190704E+04	0.378175E+03	0.161795E+01
2004	0.273897E+03	0.187999E+03	0.376314E+00
2005	0.970047E+03	0.412088E+03	0.856108E+00
2006	0.176087E+03	0.130384E+03	0.300494E+00
2007	0.702434E+03	0.113577E+04	-0.480511E+00
2008	0.688500E+02	0.226345E+03	-0.119013E+01

Survey Index: 51 Tag: us4autpo AGE = 5  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.211986E+00 % Variance Contribution = 3.2650  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.628928E+03	N/A
1979	N/A	0.867557E+03	N/A
1980	N/A	0.146619E+04	N/A
1981	N/A	0.241846E+03	N/A
1982	N/A	0.993874E+03	N/A
1983	N/A	0.597117E+03	N/A
1984	N/A	0.451058E+03	N/A
1985	N/A	0.919090E+03	N/A
1986	N/A	0.289869E+03	N/A
1987	N/A	0.194964E+03	N/A
1988	N/A	0.662253E+03	N/A
1989	N/A	0.253965E+03	N/A
1990	N/A	0.103455E+04	N/A
1991	N/A	0.547853E+03	N/A
1992	N/A	0.566254E+03	N/A
1993	N/A	0.157949E+03	N/A
1994	N/A	0.128630E+03	N/A
1995	0.209555E+03	0.183998E+03	0.130065E+00
1996	0.119121E+03	0.129227E+03	-0.814277E-01
1997	0.195348E+03	0.366027E+03	-0.627925E+00
1998	0.176496E+03	0.161363E+03	0.896428E-01
1999	0.561455E+02	0.123217E+03	-0.786000E+00
2000	0.348212E+03	0.175940E+03	0.682665E+00
2001	0.107646E+03	0.346305E+03	-0.116847E+01
2002	0.811446E+02	0.160640E+03	-0.682935E+00
2003	0.222260E+04	0.337349E+03	0.188531E+01
2004	0.212561E+03	0.129976E+03	0.491882E+00
2005	0.344250E+03	0.904246E+02	0.133685E+01
2006	0.239882E+03	0.196655E+03	0.198696E+00
2007	0.461732E+02	0.574644E+02	-0.218767E+00
2008	0.177999E+03	0.621027E+03	-0.124960E+01

Survey Index: 52 Tag: us5autpo AGE = 6  
 Time = JAN-1 Type = NUMBER  
 Catchability = 0.253043E+00 % Variance Contribution = 3.6646  
 Residual = LN(Observed) - LN(Predicted)

Year	Observed	Predicted	Residual
1978	N/A	0.319802E+03	N/A
1979	N/A	0.411024E+03	N/A
1980	N/A	0.573771E+03	N/A
1981	N/A	0.874135E+03	N/A
1982	N/A	0.164129E+03	N/A
1983	N/A	0.509981E+03	N/A

1984	N/A	0.322062E+03	N/A
1985	N/A	0.231859E+03	N/A
1986	N/A	0.424604E+03	N/A
1987	N/A	0.164292E+03	N/A
1988	N/A	0.122532E+03	N/A
1989	N/A	0.291749E+03	N/A
1990	N/A	0.161164E+03	N/A
1991	N/A	0.497729E+03	N/A
1992	N/A	0.210766E+03	N/A
1993	N/A	0.215765E+03	N/A
1994	N/A	0.477637E+02	N/A
1995	0.927563E+02	0.306029E+02	0.110888E+01
1996	0.739045E+02	0.933734E+02	-0.233833E+00
1997	0.815545E+02	0.682996E+02	0.177367E+00
1998	0.663911E+02	0.158581E+03	-0.870701E+00
1999	0.483589E+02	0.707124E+02	-0.379970E+00
2000	0.118985E+03	0.557327E+02	0.758429E+00
2001	0.418018E+02	0.100400E+03	-0.876222E+00
2002	0.745875E+02	0.180383E+03	-0.883112E+00
2003	0.161196E+03	0.744881E+02	0.771984E+00
2004	0.112564E+03	0.124863E+03	-0.103696E+00
2005	0.439192E+03	0.563041E+02	0.205417E+01
2006	0.353813E+02	0.555946E+02	-0.451902E+00
2007	0.170486E+03	0.109285E+03	0.444697E+00
2008	0.874290E+01	0.398186E+02	-0.151609E+01

Bootstrap Summary Report

Number of Bootstrap Repetitions Requested = 1000

Number of Bootstrap Repetitions Completed = 1000

Bootstrap Output Variable: Stock Estimates (2008)

	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. For NLLS Soln.
N 1	4875.	6694.	5979.	0.8932
N 2	5752.	6358.	2707.	0.4257
N 3	3852.	4065.	1293.	0.3181
N 4	970.	1003.	303.	0.3015
N 5	2930.	3019.	841.	0.2787
N 6	157.	165.	50.	0.3014
N 7	238.	251.	96.	0.3835
N 8	81.	85.	36.	0.4197

	Bias Estimate	Bias Std. Error	Per Cent Bias	NLLS Estimate Corrected For Bias	C.V. For Corrected Estimate
N 1	1819.	198.	37.3120	3056.	1.9565
N 2	606.	88.	10.5393	5146.	0.5260
N 3	214.	41.	5.5481	3638.	0.3555
N 4	33.	10.	3.4200	937.	0.3228
N 5	89.	27.	3.0394	2841.	0.2961
N 6	7.	2.	4.6315	150.	0.3306
N 7	13.	3.	5.5863	224.	0.4289
N 8	4.	1.	5.4608	76.	0.4682

	LOWER 80. % CI	UPPER 80. % CI
N 1	1954.	13428.
N 2	3484.	9918.
N 3	2596.	5739.
N 4	653.	1395.
N 5	2031.	4074.
N 6	108.	229.
N 7	138.	379.
N 8	44.	130.



Bootstrap Output Variable: Catchability Estimates

	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. For NLLS Soln.
Q 1	0.178394E-01	0.187930E-01	0.627300E-02	0.3338
Q 2	0.918544E-01	0.923297E-01	0.108349E-01	0.1174
Q 3	0.168705E+00	0.170720E+00	0.280406E-01	0.1642
Q 4	0.215614E+00	0.218945E+00	0.436434E-01	0.1993
Q 5	0.264241E+00	0.273535E+00	0.598480E-01	0.2188
Q 6	0.278657E+00	0.282841E+00	0.530001E-01	0.1874
Q 7	0.297561E+00	0.304346E+00	0.543058E-01	0.1784
Q 8	0.363074E+00	0.364229E+00	0.660452E-01	0.1813
Q 9	0.292985E-01	0.295983E-01	0.641135E-02	0.2166
Q 10	0.101150E+00	0.101495E+00	0.986629E-02	0.0972
Q 11	0.225276E+00	0.225825E+00	0.266989E-01	0.1182
Q 12	0.506259E+00	0.512075E+00	0.850898E-01	0.1662
Q 13	0.688799E+00	0.698933E+00	0.118738E+00	0.1699
Q 14	0.701770E+00	0.711636E+00	0.121819E+00	0.1712
Q 15	0.723118E+00	0.751632E+00	0.191788E+00	0.2552
Q 16	0.816798E+00	0.830399E+00	0.170318E+00	0.2051
Q 17	0.141338E-01	0.179475E-01	0.154487E-01	0.8608
Q 18	0.899870E-01	0.918702E-01	0.202105E-01	0.2200
Q 19	0.198731E+00	0.204879E+00	0.453433E-01	0.2213
Q 20	0.177261E+00	0.177987E+00	0.220123E-01	0.1237
Q 21	0.216299E+00	0.224095E+00	0.553287E-01	0.2469
Q 22	0.207689E+00	0.210823E+00	0.352334E-01	0.1671
Q 23	0.300243E+00	0.323287E+00	0.122228E+00	0.3781
Q 24	0.291472E+00	0.338867E+00	0.202053E+00	0.5963
Q 25	0.358799E-01	0.376050E-01	0.123109E-01	0.3274
Q 26	0.187587E+00	0.191192E+00	0.383436E-01	0.2006
Q 27	0.324684E+00	0.325478E+00	0.353214E-01	0.1085
Q 28	0.372132E+00	0.373357E+00	0.465633E-01	0.1247
Q 29	0.580779E+00	0.584819E+00	0.673329E-01	0.1151
Q 30	0.555873E+00	0.565143E+00	0.117326E+00	0.2076
Q 31	0.730017E+00	0.755580E+00	0.222638E+00	0.2947
Q 32	0.644843E-03	0.657234E-03	0.169703E-03	0.2582
Q 33	0.158633E-01	0.166693E-01	0.623586E-02	0.3741
Q 34	0.779414E-01	0.816357E-01	0.211843E-01	0.2595
Q 35	0.362628E+00	0.364545E+00	0.524685E-01	0.1439
Q 36	0.888325E+00	0.893783E+00	0.130016E+00	0.1455
Q 37	0.140774E+01	0.141534E+01	0.184223E+00	0.1302
Q 38	0.193422E+01	0.195304E+01	0.293137E+00	0.1501
Q 39	0.190133E+01	0.196087E+01	0.399811E+00	0.2039
Q 40	0.127804E-02	0.129603E-02	0.300947E-03	0.2322
Q 41	0.163752E-01	0.167592E-01	0.307154E-02	0.1833
Q 42	0.811005E-01	0.818014E-01	0.110507E-01	0.1351
Q 43	0.119082E+00	0.120320E+00	0.175370E-01	0.1458
Q 44	0.126944E+00	0.128267E+00	0.225092E-01	0.1755
Q 45	0.886514E-01	0.904213E-01	0.206588E-01	0.2285
Q 46	0.104097E+00	0.105532E+00	0.157620E-01	0.1494
Q 47	0.201548E-01	0.219539E-01	0.100801E-01	0.4591
Q 48	0.741493E-01	0.754117E-01	0.151957E-01	0.2015
Q 49	0.162972E+00	0.163349E+00	0.290142E-01	0.1776

Q 50	0.233271E+00	0.236413E+00	0.505131E-01	0.2137
Q 51	0.211986E+00	0.217195E+00	0.523856E-01	0.2412
Q 52	0.253043E+00	0.262837E+00	0.658035E-01	0.2504

