APPENDIX A3: GOODNESS OF FIT OF CSA (TABLES AND FIGURES)

APPENDIX A3 Table 1. Recruit abundance estimates (M = 0.25)

Year	NLLS Estimate	Bootstrap Mean	Bootstra Std Error	C.V. Bootstrap	10th Percentile	90th Percentile
1985	839	820	294.56	0.36	478	1213
1986	855	835	295.28	0.35	495	1217
1987	652	641	243.51	0.38	364	970
1988	510	511	204.92	0.40	276	788
1989	820	807	299.34	0.37	462	1196
1990	803	795	285.49	0.36	459	1186
1991	545	544	213.83	0.39	292	813
1992	406	408	166.62	0.41	226	634
1993	367	366	155.38	0.42	197	565
1994	559	553	211.77	0.38	312	848
1995	913	917	290.10	0.32	569	1296
1996	900	896	259.08	0.29	576	1231
1997	557	568	178.75	0.31	348	808
1998	479	475	136.65	0.29	307	658
1999	357	350	112.54	0.32	213	496
2000	263	263	96.38	0.37	154	393
2001	337	334	117.92	0.35	198	490
2002	265	267	111.80	0.42	143	410
2003	560	547	193.69	0.35	322	810
2004	421	427	175.12	0.41	233	652
2005	938	935	375.37	0.40	534	1427
2006	4330	4275	1609.19	0.38	2452	6432

APPENDIX A3 Table 2. Post-Recruit abundance estimates (M = 0.25)

Year	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. Bootstrap	10th Percentile	90th Percentile
1985	777	775	289.54	0.37	445	1168
1986	949	934	273.58	0.29	604	1289
1987	1089	1061	288.43	0.27	718	1438
1988	984	954	272.11	0.29	635	1309
1989	963	941	264.80	0.28	627	1287
1990	1140	1112	300.84	0.27	753	1519
1991	1126	1098	293.32	0.27	740	1488
1992	1021	999	263.05	0.26	691	1345
1993	881	866	239.67	0.28	586	1178
1994	801	789	221.08	0.28	529	1087
1995	822	808	235.44	0.29	534	1129
1996	816	808	254.64	0.32	492	1140
1997	643	635	188.89	0.30	399	878
1998	322	325	124.62	0.38	182	490
1999	300	299	109.08	0.36	173	444
2000	324	318	103.80	0.33	196	458
2001	275	270	96.56	0.36	156	395
2002	353	347	117.09	0.34	211	499
2003	442	439	130.38	0.30	292	611
2004	681	668	185.97	0.28	447	919
2005	684	679	205.52	0.30	433	946
2006	1058	1052	347.33	0.33	660	1512
2007	4052	4005	1316.26	0.33	2521	5738

APPENDIX A3 Table 3. Recruit abundance estimates (M = 0.60)

Year	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. Bootstrap	10th Percentile	90th Percentile
1985	4238.72	4428.23	3646.27	0.82	1702.56	7908.18
1986	4898.39	5126.95	4279.63	0.83	2024.86	9462.34
1987	3670.55	3795.23	3207.39	0.85	1456.95	6723.02
1988	2767.83	2970.77	2605.99	0.88	1072.24	5388.80
1989	5049.27	5280.75	4474.42	0.85	2048.53	9311.49
1990	4988.84	5239.37	4460.73	0.85	2071.90	9041.27
1991	3141.33	3288.46	2841.46	0.86	1223.68	5880.25
1992	2182.50	2321.71	2046.26	0.88	897.40	4159.60
1993	1853.13	1953.96	1729.16	0.88	692.31	3574.57
1994	2650.96	2762.13	2338.27	0.85	1104.13	4920.22
1995	3430.78	3576.86	2745.81	0.77	1568.28	6260.25
1996	2798.98	2845.07	1919.47	0.67	1351.35	4775.03
1997	1597.03	1694.55	1321.46	0.78	724.53	3031.82
1998	1690.26	1756.19	1349.20	0.77	767.93	3007.46
1999	1488.19	1540.50	1240.52	0.81	626.92	2705.96
2000	1111.27	1178.28	936.20	0.79	452.64	2136.91
2001	1757.00	1880.87	1697.51	0.90	738.74	3375.96
2002	1419.33	1530.07	1416.07	0.93	551.57	2765.84
2003	3005.73	3138.17	2645.99	0.84	1248.40	5526.67
2004	2097.38	2273.75	2056.47	0.90	806.31	4017.99
2005	4906.28	5225.31	4881.67	0.93	1992.26	9484.87
2006	23210.70	24490.90	20847.30	0.85	9173.79	43883.00
2007	28286.10	28915.30	22739.00	0.79	13692.60	50165.40

