

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
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	0.118	0.014	0.092	0.148
Block 1: Mean Selectivity for age 2	0.379	0.039	0.306	0.459
Block 1: Mean Selectivity for age 3	0.658	0.060	0.532	0.765
Block 1: Mean Selectivity for age 4	0.790	0.061	0.646	0.886
Block 1: Mean Selectivity for age 5	0.849	0.056	0.705	0.930
Block 1: Mean Selectivity for age 6	0.924	0.051	0.744	0.981
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+	0.808	0.190	0.277	0.979
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	—	—	—
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	—	—	—

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 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	0.499	0.151	0.234	0.765
Block 3: Selectivity for age 5	0.267	0.107	0.111	0.516
Block 3: Selectivity for age 6	0.256	0.104	0.105	0.502
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	0.746	0.104	0.500	0.896
Block 4: Selectivity for age 5	0.588	0.108	0.373	0.774
Block 4: Selectivity for age 6	0.511	0.103	0.317	0.702
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	—	—	—
Block 1: Selectivity RE σ	0.447	0.088	0.304	0.658

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

	Estimate	Std. Error	95% CI lower	95% CI upper
Fleet 1 age comp, logistic-normal: σ	17.323	1.448	14.705	20.405
Fleet 1 age comp, logistic-normal: ρ	0.913	0.016	0.875	0.940
Index 2 age comp, logistic-normal: σ	17.591	2.841	12.819	24.141
Index 2 age comp, logistic-normal: ρ	0.617	0.148	0.321	0.846
Index 3 age comp, logistic-normal: σ	14.446	1.512	11.766	17.736
Index 3 age comp, logistic-normal: ρ	0.718	0.076	0.551	0.842

Table 2. Abundance at age (1000s).

	1	2	3	4	5	6	7	8	9	10+
1968	5378954	1466546	418460	98136	60132	50373	26681	24388	113222	1244
1969	1984862	4266689	1126234	297152	66932	40729	33549	17483	15980	75041
1970	2378194	1605086	3224711	813623	208604	46781	28017	22751	11855	63558
1971	949965	1845188	1241885	2192511	535643	135731	29781	17470	14186	49206
1972	880154	733457	1270283	826853	1293649	308725	76301	16214	9511	36667
1973	727418	691439	509148	785934	497266	743365	172736	41375	8792	26660
1974	1070793	545809	453776	275914	406525	248428	351535	78224	18737	17525
1975	1054276	815502	329986	232872	130286	186220	107611	144188	32085	15900
1976	189026	745321	460145	156969	94721	50301	67902	36627	49076	17351
1977	35800	138089	340624	162367	49853	27344	13340	16426	8860	17163
1978	26359	26989	93276	196162	87071	26385	13759	6453	7946	13499
1979	123713	21319	20221	67387	138207	60686	18128	9316	4369	14853
1980	21035	99059	15200	14468	45447	91574	39452	11565	5943	12727
1981	82118	16790	75765	10664	10061	31136	61644	26131	7660	12715
1982	395795	64023	12121	53372	6884	6444	19515	37773	16012	12943
1983	2134959	313549	46220	8098	34604	4367	3982	11807	22855	17983
1984	67644	1690009	233252	31232	5329	22467	2774	2477	7342	26002
1985	135403	54372	1300939	166632	21967	3700	15376	1871	1670	23134
1986	91978	104573	42434	912286	112233	14676	2424	9890	1203	16653
1987	100576	73580	76565	29638	624397	74734	9639	1562	6373	12006
1988	397966	79527	52129	50023	18601	386614	44838	5641	914	11225
1989	570093	309180	55027	32362	29530	10498	214503	23961	3014	7003
1990	125519	447966	216879	33412	18795	16713	5750	113670	12697	5626
1991	208457	94787	299660	114737	16452	8854	7534	2470	48826	8188
1992	183051	164357	60498	176465	62957	8679	4498	3683	1208	28294
1993	29017	143273	117051	38475	107349	37133	4992	2511	2056	17636
1994	116836	21773	105449	76880	22945	63183	21154	2761	1389	11641
1995	152117	89542	14519	64910	43823	12602	33545	10840	1415	7229
1996	149192	118016	62466	9079	38835	25639	7123	18394	5944	5059
1997	201064	112222	72820	29932	4191	16855	10553	2764	7139	4578
1998	90937	149301	65580	33281	11603	1605	5975	3490	914	4162