	Bias Estimate	Bias Std. Error	Per Cent Bias	NLLS Estimate Corrected For Bias	C.V. For Corrected Estimate
Q 1	0.9536E-03	0.2007E-03	5.3453	0.1689E-01	0.3715
Q 2	0.4753E-03	0.3430E-03	0.5175	0.9138E-01	0.1186
Q 3	0.2015E-02	0.8890E-03	1.1946	0.1667E+00	0.1682
Q 4	0.3330E-02	0.1384E-02	1.5445	0.2123E+00	0.2056
Q 5	0.9294E-02	0.1915E-02	3.5171	0.2549E+00	0.2347
Q 6	0.4184E-02	0.1681E-02	1.5013	0.2745E+00	0.1931
Q 7	0.6786E-02	0.1731E-02	2.2805	0.2908E+00	0.1868
Q 8	0.1155E-02	0.2089E-02	0.3181	0.3619E+00	0.1825
Q 9	0.2997E-03	0.2030E-03	1.0231	0.2900E-01	0.2211
Q 10	0.3451E-03	0.3122E-03	0.3412	0.1008E+00	0.0979
Q 11	0.5493E-03	0.8445E-03	0.2438	0.2247E+00	0.1188
Q 12	0.5815E-02	0.2697E-02	1.1487	0.5004E+00	0.1700
Q 13	0.1013E-01	0.3768E-02	1.4713	0.6787E+00	0.1750
Q 14	0.9866E-02	0.3865E-02	1.4059	0.6919E+00	0.1761
Q 15	0.2851E-01	0.6132E-02	3.9432	0.6946E+00	0.2761
Q 16	0.1360E-01	0.5403E-02	1.6651	0.8032E+00	0.2121
Q 17	0.3814E-02	0.5032E-03	26.9833	0.1032E-01	1.4970
Q 18	0.1883E-02	0.6419E-03	2.0928	0.8810E-01	0.2294
Q 19	0.6147E-02	0.1447E-02	3.0934	0.1926E+00	0.2354
Q 20	0.7258E-03	0.6965E-03	0.4094	0.1765E+00	0.1247
Q 21	0.7796E-02	0.1767E-02	3.6042	0.2085E+00	0.2654
Q 22	0.3133E-02	0.1119E-02	1.5087	0.2046E+00	0.1722
Q 23	0.2304E-01	0.3933E-02	7.6749	0.2772E+00	0.4409
Q 24	0.4740E-01	0.6563E-02	16.2606	0.2441E+00	0.8278
Q 25	0.1725E-02	0.3931E-03	4.8079	0.3415E-01	0.3604
Q 26	0.3605E-02	0.1218E-02	1.9216	0.1840E+00	0.2084
Q 27	0.7940E-03	0.1117E-02	0.2446	0.3239E+00	0.1091
Q 28	0.1225E-02	0.1473E-02	0.3292	0.3709E+00	0.1255
Q 29	0.4040E-02	0.2133E-02	0.6956	0.5767E+00	0.1167
Q 30	0.9271E-02	0.3722E-02	1.6678	0.5466E+00	0.2146
Q 31	0.2556E-01	0.7087E-02	3.5017	0.7045E+00	0.3160
Q 32	0.1239E-04	0.5381E-05	1.9215	0.6325E-03	0.2683
Q 33	0.8060E-03	0.1988E-03	5.0809	0.1506E-01	0.4141
Q 34	0.3694E-02	0.6800E-03	4.7399	0.7425E-01	0.2853
Q 35	0.1917E-02	0.1660E-02	0.5286	0.3607E+00	0.1455
Q 36	0.5458E-02	0.4115E-02	0.6144	0.8829E+00	0.1473
Q 37	0.7601E-02	0.5831E-02	0.5400	0.1400E+01	0.1316
Q 38	0.1883E-01	0.9289E-02	0.9734	0.1915E+01	0.1530
Q 39	0.5954E-01	0.1278E-01	3.1314	0.1842E+01	0.2171
Q 40	0.1799E-04	0.9534E-05	1.4075	0.1260E-02	0.2388
Q 41	0.3840E-03	0.9789E-04	2.3450	0.1599E-01	0.1921
Q 42	0.7009E-03	0.3502E-03	0.8643	0.8040E-01	0.1374
Q 43	0.1238E-02	0.5560E-03	1.0399	0.1178E+00	0.1488
Q 44	0.1324E-02	0.7130E-03	1.0429	0.1256E+00	0.1792
Q 45	0.1770E-02	0.6557E-03	1.9965	0.8688E-01	0.2378
Q 46	0.1435E-02	0.5005E-03	1.3789	0.1027E+00	0.1535
Q 47	0.1799E-02	0.3238E-03	8.9262	0.1836E-01	0.5492

Q 48	0.1262E-02	0.4822E-03	1.7024	0.7289E-01	0.2085
Q 49	0.3777E-03	0.9176E-03	0.2318	0.1626E+00	0.1784
Q 50	0.3142E-02	0.1600E-02	1.3470	0.2301E+00	0.2195
Q 51	0.5210E-02	0.1665E-02	2.4576	0.2068E+00	0.2533
Q 52	0.9794E-02	0.2104E-02	3.8705	0.2432E+00	0.2705

	LOWER	UPPER
	80. % CI	80. % CI
Q 1	0.119738E-01	0.268905E-01
Q 2	0.787491E-01	0.106205E+00
Q 3	0.135282E+00	0.208162E+00
Q 4	0.166710E+00	0.276879E+00
Q 5	0.203211E+00	0.354625E+00
Q 6	0.218803E+00	0.351076E+00
Q 7	0.241163E+00	0.376140E+00
Q 8	0.284267E+00	0.450136E+00
Q 9	0.220487E-01	0.382057E-01
Q 10	0.891654E-01	0.113979E+00
Q 11	0.192796E+00	0.260044E+00
Q 12	0.409531E+00	0.630641E+00
Q 13	0.555093E+00	0.868470E+00
Q 14	0.565726E+00	0.881835E+00
Q 15	0.525975E+00	0.100552E+01
Q 16	0.625795E+00	0.105897E+01
Q 17	0.527488E-02	0.362726E-01
Q 18	0.675451E-01	0.119442E+00
Q 19	0.151073E+00	0.264704E+00
Q 20	0.151667E+00	0.207328E+00
Q 21	0.161290E+00	0.297728E+00
Q 22	0.169228E+00	0.257906E+00
Q 23	0.185918E+00	0.486119E+00
Q 24	0.144110E+00	0.577096E+00
Q 25	0.243866E-01	0.536093E-01
Q 26	0.145636E+00	0.242102E+00
Q 27	0.281805E+00	0.374254E+00
Q 28	0.316473E+00	0.434718E+00
Q 29	0.500193E+00	0.674773E+00
Q 30	0.428176E+00	0.724742E+00
Q 31	0.504484E+00	0.106412E+01
Q 32	0.450307E-03	0.895896E-03
Q 33	0.972364E-02	0.248184E-01
Q 34	0.569554E-01	0.110027E+00
Q 35	0.302125E+00	0.435224E+00
Q 36	0.731529E+00	0.106845E+01
Q 37	0.117973E+01	0.165983E+01
Q 38	0.159058E+01	0.233071E+01
Q 39	0.149533E+01	0.249015E+01
Q 40	0.931809E-03	0.169488E-02
Q 41	0.130108E-01	0.207385E-01
Q 42	0.679859E-01	0.963778E-01
Q 43	0.999247E-01	0.142363E+00
Q 44	0.100339E+00	0.158053E+00
Q 45	0.657883E-01	0.117191E+00
Q 46	0.873508E-01	0.126044E+00
Q 47	0.115838E-01	0.346139E-01
Q 48	0.573770E-01	0.959451E-01

Q 49	0.128922E+00	0.202014E+00
Q 50	0.177210E+00	0.303958E+00
Q 51	0.157548E+00	0.286259E+00
Q 52	0.185426E+00	0.355102E+00

Bootstrap Output Variable: Fishing Mortality (2007)

	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. For NLLS Soln.
AGE 1	0.0017	0.0018	0.000727	0.4096
AGE 2	0.1161	0.1200	0.034663	0.2889
AGE 3	0.3119	0.3232	0.081705	0.2528
AGE 4	0.3080	0.3172	0.074404	0.2345
AGE 5	0.3439	0.3520	0.086883	0.2468
AGE 6	0.3973	0.4208	0.140749	0.3345
AGE 7	0.1662	0.1848	0.079164	0.4283
AGE 8	0.3025	0.3192	0.065865	0.2063
AGE 9	0.3025	0.3192	0.065865	0.2063
AGE 10	0.3025	0.3192	0.065865	0.2063

	Bias Estimate	Bias Std. Error	Per Cent Bias	NLLS Estimate Corrected For Bias	C.V. For Corrected Estimate
AGE 1	0.000111	0.000023	6.6776	0.0016	0.4682
AGE 2	0.003842	0.001103	3.3082	0.1123	0.3087
AGE 3	0.011255	0.002608	3.6084	0.3006	0.2718
AGE 4	0.009239	0.002371	2.9997	0.2988	0.2490
AGE 5	0.008150	0.002760	2.3699	0.3357	0.2588
AGE 6	0.023443	0.004512	5.8998	0.3739	0.3764
AGE 7	0.018574	0.002571	11.1729	0.1477	0.5361
AGE 8	0.016722	0.002149	5.5282	0.2858	0.2305
AGE 9	0.016722	0.002149	5.5282	0.2858	0.2305
AGE 10	0.016722	0.002149	5.5282	0.2858	0.2305

	LOWER 80. % CI	UPPER 80. % CI
AGE 1	0.000962	0.002744
AGE 2	0.079354	0.167325
AGE 3	0.226352	0.433711
AGE 4	0.230071	0.417925
AGE 5	0.248083	0.468221
AGE 6	0.267313	0.606938
AGE 7	0.105918	0.284319
AGE 8	0.241887	0.406217
AGE 9	0.241887	0.406217
AGE 10	0.241887	0.406217

Bootstrap Output Variable: Average F (2007) AGES 5 - 8

	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. For NLLS Soln.
AVG F	0.3025	0.3192	0.065865	0.2063
N WTD	0.3446	0.3486	0.075233	0.2158
B WTD	0.3356	0.3403	0.074416	0.2187
C WTD	0.3597	0.3776	0.090018	0.2384

	Bias Estimate	Bias Std. Error	Per Cent Bias	NLLS Estimate Corrected For Bias	C.V. For Corrected Estimate
AVG F	0.016722	0.002149	5.5282	0.2858	0.2305
N WTD	0.003978	0.002382	1.1545	0.3406	0.2209
B WTD	0.004673	0.002358	1.3925	0.3309	0.2249
C WTD	0.017960	0.002903	4.9933	0.3417	0.2634

	LOWER 80. % CI	UPPER 80. % CI
AVG F	0.241887	0.406217
N WTD	0.257390	0.443835
B WTD	0.250281	0.437768
C WTD	0.273103	0.493857

Bootstrap Output Variable: Biomass

JAN-1 Biomass (2008) Mean Biomass & SSB (2007)

	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. For NLLS Soln.
JAN-1	27315.	29117.	4850.	0.1666
MEAN	25760.	26854.	3963.	0.1476
SSB	17672.	18172.	2716.	0.1494

	Bias Estimate	Bias Std. Error	Per Cent Bias	NLLS Estimate Corrected For Bias	C.V. For Corrected Estimate
JAN-1	1802.	164.	6.5972	25513.	0.1901
MEAN	1094.	130.	4.2465	24666.	0.1607
SSB	500.	87.	2.8292	17172.	0.1581

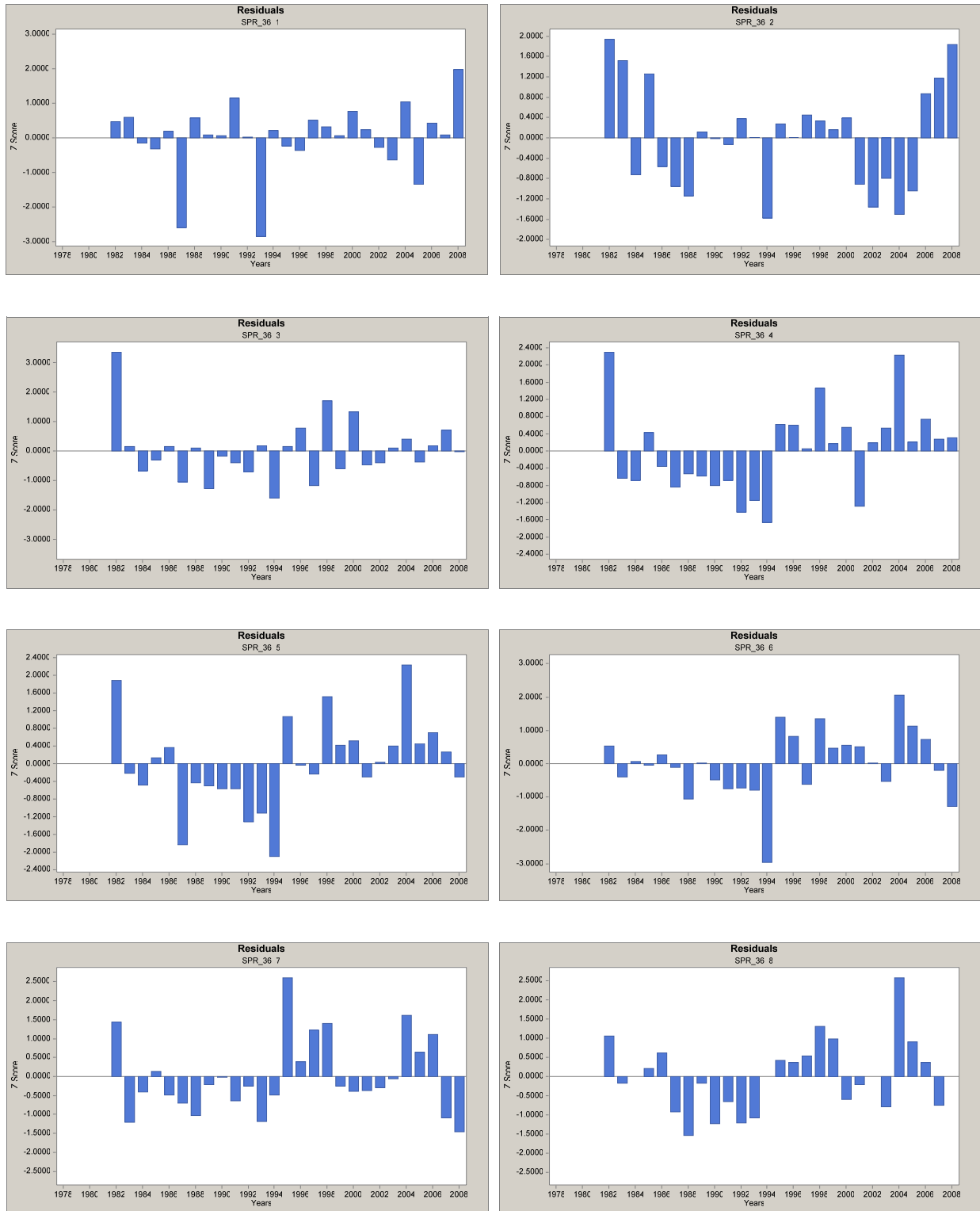
  

	LOWER 80. % CI	UPPER 80. % CI
JAN-1	22993.	35591.
MEAN	21852.	32188.
SSB	14956.	21655.

