

WHAM output tables

Table 1. Parameter estimates, standard errors, and confidence intervals. Rounded to 3 decimal places.

	Estimate	Std. Error	95% CI lower	95% CI upper
Mean Recruitment	399437.458	104273.046	239465.440	666276.866
NAA σ (age 1)	1.016	0.121	0.805	1.282
NAA σ (age 2-10+)	0.507	0.031	0.451	0.571
NAA residual AR1 ρ age	0.000	—	—	—
NAA residual AR1 ρ year	0.259	0.088	0.080	0.423
Index 1 fully selected q	0.003	0.000	0.002	0.004
Index 2 fully selected q	0.000	0.000	0.000	0.000
Index 3 fully selected q	0.000	0.000	0.000	0.000
Block 1: Selectivity for age 1	0.115	0.017	0.086	0.154
Block 1: Selectivity for age 2	0.379	0.048	0.291	0.477
Block 1: Selectivity for age 3	0.621	0.070	0.478	0.746
Block 1: Selectivity for age 4	0.710	0.075	0.545	0.834
Block 1: Selectivity for age 5	0.774	0.079	0.586	0.892
Block 1: Selectivity for age 6	1.000	—	—	—
Block 1: Selectivity for age 7	1.000	—	—	—
Block 1: Selectivity for age 8	1.000	—	—	—
Block 1: Selectivity for age 9	1.000	—	—	—
Block 1: Selectivity for age 10+	1.000	—	—	—
Block 2: Selectivity for age 1	1.000	—	—	—
Block 2: Selectivity for age 2	1.000	—	—	—
Block 2: Selectivity for age 3	1.000	—	—	—
Block 2: Selectivity for age 4	1.000	—	—	—

Table 1. Parameter estimates, standard errors, and confidence intervals. Rounded to 3 decimal places. *(continued)*

	Estimate	Std. Error	95% CI lower	95% CI upper
Block 2: Selectivity for age 5	1.000	—	—	—
Block 2: Selectivity for age 6	1.000	—	—	—
Block 2: Selectivity for age 7	1.000	—	—	—
Block 2: Selectivity for age 8	1.000	—	—	—
Block 2: Selectivity for age 9	1.000	—	—	—
Block 2: Selectivity for age 10+	1.000	—	—	—
Block 3: Selectivity for age 1	0.000	—	—	—
Block 3: Selectivity for age 2	0.000	—	—	—
Block 3: Selectivity for age 3	1.000	—	—	—
Block 3: Selectivity for age 4	0.448	0.182	0.161	0.774
Block 3: Selectivity for age 5	0.219	0.091	0.090	0.443
Block 3: Selectivity for age 6	0.202	0.068	0.099	0.368
Block 3: Selectivity for age 7	0.000	—	—	—
Block 3: Selectivity for age 8	0.000	—	—	—
Block 3: Selectivity for age 9	0.000	—	—	—
Block 3: Selectivity for age 10+	0.000	—	—	—
Block 4: Selectivity for age 1	0.000	—	—	—
Block 4: Selectivity for age 2	0.000	—	—	—
Block 4: Selectivity for age 3	1.000	—	—	—
Block 4: Selectivity for age 4	0.685	0.164	0.330	0.906
Block 4: Selectivity for age 5	0.511	0.122	0.286	0.731
Block 4: Selectivity for age 6	0.456	0.091	0.290	0.631

Table 1. Parameter estimates, standard errors, and confidence intervals. Rounded to 3 decimal places. *(continued)*

	Estimate	Std. Error	95% CI lower	95% CI upper
Block 4: Selectivity for age 7	0.000	—	—	—
Block 4: Selectivity for age 8	0.000	—	—	—
Block 4: Selectivity for age 9	0.000	—	—	—
Block 4: Selectivity for age 10+	0.000	—	—	—
Fleet 1 age comp, logistic-normal: σ	16.790	1.009	14.925	18.888
Index 2 age comp, logistic-normal: σ	33.209	5.074	24.615	44.802
Index 3 age comp, logistic-normal: σ	29.005	3.115	23.499	35.800

Table 2. Abundance at age (1000s).

