

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	57665.362	8339.430	43432.642	76562.094
NAA σ (age 1)	0.511	0.073	0.386	0.675
NAA σ (age 2-11+)	0.273	0.021	0.234	0.318
NAA residual AR1 ρ age	0.000	—	—	—
NAA residual AR1 ρ year	0.000	—	—	—
Index 1 fully selected q	0.000	0.000	0.000	0.000
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
Index 4 fully selected q	0.000	0.000	0.000	0.000
Block 1: Mean a_{50}	4.236	0.158	3.931	4.549
Block 1: Mean 1/slope (increasing)	0.551	0.030	0.496	0.612
Block 2: Selectivity for age 1	0.012	0.004	0.006	0.021
Block 2: Selectivity for age 2	0.228	0.065	0.126	0.377
Block 2: Selectivity for age 3	0.479	0.132	0.246	0.721
Block 2: Selectivity for age 4	0.866	0.244	0.095	0.998
Block 2: Selectivity for age 5	0.956	0.290	0.000	1.000
Block 2: Selectivity for age 6	1.000	—	—	—
Block 2: Selectivity for age 7	0.820	0.248	0.144	0.992
Block 2: Selectivity for age 8	0.593	0.173	0.263	0.856
Block 2: Selectivity for age 9	0.616	0.166	0.289	0.864
Block 2: Selectivity for age 10	0.661	0.180	0.287	0.904
Block 2: Selectivity for age 11+	0.581	0.126	0.335	0.792

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 3: Selectivity for age 1	0.076	0.015	0.052	0.111
Block 3: Selectivity for age 2	0.321	0.058	0.218	0.444
Block 3: Selectivity for age 3	0.690	0.115	0.438	0.864
Block 3: Selectivity for age 4	0.951	0.140	0.052	1.000
Block 3: Selectivity for age 5	1.000	—	—	—
Block 3: Selectivity for age 6	0.793	0.116	0.488	0.939
Block 3: Selectivity for age 7	0.697	0.111	0.450	0.866
Block 3: Selectivity for age 8	0.662	0.111	0.425	0.838
Block 3: Selectivity for age 9	0.625	0.108	0.403	0.805
Block 3: Selectivity for age 10	0.589	0.105	0.380	0.769
Block 3: Selectivity for age 11+	0.528	0.073	0.386	0.665
Block 4: Selectivity for age 1	0.134	0.019	0.100	0.177
Block 4: Selectivity for age 2	0.383	0.053	0.285	0.491
Block 4: Selectivity for age 3	0.701	0.095	0.490	0.851
Block 4: Selectivity for age 4	0.869	0.110	0.502	0.977
Block 4: Selectivity for age 5	0.767	0.085	0.564	0.894
Block 4: Selectivity for age 6	0.653	0.065	0.517	0.768
Block 4: Selectivity for age 7	0.422	0.040	0.347	0.501
Block 4: Selectivity for age 8	0.400	0.036	0.332	0.473
Block 4: Selectivity for age 9	0.394	0.037	0.324	0.469
Block 4: Selectivity for age 10	0.532	0.059	0.417	0.644
Block 4: Selectivity for age 11+	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 5: Selectivity for age 1	0.354	0.134	0.148	0.632
Block 5: Selectivity for age 2	0.563	0.211	0.193	0.874
Block 5: Selectivity for age 3	1.000	—	—	—
Block 5: Selectivity for age 4	0.874	0.322	0.022	1.000
Block 5: Selectivity for age 5	0.803	0.287	0.105	0.993
Block 5: Selectivity for age 6	0.641	0.233	0.197	0.928
Block 5: Selectivity for age 7	0.572	0.216	0.191	0.883
Block 5: Selectivity for age 8	0.547	0.215	0.180	0.868
Block 5: Selectivity for age 9	0.525	0.210	0.175	0.852
Block 5: Selectivity for age 10	0.769	0.278	0.134	0.986
Block 5: Selectivity for age 11+	0.438	0.129	0.218	0.685
Block 1: Selectivity RE σ	0.289	0.040	0.221	0.378
Fleet 1 age comp, logistic-normal: σ	4.529	0.254	4.057	5.056
Index 1 age comp, logistic-normal: σ	6.942	0.344	6.299	7.650
Index 2 age comp, logistic-normal: σ	2.045	0.257	1.599	2.616
Index 3 age comp, logistic-normal: σ	2.937	0.241	2.501	3.449
Index 4 age comp, logistic-normal: σ	6.121	0.483	5.244	7.146

Table 2. Abundance at age (1000s).