Plus Group Diagnostic Report

Calculation Method Selected = Backward

Year	Population Backward	Population Forward	F Forward	F Backward	Ratio
1978	44.	44.	0.308259	0.308259	1.000000
1979	127.	131.	0.345514	0.359798	1.041340
1980	37.	103.	0.164657	0.541372	3.287884
1981	173.	244.	0.353951	0.544585	1.538590
1982	192.	333.	0.327151	0.655849	2.004726
1983	288.	268.	0.613105	0.558734	0.911319
1984	283.	200.	1.129093	0.657374	0.582214
1985	182.	213.	0.614331	0.772297	1.257135
1986	76.	116.	0.306033	0.510817	1.669156
1987	75.	145.	0.219497	0.475565	2.166618
1988	105.	149.	0.488757	0.781517	1.598990
1989	54.	110.	0.240156	0.559488	2.329684
1990	88.	142.	0.372457	0.689139	1.850248
1991	47.	101.	0.330946	0.908106	2.743972
1992	19.	76.	0.162996	0.926066	5.681536
1993	34.	74.	0.376025	1.153756	3.068296
1994	9.	59.	0.109817	1.238415	11.277052
1995	3.	55.	0.028725	0.615929	21.442171
1996	1.	50.	0.006628	0.654373	98.725815
1997	7.	52.	0.086811	0.851678	9.810757
1998	6.	45.	0.072847	0.743661	10.208472
1999	7.	39.	0.100541	0.779848	7.756524
2000	3.	33.	0.034234	0.548413	16.019363
2001	3.	31.	0.047227	0.653113	13.829337
2002	13.	39.	0.204668	0.798154	3.899747
2003	5.	34.	0.100203	0.957827	9.558863
2004	10.	28.	0.215770	0.841706	3.900942
2005	8.	27.	0.165477	0.694653	4.197875
2006	8.	26.	0.152554	0.600590	3.936897
2007	4.	23.	0.054852	0.357014	6.508634
2008	20.	35.	N/A	N/A	

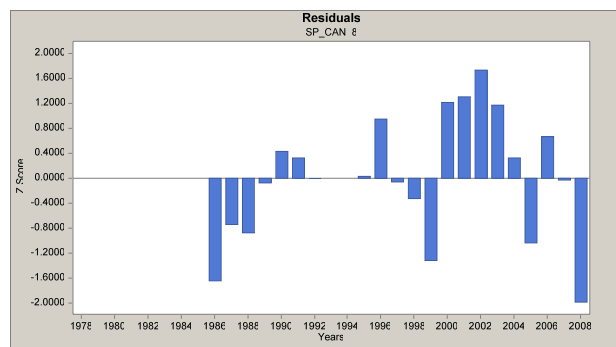
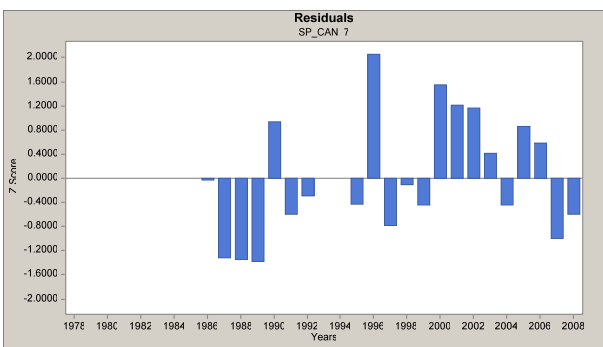
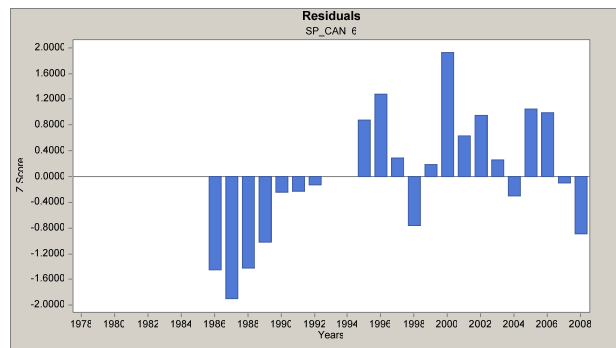
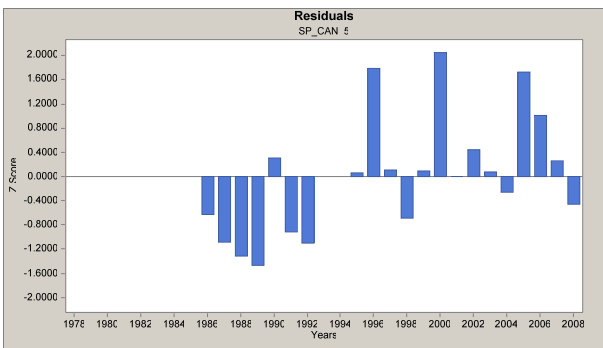
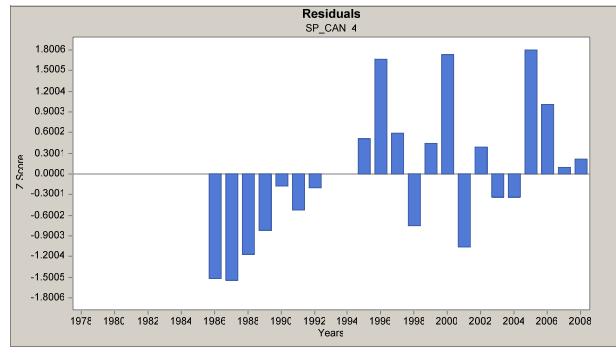
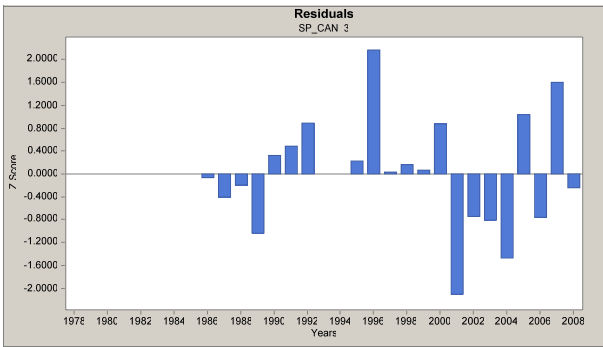
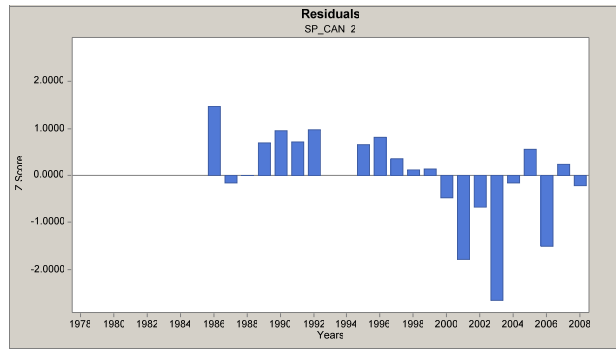
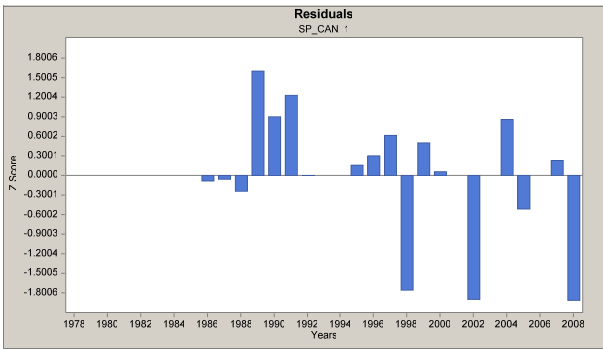


Appendix A. Figure A1a. Base VPA residuals for ages 1-8 for NEFSC spring survey, 1978-2008.

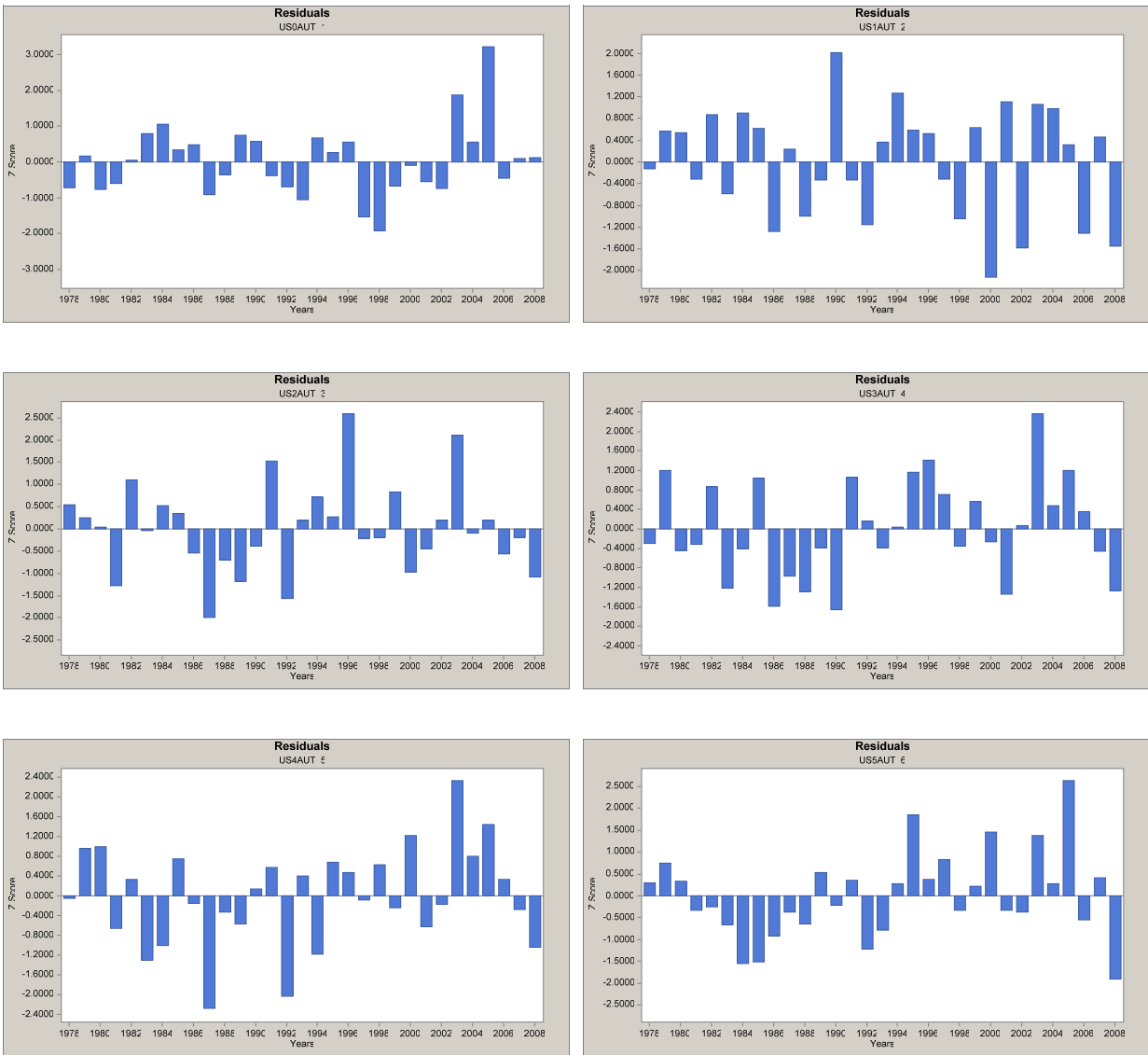


Appendix A. Figure A1b. Base VPA residuals for ages 1-8 for NEFSC spring survey, 1978-1981