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

	1	2	3	4	5	6	7	8	9	10+
1999	138504	68300	81960	29116	12458	4032	527	1820	1063	1804
2000	1162665	102371	37214	31853	9634	3803	1125	136	469	850
2001	167175	900192	66626	20761	16061	4695	1766	500	60	632
2002	141615	127358	641506	36571	10786	7971	2248	807	228	351
2003	384861	107517	86021	382793	19927	5723	4040	1098	394	302
2004	904681	295666	62949	44207	187510	9054	2477	1656	450	303
2005	223091	658664	148391	23159	13865	58377	2458	614	411	206
2006	513081	158236	367922	52522	6855	3901	15203	574	144	157
2007	94266	350908	78462	123285	13509	1613	842	2946	111	67
2008	211092	67039	188020	26989	39406	3789	415	198	693	46
2009	186518	149379	33895	76569	8641	12491	1063	107	51	193
2010	43820	117456	53886	7097	13059	1248	1622	116	12	38
2011	151096	22289	29826	4947	487	746	57	58	4	3
2012	86174	101848	7806	7025	728	71	87	6	6	1
2013	48317	59573	41193	1867	1421	117	10	11	1	1
2014	81670	31885	28581	11286	492	276	20	2	2	0
2015	124453	54485	14294	9172	2657	133	54	4	0	0
2016	312242	86100	25091	4835	2667	702	31	12	1	0
2017	31096	224318	44231	10502	1613	864	206	8	3	0
2018	104037	22659	122561	18336	4022	538	272	60	2	1
2019	62252	73372	14195	49841	6424	1398	168	78	17	1
2020	82011	45144	42861	5992	18822	2291	467	52	24	6
2021	91619	57735	22961	13898	1666	4833	535	98	11	7
2022	311586	67159	30100	8947	4600	493	1375	138	25	5

Table 3. Total fishing mortality at age.

	1	2	3	4	5	6	7	8	9	10+
1968	0.032	0.064	0.142	0.183	0.190	0.206	0.223	0.223	0.223	0.180
1969	0.012	0.080	0.125	0.154	0.158	0.174	0.188	0.188	0.188	0.153
1970	0.054	0.057	0.186	0.218	0.230	0.252	0.272	0.272	0.272	0.219

