

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
NAA σ (age 1)	0.809	0.113	0.615	1.065
NAA σ (age 2-10+)	0.491	0.029	0.437	0.552
NAA residual AR1 ρ age	0.000	—	—	—
NAA residual AR1 ρ year	0.093	0.086	-0.077	0.259
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: Mean Selectivity for age 1	0.109	0.014	0.084	0.140
Block 1: Mean Selectivity for age 2	0.384	0.046	0.298	0.477
Block 1: Mean Selectivity for age 3	0.633	0.062	0.506	0.743
Block 1: Mean Selectivity for age 4	0.710	0.060	0.580	0.813
Block 1: Mean Selectivity for age 5	0.790	0.062	0.644	0.887
Block 1: Mean Selectivity for age 6	1.000	—	—	—
Block 1: Mean Selectivity for age 7	1.000	—	—	—
Block 1: Mean Selectivity for age 8	1.000	—	—	—
Block 1: Mean Selectivity for age 9	1.000	0.000	0.000	1.000
Block 1: Mean Selectivity for age 10+	1.000	0.000	0.000	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	—	—	—
Block 2: Selectivity for age 5	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 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	0.449	0.184	0.160	0.777
Block 3: Selectivity for age 5	0.219	0.091	0.090	0.444
Block 3: Selectivity for age 6	0.202	0.068	0.100	0.367
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	0.683	0.164	0.329	0.905
Block 4: Selectivity for age 5	0.515	0.122	0.289	0.735
Block 4: Selectivity for age 6	0.460	0.089	0.296	0.632
Block 4: Selectivity for age 7	0.000	—	—	—

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 4: Selectivity for age 8	0.000	—	—	—
Block 4: Selectivity for age 9	0.000	—	—	—
Block 4: Selectivity for age 10+	0.000	—	—	—
Block 1: Selectivity RE σ	0.290	0.098	0.150	0.562
Block 1: Selectivity RE AR1 ρ (year)	-0.880	0.092	-0.974	-0.520
Fleet 1 age comp, logistic-normal: σ	15.907	0.945	14.158	17.871
Index 2 age comp, logistic-normal: σ	34.002	5.090	25.356	45.596
Index 3 age comp, logistic-normal: σ	29.990	3.086	24.512	36.691

Table 2. Abundance at age (1000s).

	1	2	3	4	5	6	7	8	9	10+
1968	4672687	3159269	1570686	661388	267769	104534	37726	13615	4914	2775
1969	1675488	5102032	2184395	733103	138620	61553	40060	32453	11827	72823
1970	3599628	1007340	3929639	1289351	276552	57998	34054	35729	36675	45676
1971	1894217	2360910	826235	2578383	731887	143609	33730	21407	20178	61670
1972	1201702	1059502	1402859	712244	1390558	305618	73062	16268	15683	35735
1973	1653873	992654	717173	788064	498443	608187	123061	32166	9013	15148
1974	1980664	974382	500192	297060	401856	256078	254773	62056	13813	8314
1975	1743101	1461846	348274	237488	121668	176834	110475	93141	28040	7092
1976	298629	1149242	650229	155592	95476	50766	73112	51636	32557	20722
1977	86967	197338	426238	208517	51734	30413	14704	21040	14686	11512
1978	47942	47567	97214	208052	102521	30954	15020	7372	14335	26086
1979	128440	53560	19410	52777	131144	72110	21355	9163	5756	24113
1980	93991	141555	29115	15722	38744	96307	33542	11991	5766	15107
1981	325885	47196	97288	17182	15816	35892	55219	19791	8426	10407
1982	826459	183879	18107	54218	7294	13536	21546	37564	12112	16712
1983	1272003	497249	104324	13328	27520	3498	4396	16669	26411	25584
1984	140224	1224231	335544	55661	8747	11850	2476	2797	11957	68292
1985	390227	60640	1146570	205459	23552	4153	12762	1658	1747	56231
1986	219214	265121	60172	944968	144176	13019	2717	11800	969	26188
1987	185515	135664	120285	45321	757348	88417	9730	1944	8416	14746
1988	398056	107739	58624	51346	29463	493190	48522	6003	1825	14005
1989	358042	278425	66914	39221	31301	12646	349323	21134	3271	9824
1990	179593	362626	224752	43493	28543	22600	6584	240584	10342	4924
1991	148853	133075	337365	145715	22264	17355	12905	4586	127609	4657
1992	179994	127662	69670	212396	92694	11983	7893	7243	3280	69816
1993	157432	135429	92413	44257	134682	50053	7434	4088	5371	33048
1994	302327	61689	131377	87392	27150	82800	25103	3761	1912	12952
1995	344032	191316	26478	89589	66572	15400	45383	13737	1839	4187
1996	251246	205424	115989	11510	51988	51528	8924	26419	7153	1998
1997	216356	153724	102309	49842	6238	20659	20714	4694	12143	3491
1998	89419	161526	81730	47729	17040	3300	9473	9161	1770	4550