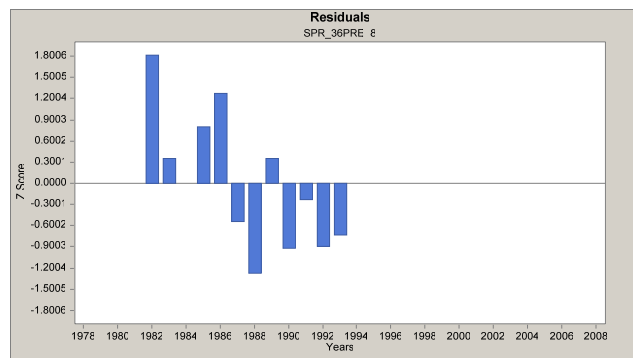
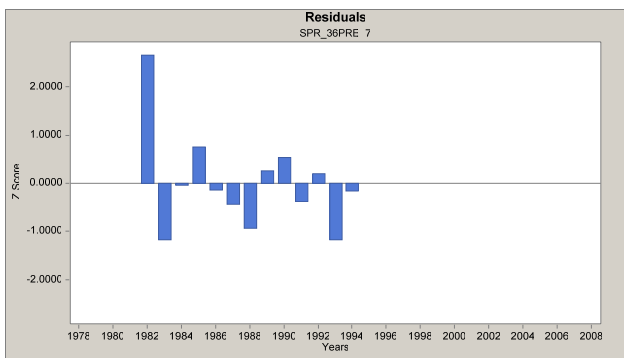
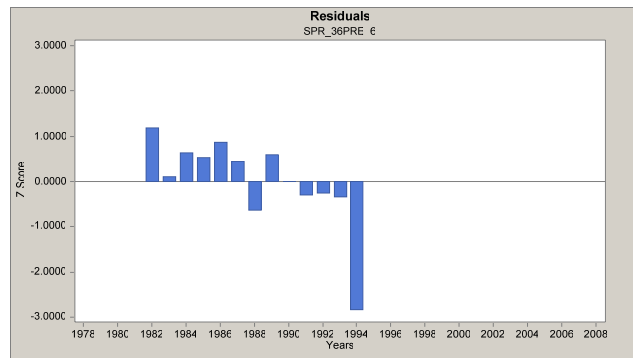
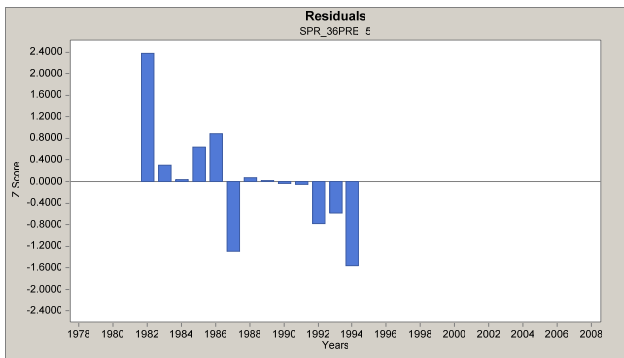
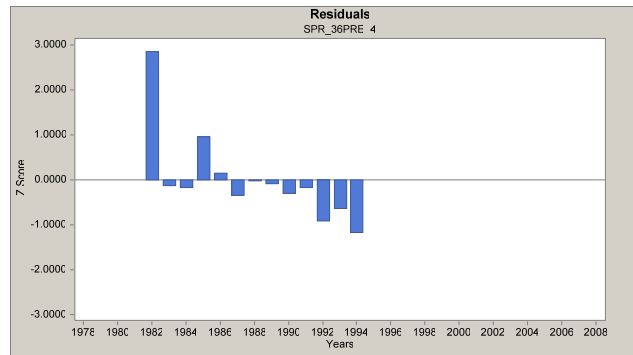
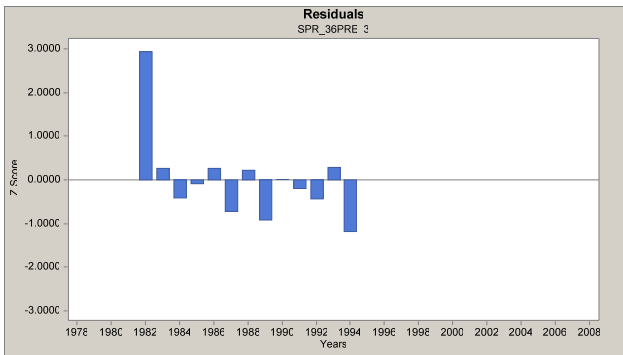
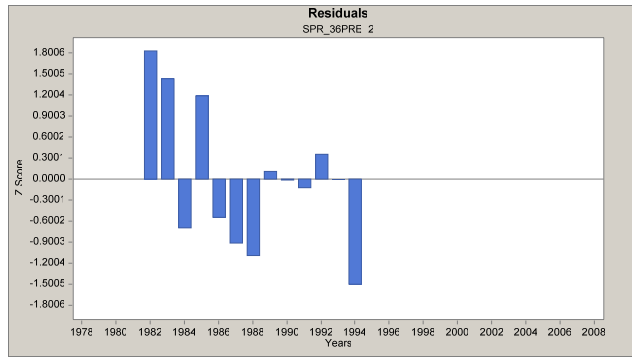
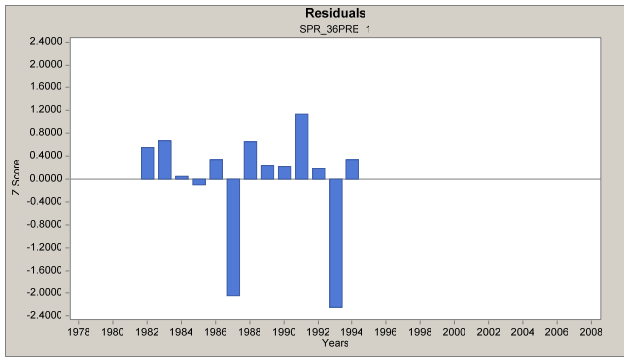




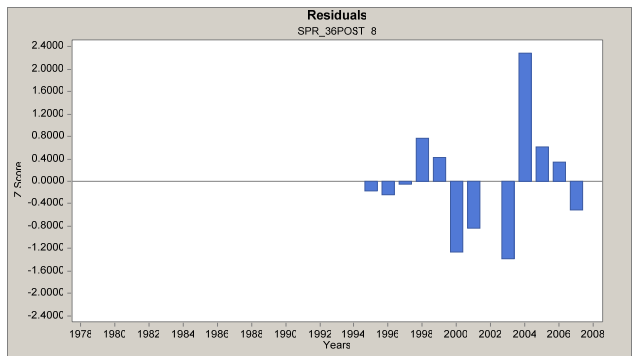
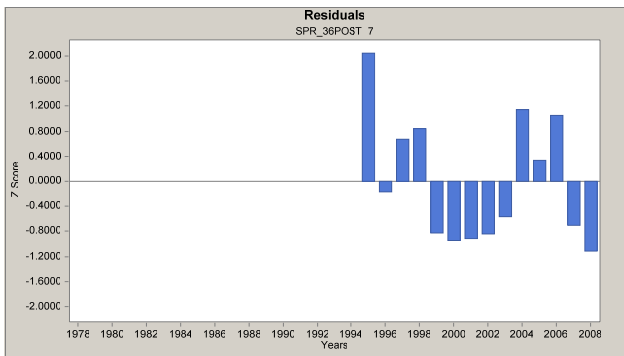
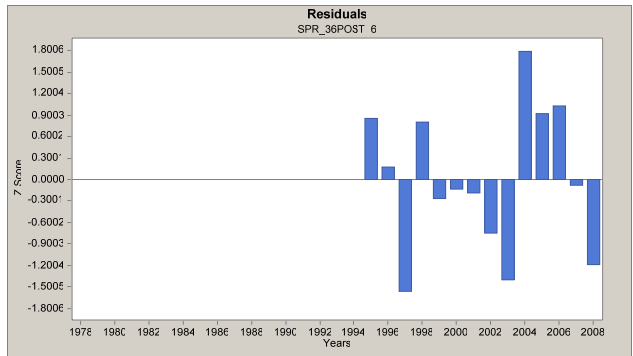
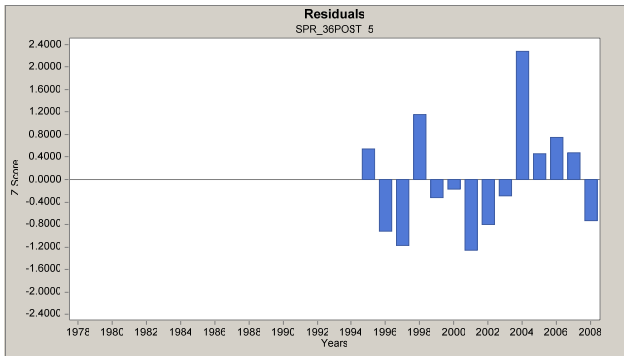
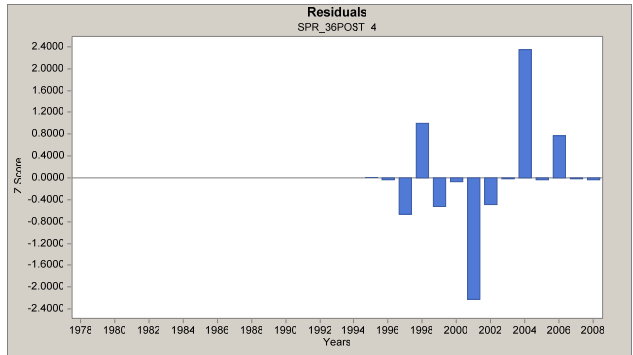
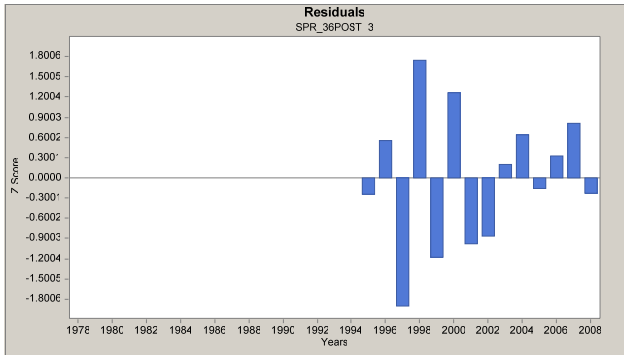
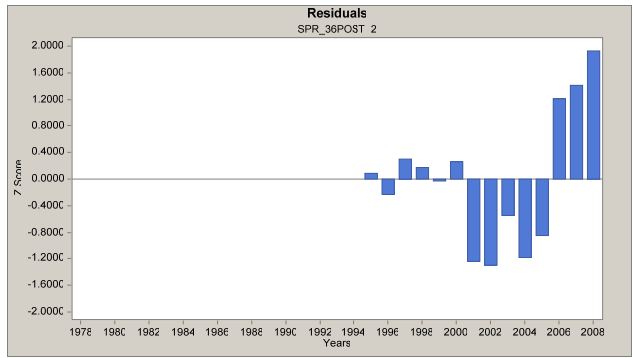
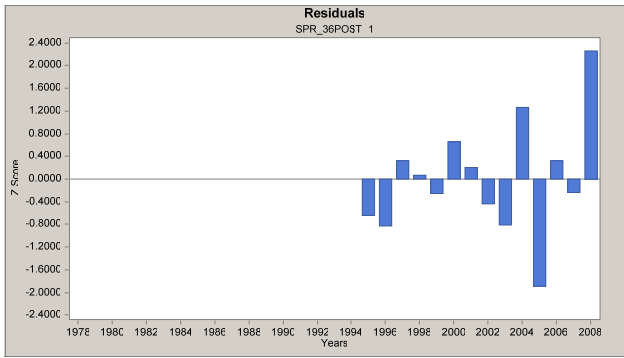
Appendix A. Figure A1c. Base VPA residuals for ages 1-8 for DFO spring survey, 1986-2008