APPENDIX A3 Table 4. Post-Recruit abundance estimates (M = 0.60)

Year	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. Bootstrap	10th Percentile	90th Percentile
1985	3877.66	4162.36	3671.46	0.88	1535.93	7657.24
1986	4197.65	4468.20	3712.98	0.83	1822.60	8014.88
1987	4729.13	5013.58	4135.99	0.82	2074.61	8922.21
1988	4300.52	4537.51	3805.79	0.84	1842.66	8257.32
1989	3712.84	3960.93	3368.35	0.85	1613.33	7093.25
1990	4602.19	4873.64	4122.01	0.85	1969.63	8782.58
1991	4941.78	5241.18	4491.13	0.86	2131.77	9117.56
1992	4202.98	4457.38	3796.79	0.85	1850.14	7862.35
1993	3313.43	3537.10	3069.11	0.87	1434.43	6313.46
1994	2693.66	2877.44	2522.74	0.88	1157.71	5174.66
1995	2736.52	2906.31	2549.99	0.88	1181.29	5105.76
1996	2938.75	3130.36	2730.21	0.87	1255.78	5567.70
1997	2571.36	2725.76	2370.29	0.87	1081.30	4926.54
1998	1775.25	1935.27	1902.57	0.98	646.18	3680.45
1999	1631.26	1766.48	1684.95	0.95	618.57	3379.26
2000	1555.73	1665.01	1531.71	0.92	620.75	3032.61
2001	1311.77	1414.73	1275.99	0.90	505.23	2644.25
2002	1581.68	1710.29	1560.96	0.91	638.30	3152.76
2003	1614.62	1747.26	1552.90	0.89	695.80	3061.64
2004	2452.89	2601.67	2214.58	0.85	1079.55	4654.91
2005	2352.63	2536.88	2236.13	0.88	1005.88	4497.34
2006	3813.38	4096.41	3773.41	0.92	1617.87	7356.06
2007	14711.80	15574.40	13202.10	0.85	6081.03	27822.50

APPENDIX A3 Table 5. Estimates of Fishing Mortality (M = 0.25)

Year	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. Bootstrap	10th Percentile	90th Percentile
1985	0.28	0.30	0.08	0.26	0.21	0.41
1986	0.26	0.28	0.07	0.25	0.20	0.36
1987	0.32	0.35	0.09	0.25	0.25	0.46
1988	0.19	0.21	0.05	0.26	0.14	0.28
1989	0.20	0.21	0.05	0.25	0.15	0.28
1990	0.30	0.32	0.08	0.24	0.23	0.42
1991	0.24	0.26	0.06	0.24	0.19	0.34
1992	0.23	0.25	0.06	0.25	0.18	0.33
1993	0.19	0.21	0.05	0.26	0.15	0.28
1994	0.25	0.27	0.07	0.27	0.19	0.37
1995	0.50	0.54	0.14	0.26	0.39	0.73
1996	0.73	0.77	0.17	0.22	0.58	1.00
1997	1.06	1.12	0.27	0.24	0.81	1.47
1998	0.73	0.78	0.20	0.26	0.55	1.05
1999	0.46	0.50	0.13	0.26	0.34	0.67
2000	0.51	0.56	0.16	0.28	0.38	0.77
2001	0.30	0.33	0.10	0.29	0.22	0.46
2002	0.08	0.09	0.03	0.28	0.06	0.13
2003	0.14	0.15	0.04	0.26	0.10	0.20
2004	0.23	0.25	0.07	0.28	0.17	0.34
2005	0.18	0.19	0.06	0.30	0.13	0.27
2006	0.03	0.04	0.01	0.32	0.02	0.06