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

	1	2	3	4	5	6	7	8	9	10+
1999	126227	63555	101345	41304	20034	5897	963	3375	2850	1861
2000	380188	93596	42884	45844	15406	5844	1626	277	722	713
2001	185759	356939	73864	25980	23718	6465	1507	623	172	173
2002	216104	140228	576816	42524	13255	9815	3740	161	115	66
2003	313388	151369	121445	502921	32081	6470	6741	2942	7	73
2004	451722	249653	64400	52328	237557	11960	3271	2151	2706	34
2005	218793	392192	147491	28798	18824	99111	4059	833	239	507
2006	267306	131701	346920	72640	11101	6206	34737	1069	106	56
2007	113737	236545	88925	134859	20738	2358	1788	9014	204	8
2008	218109	73725	187192	28920	33379	4246	475	348	2030	35
2009	240639	164775	37657	76589	8623	10814	919	90	56	648
2010	82103	135073	53478	7818	14184	1440	1657	109	3	75
2011	111694	25307	30256	7917	1039	1410	178	171	13	16
2012	75294	90856	8489	7323	1335	143	59	7	4	1
2013	92389	54208	38009	1723	1688	284	37	8	1	1
2014	142254	55894	27268	10174	387	143	9	3	0	0
2015	213589	72090	22020	10336	3422	257	23	6	1	0
2016	214563	109441	24428	6842	3758	1425	54	2	1	0
2017	51119	198725	47197	10684	2803	1737	369	16	1	0
2018	83264	20877	126607	22032	4161	745	376	23	2	0
2019	82773	70782	14907	50671	6678	1638	209	77	5	1
2020	85244	51740	50853	7686	16903	2288	408	31	9	1
2021	114810	59944	23885	16220	2148	3320	672	99	12	3
2022	273367	83428	28897	7224	3510	248	910	283	21	3

Table 3. Total fishing mortality at age.

	1	2	3	4	5	6	7	8	9	10+
1968	0.017	0.043	0.058	0.061	0.064	0.071	0.071	0.071	0.071	0.071
1969	0.010	0.041	0.081	0.096	0.115	0.179	0.179	0.179	0.179	0.179
1970	0.031	0.095	0.141	0.153	0.166	0.194	0.194	0.194	0.194	0.194