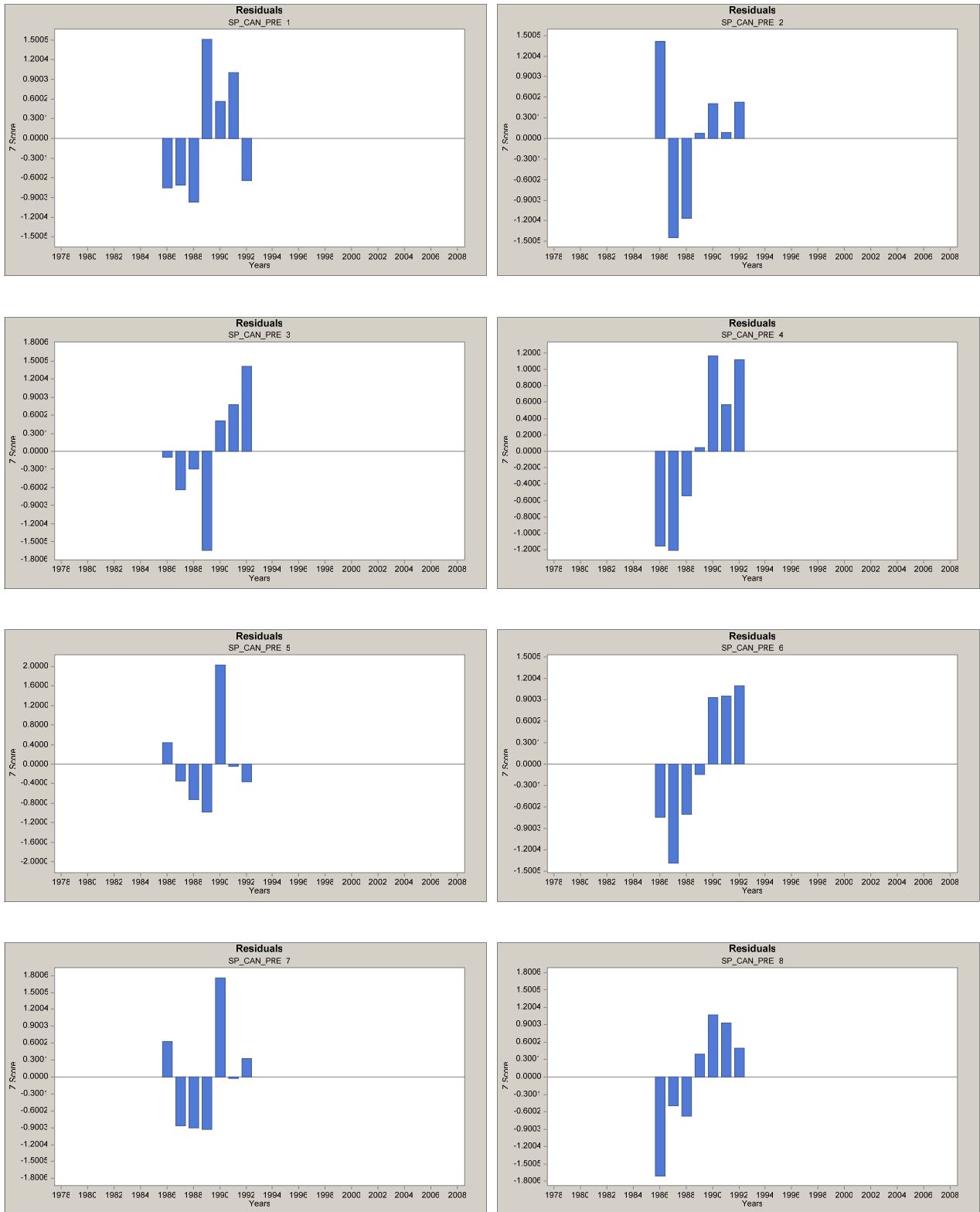
Appendix A. Figure A1d. Base VPA residuals for ages 1-6 for NEFSC autumn survey, 1978-2008.



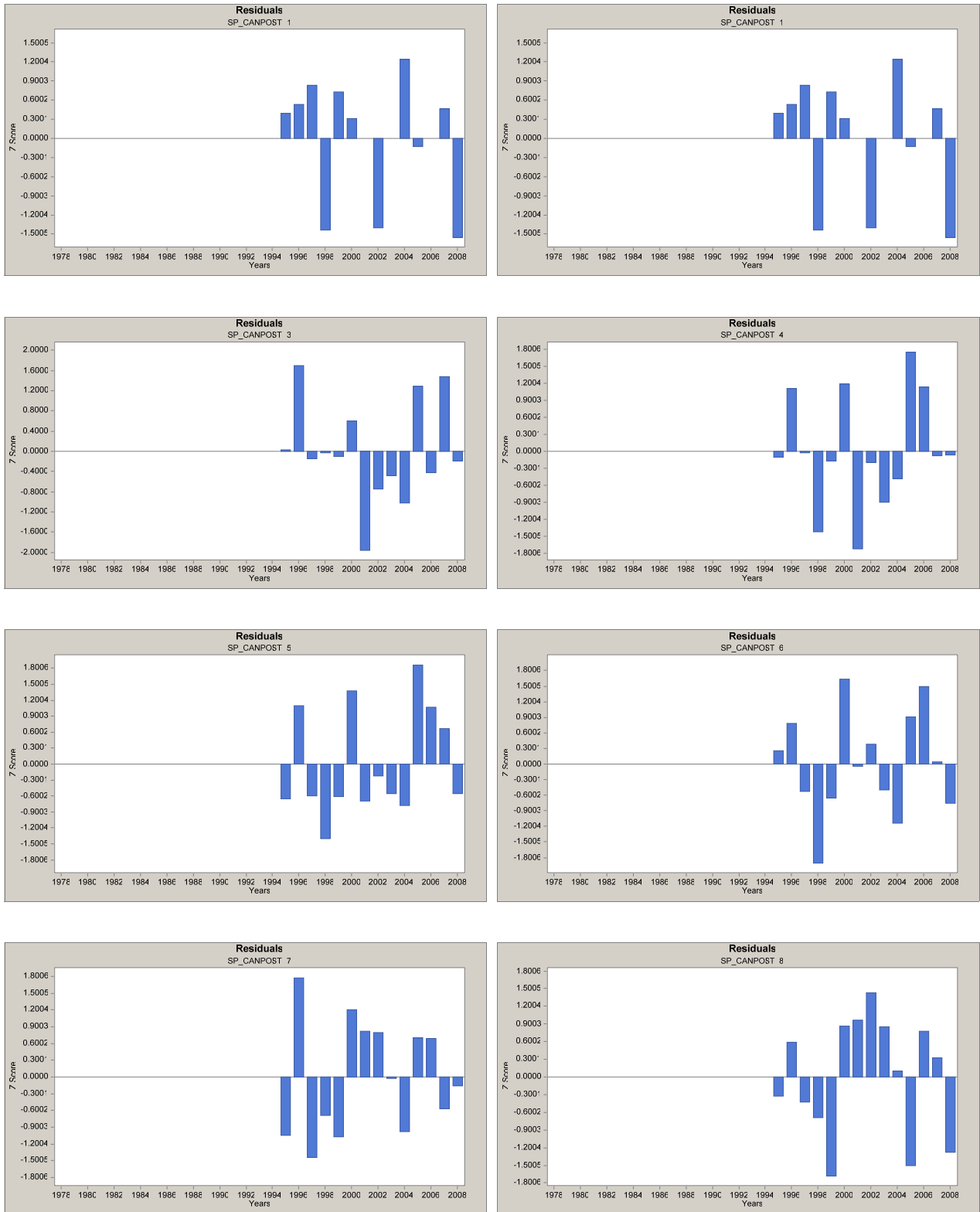
Appendix A. Figure A2a. Split survey VPA residual for ages 1-8 for NEFSC spring survey, 1982-1994.



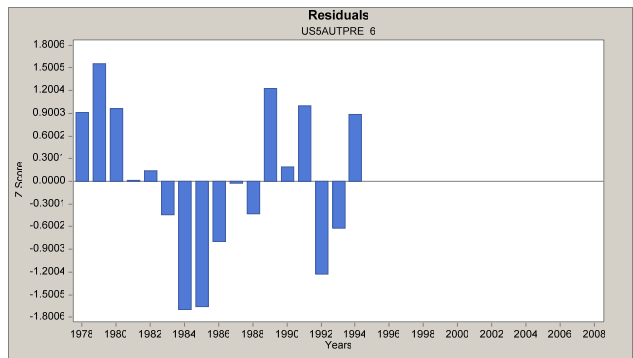
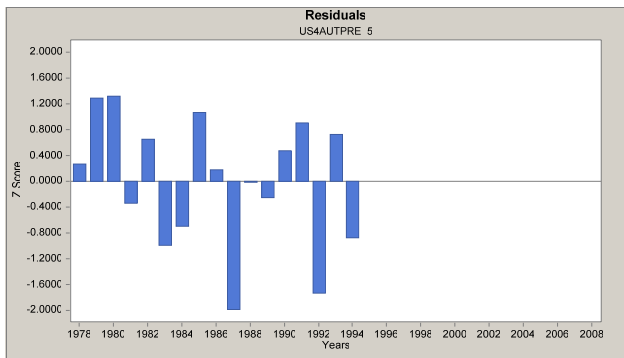
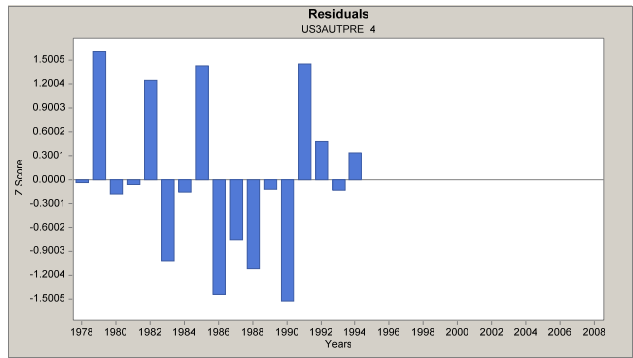
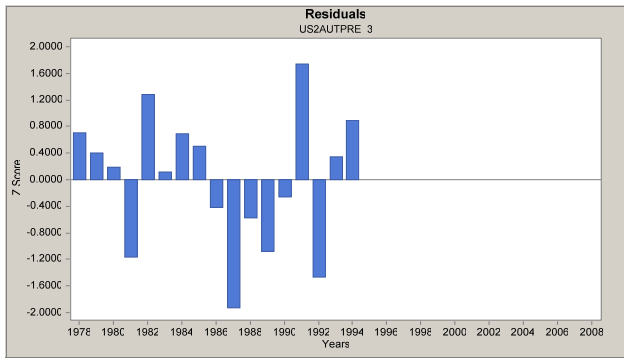
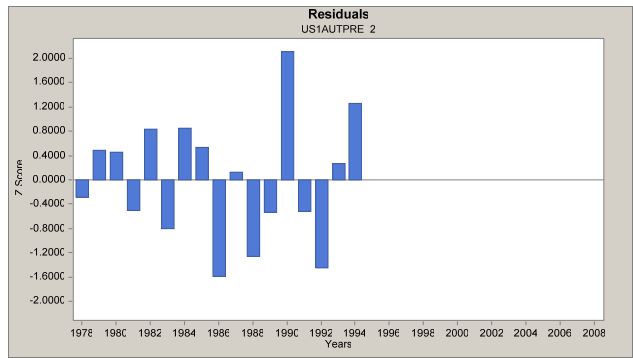
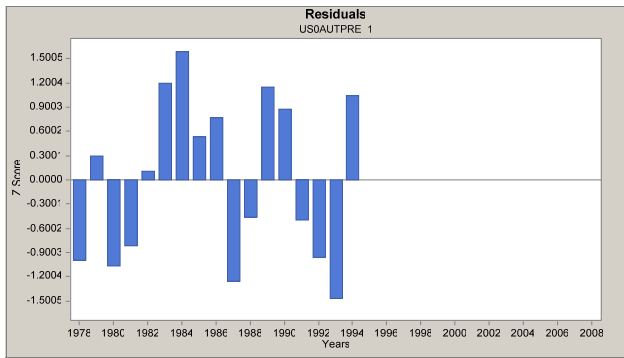
Appendix A. Figure A2b. Split survey VPA residual for ages 1-8 for NEFSC spring survey, 1995-2007.