APPENDIX A3 Table 6. Estimates of Fishing Mortality (M = 0.60)

Year	NLLS Estimate	Bootstrap Mean	Bootstrap Std Error	C.V. Bootstrap	10th Percentile	90th Percentile
1985	0.06	0.07	0.04	0.53	0.03	0.12
1986	0.05	0.06	0.03	0.53	0.02	0.11
1987	0.07	0.08	0.04	0.54	0.03	0.14
1988	0.04	0.05	0.03	0.54	0.02	0.09
1989	0.04	0.05	0.03	0.54	0.02	0.09
1990	0.06	0.07	0.04	0.53	0.03	0.13
1991	0.05	0.06	0.03	0.53	0.02	0.11
1992	0.06	0.07	0.03	0.53	0.02	0.11
1993	0.05	0.06	0.03	0.54	0.02	0.10
1994	0.07	0.08	0.04	0.54	0.03	0.14
1995	0.14	0.17	0.09	0.52	0.06	0.28
1996	0.20	0.24	0.12	0.50	0.09	0.38
1997	0.25	0.31	0.17	0.55	0.10	0.53
1998	0.15	0.19	0.10	0.56	0.06	0.33
1999	0.10	0.12	0.06	0.55	0.04	0.20
2000	0.11	0.13	0.08	0.56	0.04	0.23
2001	0.06	0.08	0.04	0.56	0.03	0.13
2002	0.02	0.02	0.01	0.54	0.01	0.04
2003	0.03	0.04	0.02	0.53	0.01	0.07