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

	1	2	3	4	5	6	7	8	9	10+
1971	0.039	0.140	0.231	0.260	0.290	0.368	0.368	0.368	0.368	0.368
1972	0.036	0.139	0.249	0.288	0.330	0.452	0.452	0.452	0.452	0.452
1973	0.091	0.280	0.413	0.449	0.484	0.566	0.566	0.566	0.566	0.566
1974	0.058	0.228	0.419	0.487	0.564	0.797	0.797	0.797	0.797	0.797
1975	0.133	0.385	0.546	0.587	0.627	0.716	0.716	0.716	0.716	0.716
1976	0.074	0.303	0.581	0.686	0.809	1.208	1.208	1.208	1.208	1.208
1977	0.075	0.207	0.285	0.304	0.322	0.362	0.362	0.362	0.362	0.362
1978	0.010	0.043	0.088	0.106	0.128	0.207	0.207	0.207	0.207	0.207
1979	0.045	0.123	0.169	0.180	0.190	0.213	0.213	0.213	0.213	0.213
1980	0.012	0.050	0.098	0.117	0.138	0.212	0.212	0.212	0.212	0.212
1981	0.046	0.126	0.172	0.184	0.194	0.218	0.218	0.218	0.218	0.218
1982	0.015	0.063	0.126	0.151	0.180	0.284	0.284	0.284	0.284	0.284
1983	0.038	0.098	0.130	0.137	0.144	0.159	0.159	0.159	0.159	0.159
1984	0.011	0.047	0.096	0.117	0.143	0.241	0.241	0.241	0.241	0.241
1985	0.039	0.111	0.155	0.167	0.178	0.202	0.202	0.202	0.202	0.202
1986	0.019	0.073	0.132	0.153	0.175	0.243	0.243	0.243	0.243	0.243
1987	0.034	0.112	0.174	0.192	0.210	0.255	0.255	0.255	0.255	0.255
1988	0.032	0.115	0.193	0.218	0.244	0.313	0.313	0.313	0.313	0.313
1989	0.033	0.117	0.196	0.221	0.247	0.316	0.316	0.316	0.316	0.316
1990	0.049	0.169	0.273	0.304	0.337	0.420	0.420	0.420	0.420	0.420
1991	0.034	0.124	0.211	0.239	0.268	0.349	0.349	0.349	0.349	0.349
1992	0.033	0.109	0.173	0.192	0.211	0.258	0.258	0.258	0.258	0.258
1993	0.027	0.102	0.178	0.204	0.231	0.308	0.308	0.308	0.308	0.308
1994	0.043	0.145	0.227	0.251	0.275	0.335	0.335	0.335	0.335	0.335
1995	0.027	0.098	0.167	0.189	0.213	0.277	0.277	0.277	0.277	0.277
1996	0.050	0.170	0.271	0.301	0.331	0.407	0.407	0.407	0.407	0.407
1997	0.056	0.206	0.349	0.395	0.444	0.577	0.577	0.577	0.577	0.577
1998	0.081	0.276	0.439	0.487	0.537	0.660	0.660	0.660	0.660	0.660
1999	0.075	0.289	0.521	0.602	0.691	0.953	0.953	0.953	0.953	0.953
2000	0.087	0.276	0.419	0.459	0.498	0.592	0.592	0.592	0.592	0.592
2001	0.072	0.277	0.497	0.573	0.657	0.902	0.902	0.902	0.902	0.902

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

	1	2	3	4	5	6	7	8	9	10+
2002	0.061	0.214	0.350	0.392	0.435	0.547	0.547	0.547	0.547	0.547
2003	0.058	0.202	0.328	0.367	0.407	0.509	0.509	0.509	0.509	0.509
2004	0.123	0.436	0.722	0.812	0.905	1.151	1.151	1.151	1.151	1.151
2005	0.118	0.435	0.750	0.854	0.965	1.271	1.271	1.271	1.271	1.271
2006	0.173	0.590	0.942	1.046	1.153	1.421	1.421	1.421	1.421	1.421
2007	0.117	0.442	0.774	0.886	1.007	1.348	1.348	1.348	1.348	1.348
2008	0.145	0.479	0.748	0.826	0.904	1.096	1.096	1.096	1.096	1.096
2009	0.175	0.673	1.206	1.391	1.594	2.185	2.185	2.185	2.185	2.185
2010	0.380	1.074	1.499	1.606	1.707	1.932	1.932	1.932	1.932	1.932
2011	0.142	0.608	1.238	1.497	1.814	2.987	2.987	2.987	2.987	2.987
2012	0.269	0.744	1.025	1.094	1.159	1.303	1.303	1.303	1.303	1.303
2013	0.140	0.588	1.168	1.400	1.675	2.640	2.640	2.640	2.640	2.640
2014	0.173	0.472	0.646	0.689	0.729	0.816	0.816	0.816	0.816	0.816
2015	0.083	0.345	0.675	0.804	0.955	1.471	1.471	1.471	1.471	1.471
2016	0.145	0.412	0.577	0.618	0.658	0.746	0.746	0.746	0.746	0.746
2017	0.091	0.375	0.730	0.867	1.028	1.569	1.569	1.569	1.569	1.569
2018	0.146	0.444	0.653	0.708	0.763	0.888	0.888	0.888	0.888	0.888
2019	0.087	0.347	0.646	0.755	0.879	1.263	1.263	1.263	1.263	1.263
2020	0.161	0.498	0.738	0.802	0.865	1.013	1.013	1.013	1.013	1.013
2021	0.097	0.376	0.681	0.789	0.907	1.260	1.260	1.260	1.260	1.260
2022	0.025	0.077	0.113	0.123	0.133	0.155	0.155	0.155	0.155	0.155