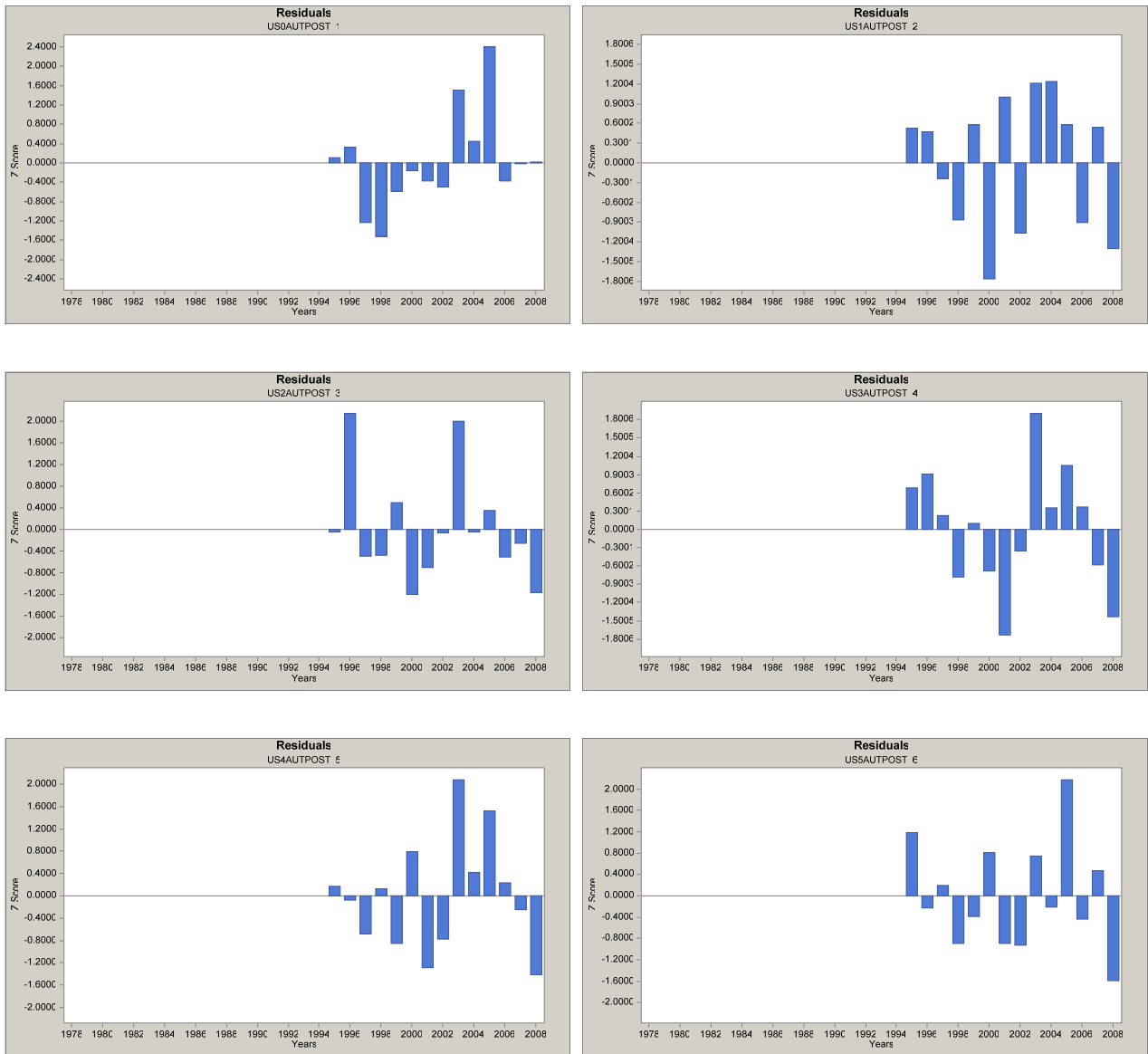
Appendix A. Figure A2c. Split survey VPA residual for ages 1-8 for DFO spring survey, 1986-1994.



Appendix A. Figure A2d. Split survey VPA residual for ages 1-8 for DFO spring survey, 1995-2007.

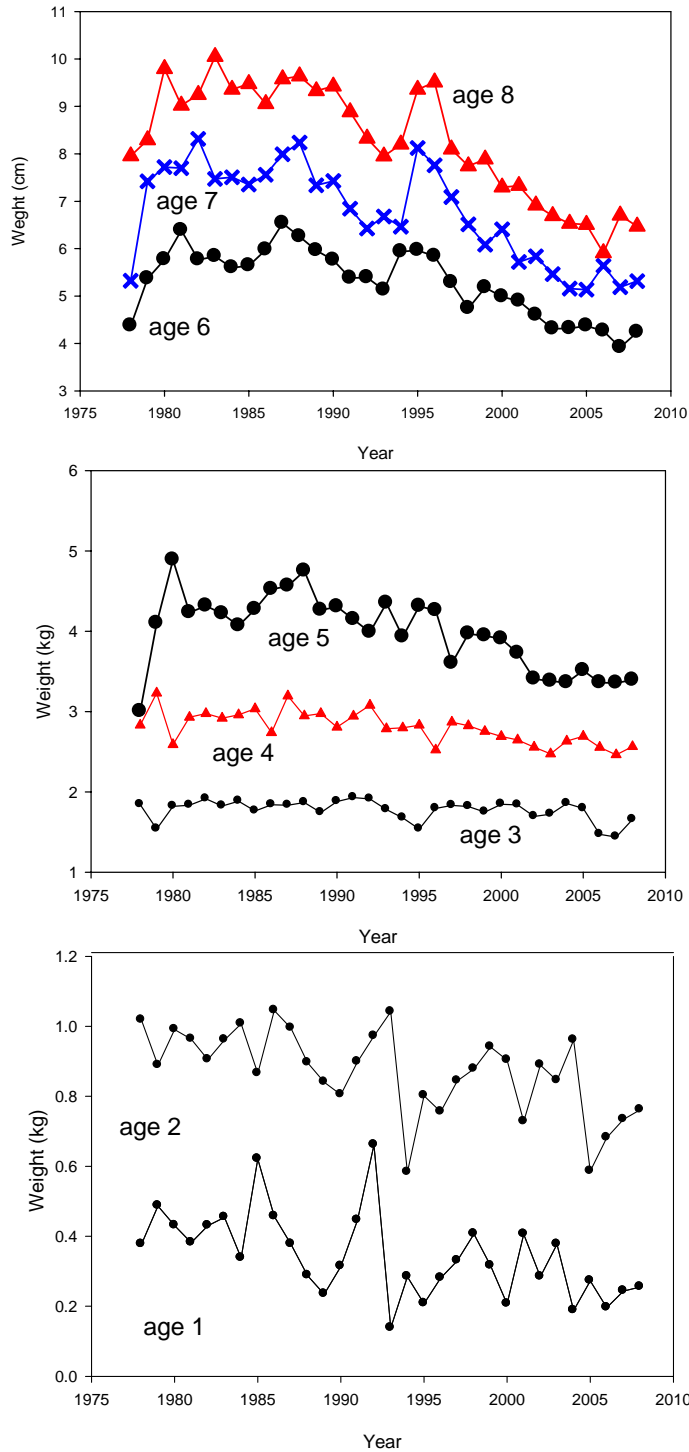


Appendix A. Figure A2e. Split survey VPA residual for ages 1-8 for NEFSC autumn survey, 1978-1994.

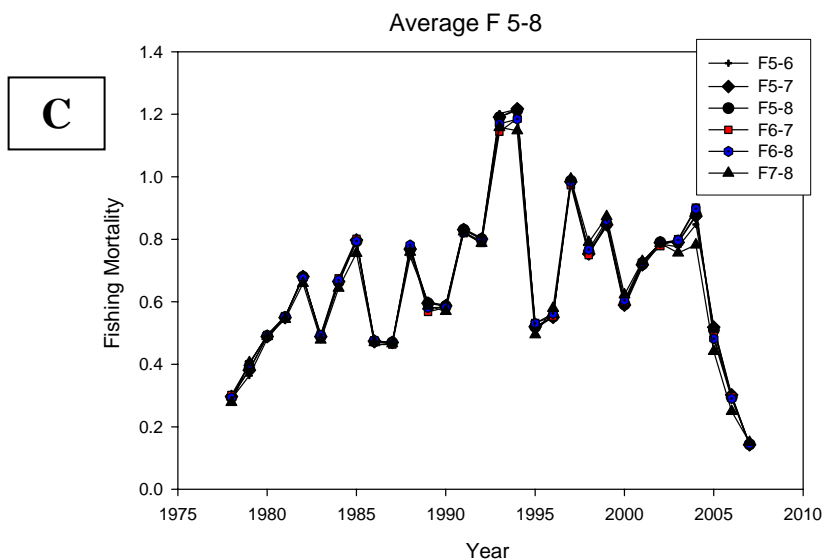
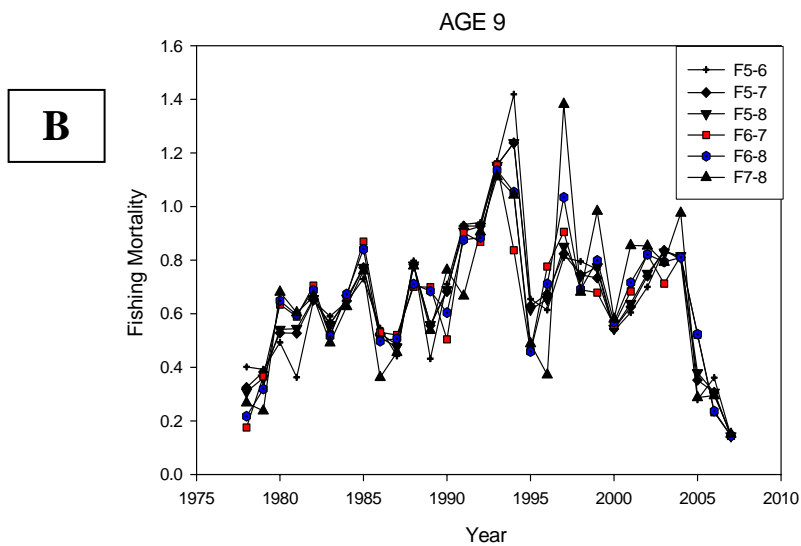
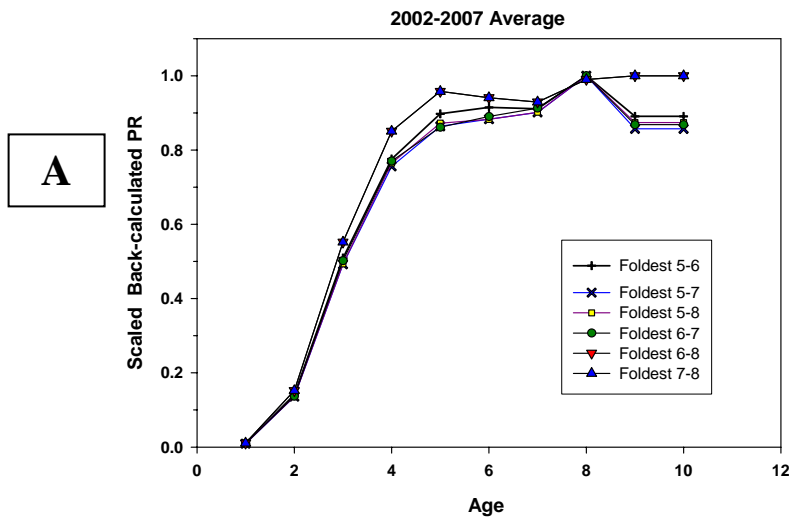


Appendix A. Figure A2f. Split survey VPA residual for ages 1-8 for NEFSC autumn survey, 1995-2007.