2004	0.06	0.07	0.04	0.55	0.03	0.12
2005	0.04	0.05	0.03	0.56	0.02	0.09
2006	0.01	0.01	0.01	0.57	0.00	0.02
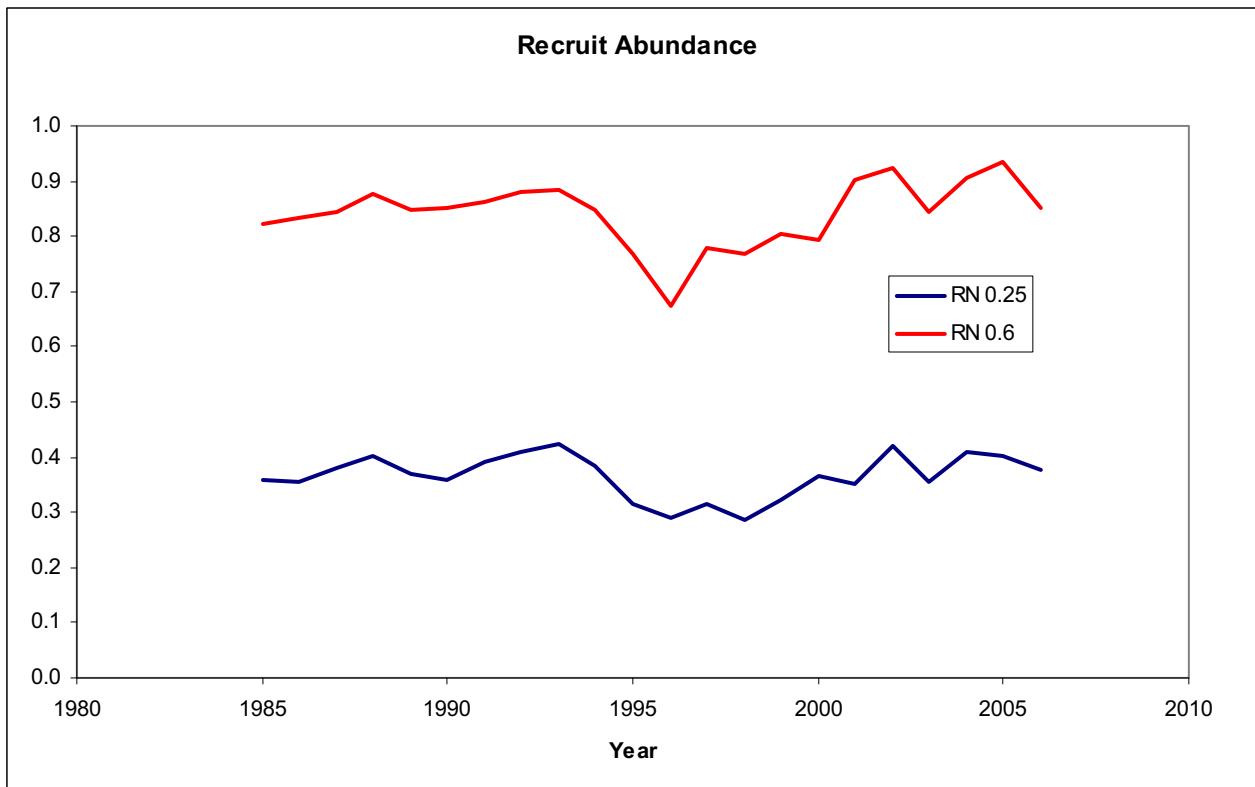
APPENDIX A3 Figure 1. CVs of recruitment abundance from CSA
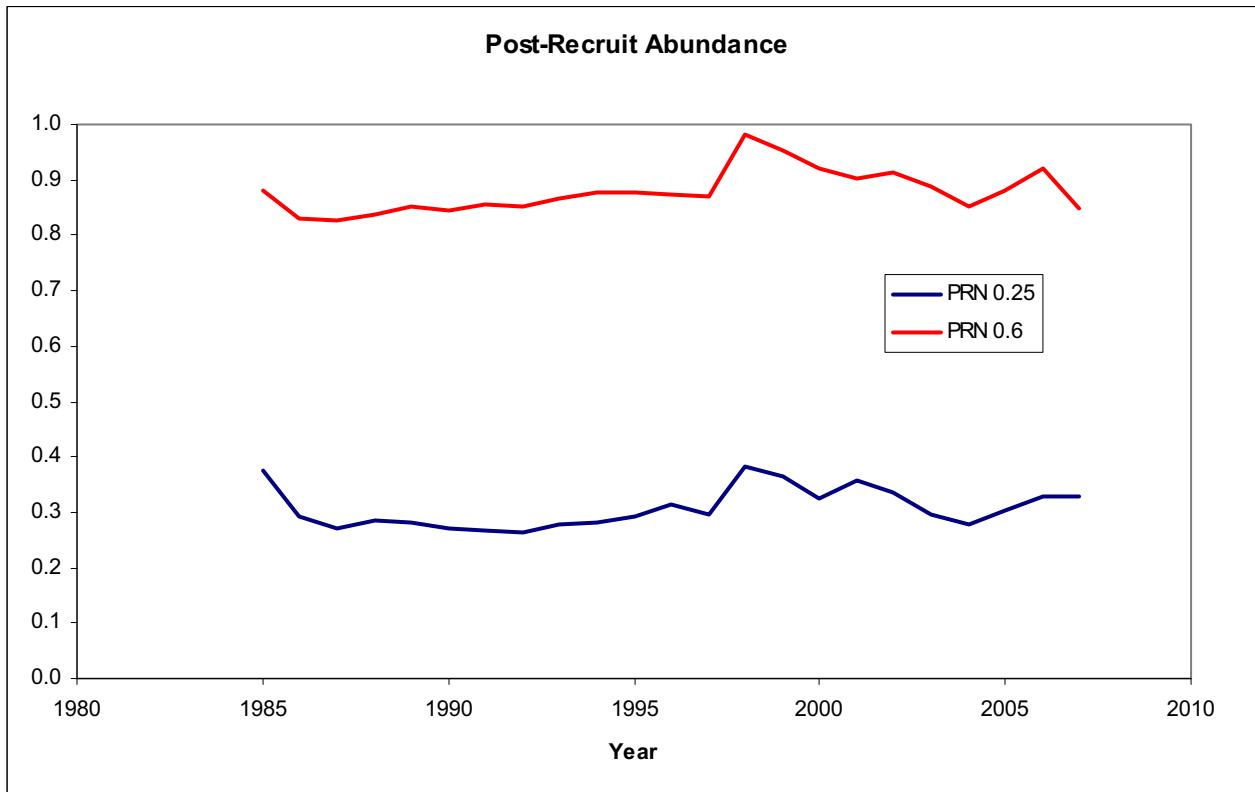
APPENDIX A3 Figure 2. CVs of post-recruit abundance from CSA
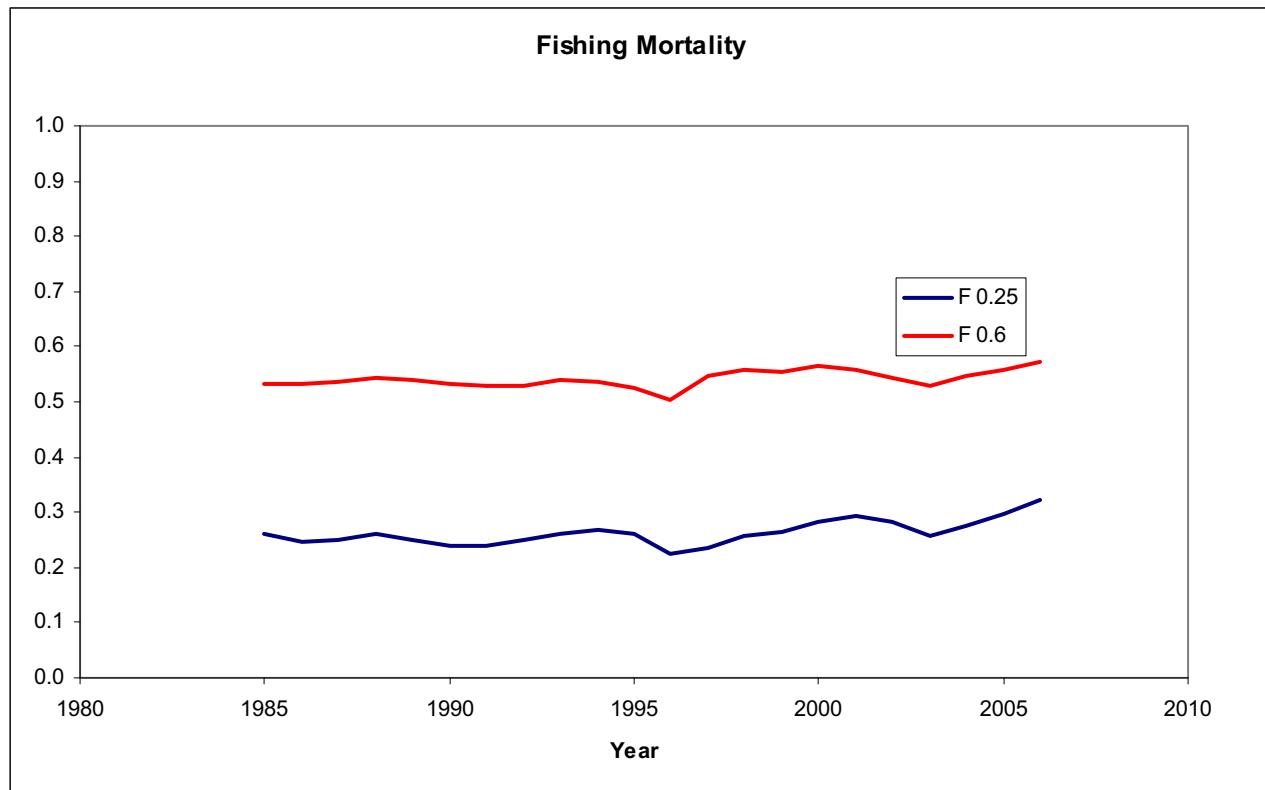
Fishing Mortality

APPENDIX A3 Figure 3. CVs of fishing mortality from CSA