	1	2	3	4	5	6	7	8	9	10	11+
1980	67522	61408	49181	32762	25672	18203	17449	7469	5535	3484	4810
1981	38612	65930	40558	36030	27676	19646	12057	9740	3570	2648	4198
1982	34384	36637	42063	27207	19050	14366	10125	6213	4645	2269	2553
1983	49735	36567	27870	34023	20191	12178	7667	4069	2407	1460	2540
1984	26348	53723	26149	17300	17610	10409	5169	2881	1197	757	1384
1985	56220	21928	39700	18110	13633	10350	6227	2444	1167	505	391
1986	40058	37984	14070	19050	9121	6718	4187	2426	858	355	382
1987	55101	35350	21591	9070	9512	4566	3239	1930	1164	364	317
1988	143772	50040	25406	11453	5567	3812	2012	1425	866	582	270
1989	40666	109435	33804	12416	4554	2385	1568	1079	654	370	490
1990	54610	37912	68963	21572	6429	2471	1459	1028	664	310	390
1991	36573	48059	24442	26157	10888	3574	1382	947	569	311	308
1992	43593	30482	28415	15505	15110	6114	1943	968	618	352	335
1993	111874	32703	23669	19134	9282	7979	3049	890	613	366	366
1994	93318	87122	24145	16691	10264	4202	3189	1474	408	319	346
1995	39918	74818	56340	23972	13985	5148	1868	1254	553	192	239
1996	46378	28886	38583	34155	13490	6356	1962	969	530	256	265
1997	33168	40121	22144	25642	18950	6351	2573	715	458	237	265
1998	69944	23781	26524	17008	17530	10930	2642	1288	330	208	198
1999	75980	54483	23027	19958	13880	11258	5661	872	654	210	163
2000	30188	51891	37199	18107	15655	10912	7795	3277	689	369	197
2001	24335	24419	32585	23590	13803	9791	6759	4297	1962	460	277
2002	45226	16780	16259	22959	14189	7316	5076	2943	1813	854	589
2003	35841	35863	10652	10603	11407	6677	3553	2084	1080	697	650
2004	61785	30599	21217	10029	8373	6476	3438	1856	904	443	316
2005	58787	45877	16826	13341	7282	5272	3015	1610	903	351	404
2006	99972	46657	28733	15640	10441	4823	3303	1502	739	411	311
2007	79613	75768	34445	21863	11642	6786	2835	1511	546	424	252
2008	92821	43107	46571	25609	15337	8137	4571	1561	926	381	425
2009	77354	66116	22720	28859	20698	11862	5623	2929	1085	492	693
2010	47641	59334	38240	17520	21978	18217	9051	3519	2085	827	626

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

	1	2	3	4	5	6	7	8	9	10	11+
2011	63814	34630	26770	20677	13127	15733	14874	7490	2675	1593	1071
2012	47742	45924	21582	14474	15560	9524	11393	10132	4963	1418	1896
2013	67348	35571	28631	13305	8682	13598	6129	6844	5992	3151	1552
2014	102270	55526	28091	20805	10615	6631	11447	4292	4451	3793	3666
2015	28481	116341	48101	22837	14517	7484	5412	8310	3074	2877	3559
2016	52913	25710	96196	32822	15968	10136	4764	4107	5752	2411	5292
2017	15193	32150	15622	56634	22520	11636	7795	3627	2694	3938	4917
2018	68538	9498	18318	9824	34508	15300	7944	5047	2790	2105	7310
2019	41954	54896	6904	13178	7051	19479	9042	4953	2531	1473	4459

Table 3. Total fishing mortality at age.