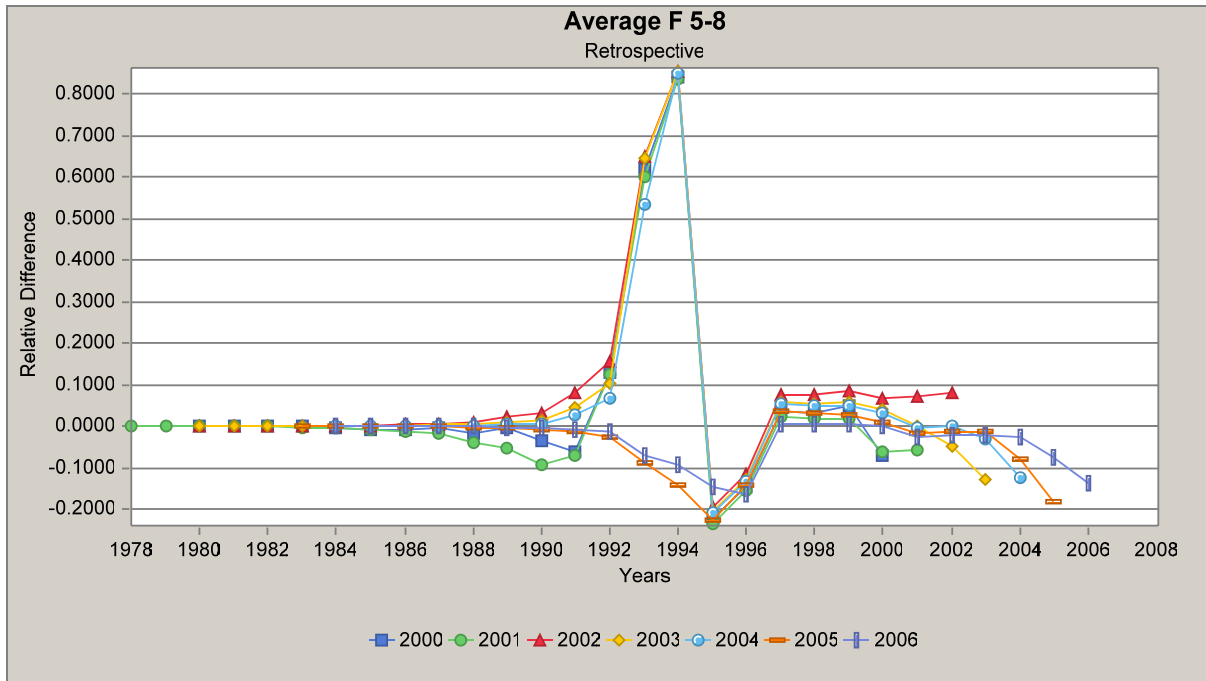




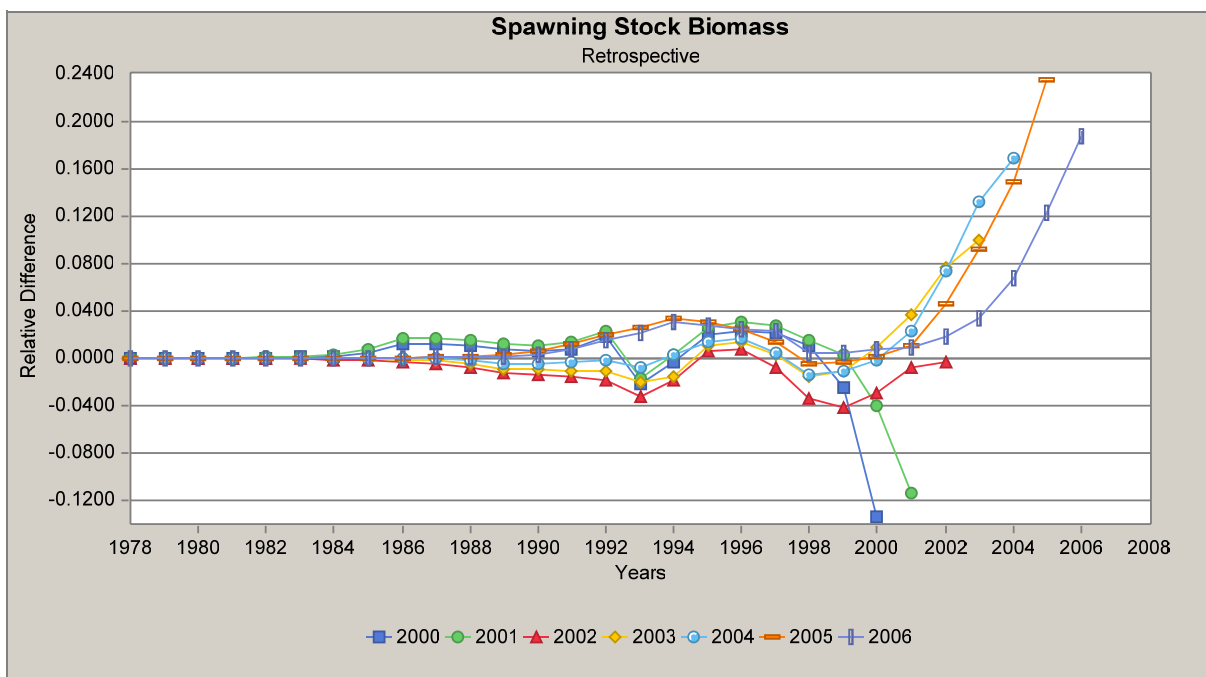
Appendix A. Figure A3. Stock mean weights for ages 1-8 for Georges Bank cod, 1978-2008, from revised August VPA.



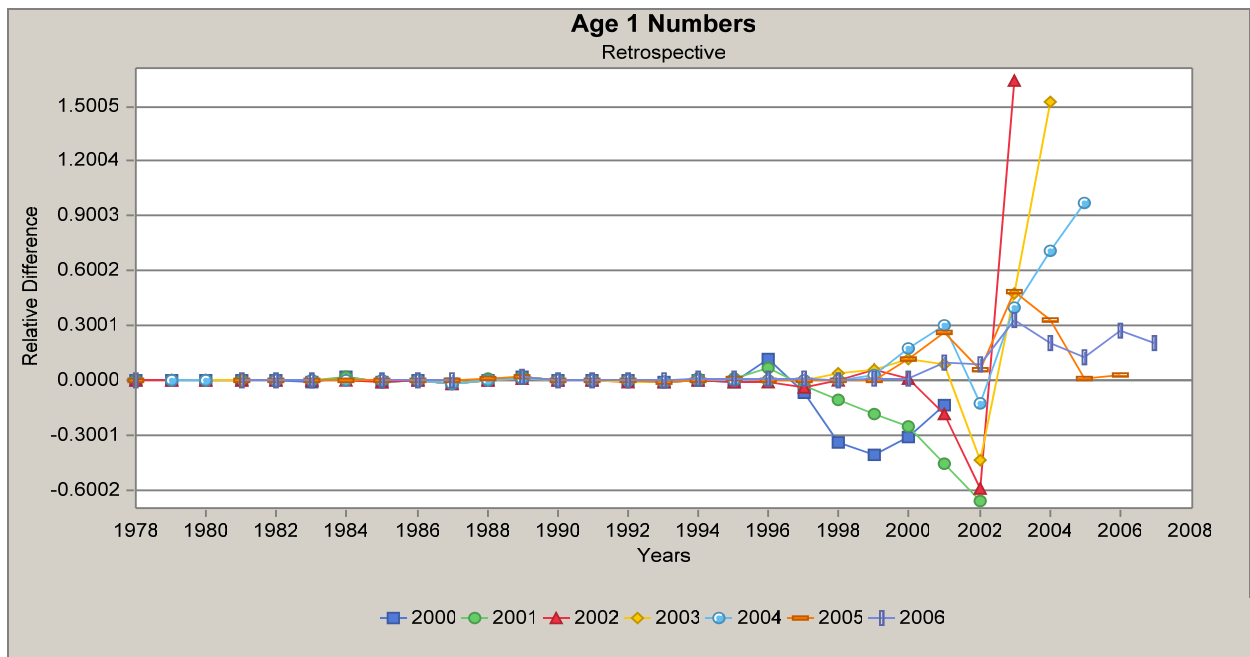
Appendix A. Figure A4. Sensitivity runs of BASE Model, with F on oldest age (9) estimated by averaging different age groups (5-6, 5-7, 5-8, 6-7, 6-8, and 7-8) and the effect on the partial recruitment (A), F on age 9 (B), and F averaged over ages 5-8 (C), for each scenario.



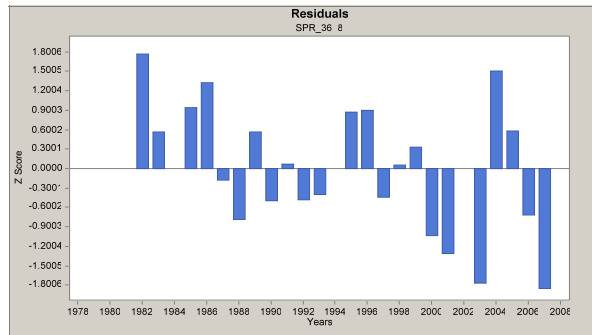
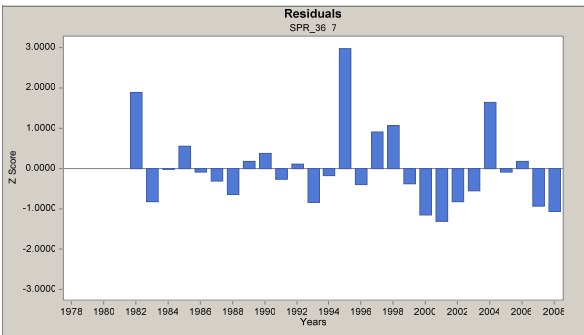
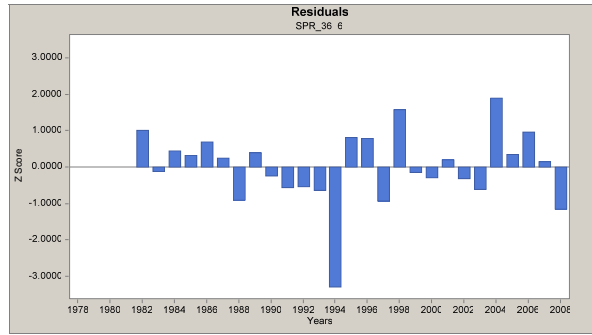
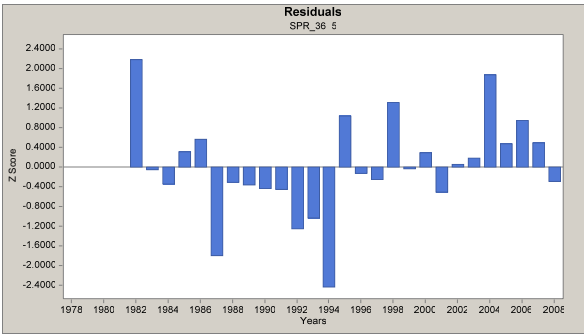
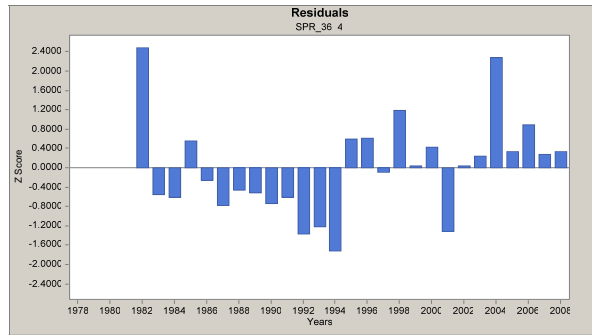
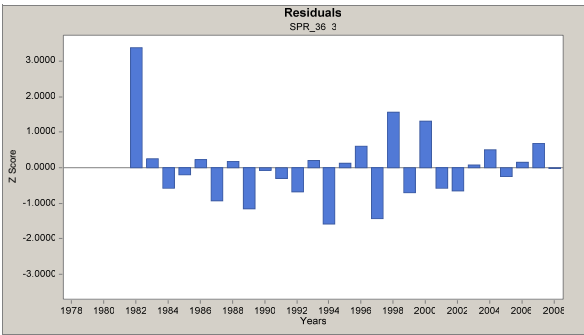
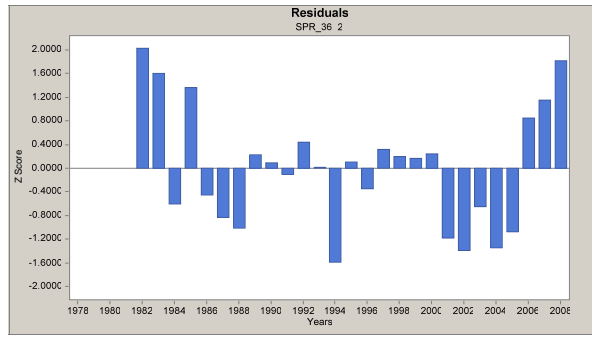
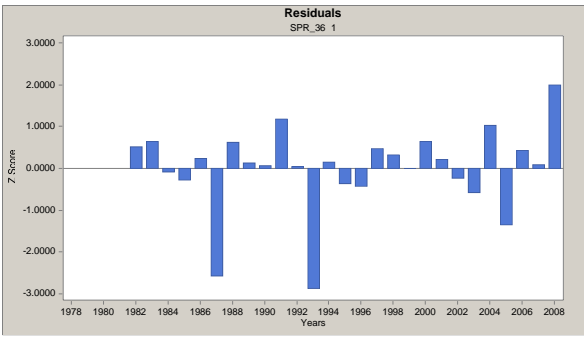
Appendix A. Figure A5a. Retrospective analysis of relative difference to terminal year 2007 of Georges Bank Atlantic cod fishing mortality (ages 5-8, unweighted), based on around the corner ADAPT VPA, 2000-2007.