	1	2	3	4	5	6	7	8	9	10+
1968	3286374	2420674	1399961	648901	277108	111673	36577	11981	3924	1911
1969	578879	3563940	1716270	624043	120512	56002	35648	29149	10019	62306
1970	3306114	643779	3280225	1105277	228539	46253	28274	30288	32579	37276
1971	1181528	2125338	641133	2308221	615901	113689	26826	17707	17965	50594
1972	709782	804785	1280770	593350	1268910	261530	58765	13511	12999	31032
1973	1330770	789536	602712	751424	450388	560560	113230	27247	8220	12610
1974	1405569	887163	434372	266258	389375	235520	223533	57324	11758	7824
1975	1996486	1311885	322177	216088	110588	171098	108304	85816	28735	6283
1976	213993	1198294	568105	144148	84743	45062	63888	47002	26551	19921
1977	88675	174651	406102	188423	48389	28293	14507	20359	16212	10136
1978	31631	45652	81962	189307	93647	30460	14396	7211	13722	28365
1979	202250	47166	18811	48558	128178	71423	21150	8799	5925	22266
1980	60688	164649	24648	14790	37384	101684	32596	12044	5703	16286
1981	384553	40709	98704	15623	15248	36934	54769	18740	8821	9254
1982	620757	179967	15770	53286	6955	13710	20403	38131	11391	18302
1983	2016994	445867	99315	12457	26353	3296	4388	16088	28150	22832
1984	58412	1225398	292093	51808	7785	10001	2270	2742	11427	71507
1985	554900	44010	1184514	193782	23559	3568	11792	1633	1739	50662
1986	177919	283996	50399	943164	135822	12421	2570	11040	960	26226
1987	163812	124275	120906	40742	783199	84065	9472	1934	8385	13732
1988	410475	103280	56040	52127	28668	504576	48120	5852	1824	14072
1989	371669	285534	65368	37929	32313	12780	354485	21891	3384	10019
1990	163055	381685	232850	43453	28336	23323	6842	249043	11045	4943
1991	146770	133142	358782	156322	23167	18358	13302	4855	141236	4982
1992	223601	137741	75794	235950	103178	13192	8730	7965	3661	75528
1993	144054	156555	103306	49861	153779	56804	8182	4581	6094	37901
1994	394478	65354	147869	99969	31512	94410	29206	4280	2263	14469
1995	387102	224738	30252	99800	78364	18105	51056	16111	2111	4867
1996	271870	230639	127695	13170	57873	58975	10001	29748	8477	2172
1997	257257	166163	111912	53853	7077	22895	23079	5274	13293	3911
1998	81751	180285	87681	51132	18214	3618	9937	10224	1992	4801

Table 2. Abundance at age (1000s). (*continued*)

	1	2	3	4	5	6	7	8	9	10+
1999	103739	60543	109267	43451	20497	6186	1028	3461	3024	1974
2000	513858	85734	43815	48167	16418	5849	1810	320	825	731
2001	140504	385051	75137	25906	23787	6515	1412	608	164	176
2002	198047	122125	616923	44093	13830	9442	4536	166	105	65
2003	296199	146614	119428	516782	32406	6093	6765	3494	7	61
2004	481184	241936	66513	53811	243745	11689	3394	2247	2695	27
2005	160791	390203	146947	29183	18799	96380	4205	869	257	508
2006	306921	113409	352774	72954	10814	5976	36830	1161	110	56
2007	80263	240615	87806	134220	19947	2129	1695	9029	198	8
2008	237884	63490	195915	28916	32178	4163	477	362	2091	34
2009	270381	165756	36795	73655	8203	9452	933	86	50	628
2010	74217	142520	53563	7751	13481	1433	1696	133	3	77
2011	102970	24150	29973	7787	979	1085	125	109	9	14
2012	84582	85541	8291	7505	1511	154	97	10	4	3
2013	83587	56346	36354	1542	1389	225	15	8	1	1
2014	170952	54593	27588	10323	416	165	14	3	1	0
2015	186723	72833	21324	9621	3194	235	17	7	1	0
2016	312246	102976	24415	6965	3732	1655	59	2	2	0
2017	34050	207573	44868	10265	2627	1555	371	10	1	1
2018	114774	18435	130982	22776	4281	831	459	25	2	0
2019	80110	76933	14696	54584	6842	1604	213	64	5	1
2020	99699	52475	54601	8196	18492	2415	490	38	10	2
2021	105479	64814	25110	17313	2192	3147	642	106	13	3
2022	462649	88121	31401	7914	3964	260	1021	292	30	4

Table 3. Total fishing mortality at age.

	1	2	3	4	5	6	7	8	9	10+
1968	0.013	0.043	0.070	0.080	0.087	0.112	0.112	0.112	0.112	0.112
1969	0.019	0.064	0.104	0.119	0.130	0.168	0.168	0.168	0.168	0.168
1970	0.031	0.103	0.169	0.193	0.210	0.272	0.272	0.272	0.272	0.272

Table 3. Total fishing mortality at age. (*continued*)