	1	2	3	4	5	6	7	8	9	10	11+
1980	0.000	0.001	0.016	0.122	0.323	0.379	0.386	0.386	0.386	0.386	0.386
1981	0.000	0.009	0.109	0.248	0.264	0.265	0.265	0.265	0.265	0.265	0.265
1982	0.001	0.010	0.099	0.364	0.460	0.469	0.470	0.470	0.470	0.470	0.470
1983	0.001	0.007	0.060	0.290	0.507	0.553	0.559	0.560	0.560	0.560	0.560
1984	0.000	0.002	0.025	0.195	0.568	0.694	0.709	0.711	0.711	0.711	0.711
1985	0.002	0.007	0.027	0.098	0.284	0.540	0.696	0.750	0.765	0.769	0.770
1986	0.003	0.015	0.076	0.240	0.377	0.417	0.424	0.425	0.426	0.426	0.426
1987	0.002	0.023	0.170	0.428	0.499	0.507	0.507	0.507	0.507	0.507	0.507
1988	0.004	0.028	0.142	0.358	0.462	0.483	0.486	0.487	0.487	0.487	0.487
1989	0.001	0.016	0.124	0.298	0.339	0.343	0.343	0.343	0.343	0.343	0.343
1990	0.002	0.012	0.058	0.190	0.327	0.377	0.388	0.390	0.390	0.390	0.390
1991	0.000	0.004	0.074	0.326	0.377	0.379	0.379	0.379	0.379	0.379	0.379
1992	0.001	0.009	0.069	0.280	0.426	0.453	0.456	0.456	0.456	0.456	0.456
1993	0.003	0.011	0.046	0.155	0.333	0.452	0.492	0.502	0.505	0.505	0.505
1994	0.002	0.007	0.032	0.123	0.326	0.503	0.570	0.587	0.591	0.592	0.592
1995	0.006	0.023	0.077	0.193	0.311	0.367	0.385	0.389	0.391	0.391	0.391
1996	0.008	0.033	0.101	0.203	0.268	0.290	0.295	0.297	0.297	0.297	0.297
1997	0.003	0.011	0.040	0.122	0.245	0.324	0.353	0.361	0.363	0.363	0.363

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

	1	2	3	4	5	6	7	8	9	10	11+
1998	0.000	0.002	0.018	0.113	0.265	0.308	0.314	0.314	0.314	0.314	0.314
1999	0.000	0.001	0.007	0.049	0.168	0.235	0.246	0.247	0.248	0.248	0.248
2000	0.000	0.001	0.015	0.114	0.198	0.207	0.208	0.208	0.208	0.208	0.208
2001	0.001	0.006	0.031	0.107	0.203	0.244	0.254	0.256	0.256	0.256	0.256
2002	0.000	0.000	0.004	0.029	0.138	0.261	0.294	0.298	0.299	0.299	0.299
2003	0.002	0.008	0.027	0.081	0.168	0.237	0.267	0.276	0.278	0.279	0.279
2004	0.000	0.001	0.007	0.034	0.114	0.216	0.261	0.273	0.275	0.275	0.275
2005	0.001	0.004	0.017	0.057	0.120	0.162	0.176	0.180	0.181	0.181	0.181
2006	0.001	0.002	0.009	0.033	0.087	0.145	0.172	0.180	0.182	0.183	0.183
2007	0.001	0.004	0.012	0.034	0.070	0.099	0.112	0.116	0.117	0.118	0.118
2008	0.000	0.001	0.004	0.017	0.054	0.105	0.134	0.143	0.145	0.145	0.145
2009	0.000	0.002	0.007	0.023	0.060	0.104	0.127	0.135	0.137	0.138	0.138
2010	0.001	0.003	0.007	0.017	0.039	0.070	0.100	0.118	0.127	0.130	0.131
2011	0.001	0.003	0.010	0.025	0.045	0.059	0.065	0.067	0.067	0.068	0.068
2012	0.000	0.004	0.026	0.060	0.069	0.070	0.070	0.070	0.070	0.070	0.070
2013	0.000	0.002	0.010	0.031	0.054	0.063	0.065	0.066	0.066	0.066	0.066
2014	0.000	0.001	0.006	0.026	0.045	0.050	0.050	0.051	0.051	0.051	0.051
2015	0.000	0.001	0.005	0.021	0.041	0.047	0.048	0.048	0.048	0.048	0.048
2016	0.000	0.000	0.002	0.014	0.030	0.034	0.035	0.035	0.035	0.035	0.035
2017	0.000	0.001	0.003	0.013	0.027	0.032	0.033	0.033	0.033	0.033	0.033
2018	0.000	0.001	0.003	0.014	0.026	0.029	0.030	0.030	0.030	0.030	0.030
2019	0.000	0.001	0.005	0.018	0.032	0.037	0.038	0.038	0.038	0.038	0.038