Appendix A. Figure A5b. Retrospective analysis of relative difference to terminal year 2007 of Georges Bank Atlantic cod spawning stock biomass, based on around the corner ADAPT VPA, 2000-2007



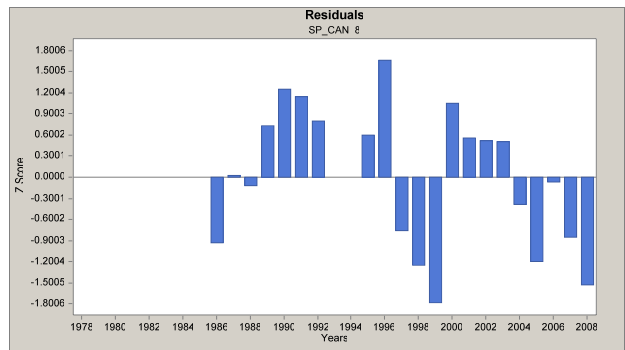
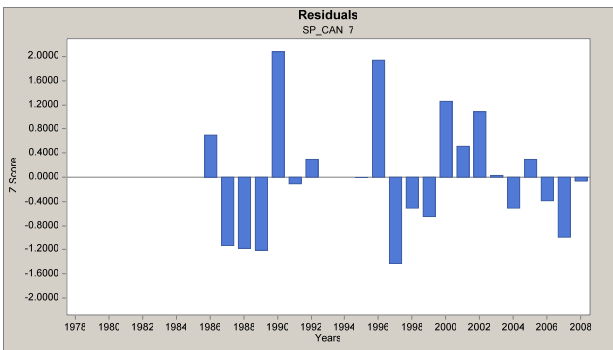
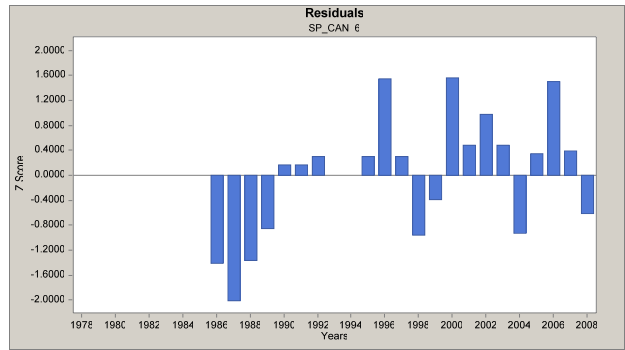
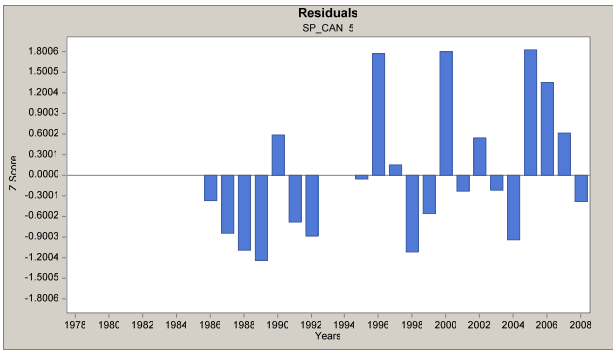
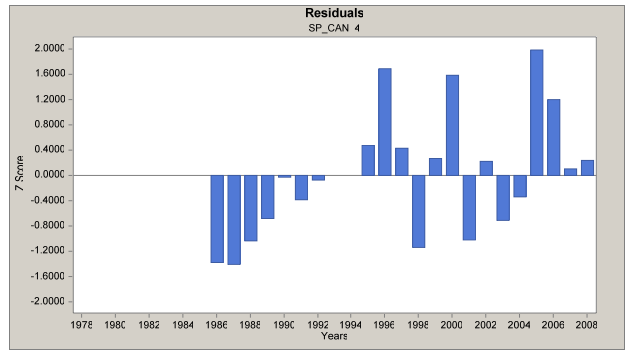
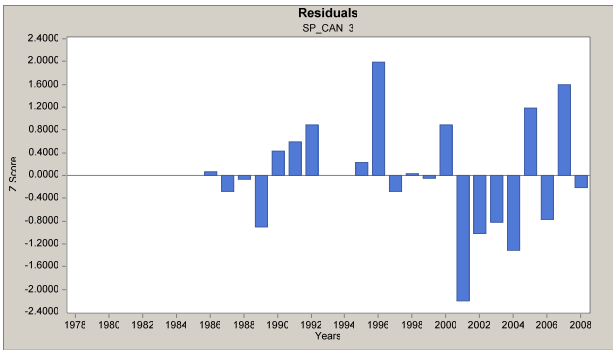
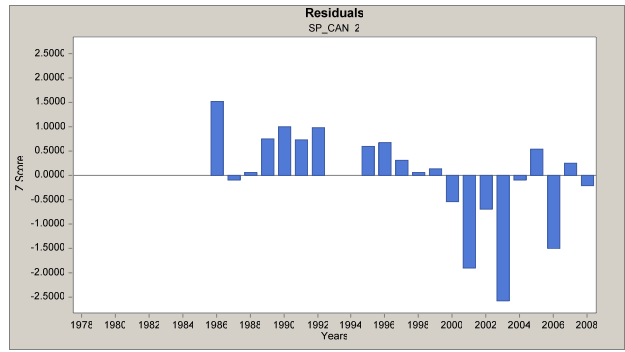
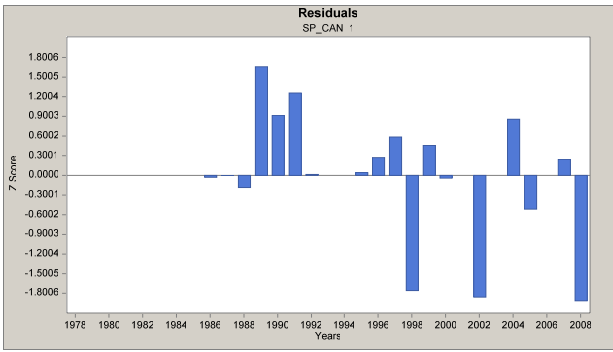
Appendix A. Figure A5c. Retrospective analysis of relative difference to terminal year 2007 of Georges Bank Atlantic cod age 1 recruitment based on around the corner ADAPT VPA, 2000-2007.



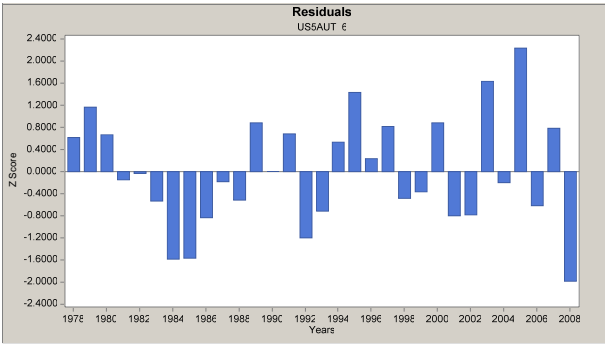
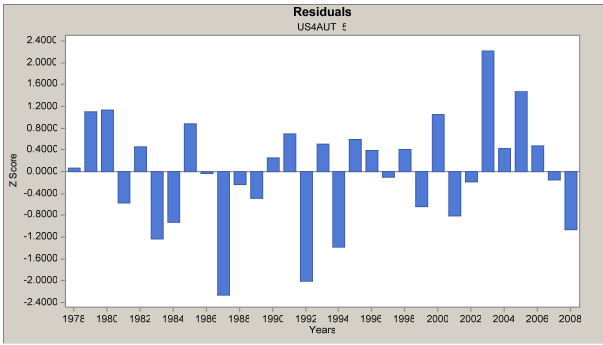
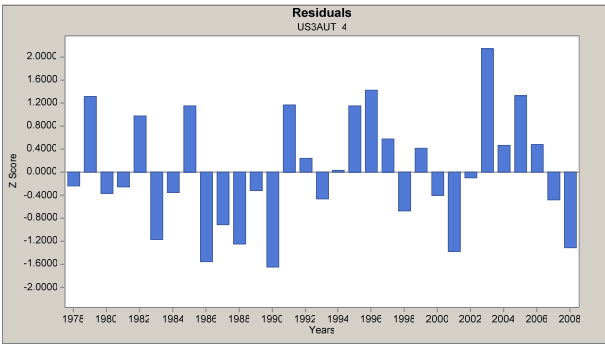
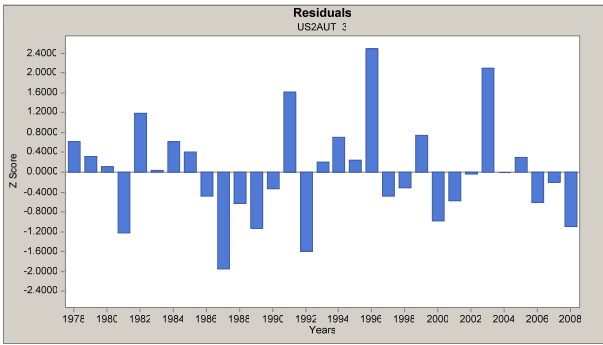
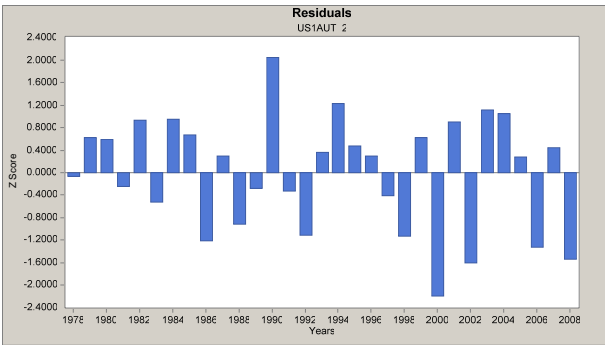
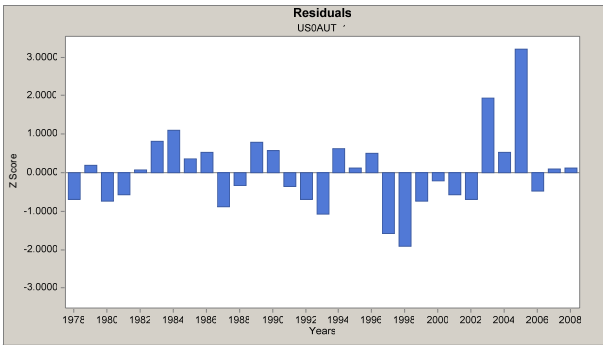
Appendix A. Figure A6a. Around the corner VPA residual for ages 1-8 for NEFSC spring survey, 1982-2008.



Appendix A. Figure A6b. Around the corner VPA residual for ages 1-8 for NEFSC spring survey, 1978-1981.



Appendix A. Figure A6c. Around the corner VPA residual for ages 1-8 for DFO spring survey, 1986-2008



Appendix A. Figure A6d. Around the corner VPA residual for ages 1-8 for NEFSC autumn survey, 1978-2008.