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

	1	2	3	4	5	6	7	8	9	10+
1971	0.059	0.173	0.207	0.328	0.351	0.376	0.408	0.408	0.408	0.331
1972	0.041	0.165	0.280	0.309	0.354	0.381	0.412	0.412	0.412	0.334
1973	0.087	0.221	0.413	0.459	0.494	0.549	0.592	0.592	0.592	0.477
1974	0.072	0.303	0.467	0.550	0.581	0.637	0.691	0.691	0.691	0.558
1975	0.147	0.372	0.543	0.700	0.752	0.809	0.878	0.878	0.878	0.705
1976	0.114	0.583	0.842	0.947	1.042	1.127	1.219	1.219	1.219	0.988
1977	0.083	0.192	0.352	0.423	0.436	0.487	0.526	0.526	0.526	0.422
1978	0.012	0.089	0.125	0.150	0.161	0.175	0.190	0.190	0.190	0.154
1979	0.022	0.138	0.135	0.194	0.212	0.231	0.249	0.249	0.249	0.202
1980	0.025	0.068	0.154	0.163	0.178	0.196	0.212	0.212	0.212	0.171
1981	0.049	0.126	0.150	0.238	0.245	0.267	0.290	0.290	0.290	0.233
1982	0.033	0.126	0.203	0.233	0.255	0.281	0.302	0.302	0.302	0.245
1983	0.034	0.096	0.192	0.218	0.232	0.254	0.275	0.275	0.275	0.222
1984	0.018	0.062	0.136	0.152	0.165	0.179	0.194	0.194	0.194	0.158
1985	0.058	0.048	0.155	0.195	0.203	0.223	0.241	0.241	0.241	0.195
1986	0.023	0.112	0.159	0.179	0.207	0.220	0.239	0.239	0.239	0.194
1987	0.035	0.145	0.226	0.266	0.279	0.311	0.336	0.336	0.336	0.271
1988	0.052	0.168	0.277	0.327	0.372	0.389	0.427	0.427	0.427	0.344
1989	0.041	0.155	0.299	0.343	0.369	0.402	0.435	0.435	0.435	0.353
1990	0.081	0.202	0.437	0.508	0.553	0.597	0.645	0.645	0.645	0.522
1991	0.038	0.249	0.330	0.400	0.440	0.477	0.516	0.516	0.516	0.415
1992	0.045	0.139	0.253	0.297	0.328	0.353	0.383	0.383	0.383	0.312
1993	0.087	0.107	0.220	0.317	0.330	0.363	0.392	0.392	0.392	0.318
1994	0.066	0.205	0.285	0.362	0.399	0.433	0.469	0.469	0.469	0.380
1995	0.054	0.160	0.269	0.314	0.336	0.371	0.401	0.401	0.401	0.323
1996	0.085	0.283	0.536	0.573	0.635	0.688	0.747	0.747	0.747	0.601
1997	0.098	0.337	0.583	0.748	0.760	0.837	0.906	0.906	0.906	0.733
1998	0.086	0.400	0.612	0.783	0.857	0.913	0.989	0.989	0.989	0.804
1999	0.102	0.407	0.745	0.906	0.987	1.076	1.156	1.156	1.156	0.941
2000	0.056	0.230	0.384	0.485	0.519	0.567	0.612	0.612	0.612	0.496
2001	0.072	0.139	0.400	0.455	0.501	0.536	0.583	0.583	0.583	0.469

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

	1	2	3	4	5	6	7	8	9	10+
2002	0.075	0.192	0.316	0.407	0.434	0.480	0.517	0.517	0.517	0.415
2003	0.064	0.335	0.466	0.514	0.589	0.637	0.692	0.692	0.692	0.559
2004	0.117	0.489	0.800	0.960	0.967	1.104	1.194	1.194	1.194	0.963
2005	0.143	0.382	0.839	1.017	1.068	1.145	1.254	1.254	1.254	1.024
2006	0.180	0.501	0.893	1.158	1.247	1.333	1.441	1.441	1.441	1.173
2007	0.141	0.424	0.867	0.941	1.071	1.157	1.248	1.248	1.248	1.000
2008	0.146	0.482	0.698	0.939	0.949	1.071	1.158	1.158	1.158	0.932
2009	0.262	0.820	1.364	1.569	1.735	1.842	2.014	2.014	2.014	1.592
2010	0.476	1.171	2.188	2.478	2.662	2.890	3.125	3.125	3.125	2.478
2011	0.194	0.849	1.246	1.717	1.721	1.950	2.098	2.098	2.098	1.701
2012	0.169	0.705	1.231	1.398	1.626	1.719	1.864	1.864	1.864	1.506
2013	0.216	0.534	1.095	1.134	1.439	1.553	1.667	1.667	1.667	1.347
2014	0.205	0.602	0.937	1.246	1.111	1.425	1.523	1.523	1.523	1.230
2015	0.168	0.575	0.884	1.035	1.131	1.246	1.345	1.345	1.345	1.086
2016	0.131	0.466	0.671	0.897	0.927	1.028	1.110	1.110	1.110	0.897
2017	0.117	0.404	0.681	0.760	0.898	0.956	1.036	1.036	1.036	0.837
2018	0.149	0.268	0.700	0.849	0.857	0.967	1.045	1.045	1.045	0.844
2019	0.121	0.338	0.662	0.774	0.831	0.896	0.979	0.979	0.979	0.791
2020	0.151	0.476	0.926	1.080	1.160	1.254	1.358	1.358	1.358	1.097
2021	0.111	0.451	0.743	0.906	1.018	1.057	1.156	1.156	1.156	0.934
2022	0.021	0.074	0.114	0.140	0.149	0.161	0.176	0.176	0.176	0.142