	1	2	3	4	5	6	7	8	9	10+
1971	0.049	0.163	0.266	0.305	0.332	0.429	0.429	0.429	0.429	0.429
1972	0.055	0.182	0.297	0.340	0.371	0.479	0.479	0.479	0.479	0.479
1973	0.080	0.263	0.430	0.492	0.536	0.693	0.693	0.693	0.693	0.693
1974	0.092	0.303	0.495	0.567	0.617	0.798	0.798	0.798	0.798	0.798
1975	0.104	0.342	0.559	0.640	0.697	0.901	0.901	0.901	0.901	0.901
1976	0.127	0.419	0.685	0.784	0.854	1.103	1.103	1.103	1.103	1.103
1977	0.053	0.175	0.286	0.327	0.356	0.460	0.460	0.460	0.460	0.460
1978	0.021	0.068	0.112	0.128	0.139	0.180	0.180	0.180	0.180	0.180
1979	0.028	0.092	0.151	0.173	0.188	0.243	0.243	0.243	0.243	0.243
1980	0.021	0.070	0.115	0.132	0.144	0.186	0.186	0.186	0.186	0.186
1981	0.029	0.095	0.155	0.177	0.193	0.250	0.250	0.250	0.250	0.250
1982	0.028	0.091	0.150	0.171	0.186	0.241	0.241	0.241	0.241	0.241
1983	0.025	0.082	0.135	0.154	0.168	0.217	0.217	0.217	0.217	0.217
1984	0.020	0.065	0.107	0.122	0.133	0.172	0.172	0.172	0.172	0.172
1985	0.028	0.092	0.150	0.172	0.187	0.242	0.242	0.242	0.242	0.242
1986	0.025	0.083	0.137	0.156	0.170	0.220	0.220	0.220	0.220	0.220
1987	0.031	0.101	0.166	0.190	0.207	0.267	0.267	0.267	0.267	0.267
1988	0.035	0.116	0.190	0.217	0.237	0.306	0.306	0.306	0.306	0.306
1989	0.036	0.118	0.192	0.220	0.240	0.310	0.310	0.310	0.310	0.310
1990	0.048	0.157	0.256	0.293	0.319	0.413	0.413	0.413	0.413	0.413
1991	0.036	0.119	0.196	0.224	0.244	0.315	0.315	0.315	0.315	0.315
1992	0.028	0.091	0.150	0.171	0.186	0.241	0.241	0.241	0.241	0.241
1993	0.030	0.098	0.160	0.183	0.199	0.257	0.257	0.257	0.257	0.257
1994	0.035	0.114	0.186	0.213	0.231	0.299	0.299	0.299	0.299	0.299
1995	0.026	0.087	0.142	0.163	0.177	0.229	0.229	0.229	0.229	0.229
1996	0.043	0.140	0.230	0.263	0.286	0.370	0.370	0.370	0.370	0.370
1997	0.057	0.188	0.307	0.352	0.383	0.495	0.495	0.495	0.495	0.495
1998	0.073	0.239	0.391	0.447	0.487	0.630	0.630	0.630	0.630	0.630
1999	0.091	0.298	0.487	0.557	0.607	0.785	0.785	0.785	0.785	0.785
2000	0.072	0.238	0.389	0.445	0.485	0.626	0.626	0.626	0.626	0.626
2001	0.084	0.277	0.454	0.519	0.566	0.731	0.731	0.731	0.731	0.731

Table 3. Total fishing mortality at age. (*continued*)

	1	2	3	4	5	6	7	8	9	10+
2002	0.062	0.203	0.332	0.380	0.414	0.535	0.535	0.535	0.535	0.535
2003	0.059	0.193	0.316	0.361	0.393	0.508	0.508	0.508	0.508	0.508
2004	0.130	0.427	0.700	0.800	0.872	1.127	1.127	1.127	1.127	1.127
2005	0.142	0.467	0.764	0.874	0.952	1.231	1.231	1.231	1.231	1.231
2006	0.171	0.564	0.922	1.055	1.149	1.485	1.485	1.485	1.485	1.485
2007	0.145	0.475	0.777	0.889	0.969	1.252	1.252	1.252	1.252	1.252
2008	0.136	0.449	0.734	0.840	0.915	1.183	1.183	1.183	1.183	1.183
2009	0.227	0.746	1.222	1.398	1.522	1.967	1.967	1.967	1.967	1.967
2010	0.270	0.887	1.452	1.661	1.809	2.338	2.338	2.338	2.338	2.338
2011	0.236	0.776	1.270	1.453	1.583	2.045	2.045	2.045	2.045	2.045
2012	0.229	0.753	1.232	1.409	1.535	1.984	1.984	1.984	1.984	1.984
2013	0.201	0.661	1.082	1.238	1.348	1.743	1.743	1.743	1.743	1.743
2014	0.131	0.430	0.704	0.805	0.877	1.133	1.133	1.133	1.133	1.133
2015	0.117	0.384	0.629	0.720	0.784	1.013	1.013	1.013	1.013	1.013
2016	0.115	0.378	0.619	0.708	0.771	0.996	0.996	0.996	0.996	0.996
2017	0.127	0.419	0.685	0.784	0.854	1.104	1.104	1.104	1.104	1.104
2018	0.115	0.379	0.620	0.710	0.773	0.999	0.999	0.999	0.999	0.999
2019	0.107	0.352	0.575	0.658	0.717	0.927	0.927	0.927	0.927	0.927
2020	0.128	0.421	0.689	0.789	0.859	1.110	1.110	1.110	1.110	1.110
2021	0.116	0.382	0.626	0.716	0.780	1.008	1.008	1.008	1.008	1.008
2022	0.018	0.059	0.097	0.111	0.121	0.156	0.156	0.156	0.156	0.156