

## 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: Selectivity for age 1	0.106	0.015	0.080	0.138
Block 1: Selectivity for age 2	0.341	0.044	0.261	0.432
Block 1: Selectivity for age 3	0.581	0.070	0.442	0.709
Block 1: Selectivity for age 4	0.620	0.074	0.468	0.751
Block 1: Selectivity for age 5	1.000	0.000	0.000	1.000
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	—	—	—
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	0.384	0.162	0.140	0.705
Block 3: Selectivity for age 5	0.189	0.083	0.074	0.403
Block 3: Selectivity for age 6	0.256	0.088	0.122	0.460
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	0.684	0.175	0.307	0.914
Block 4: Selectivity for age 5	0.473	0.117	0.264	0.692
Block 4: Selectivity for age 6	0.501	0.096	0.322	0.681
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: $\sigma$	30.168	1.027	28.221	32.248

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

	Estimate	Std. Error	95% CI lower	95% CI upper
Index 2 age comp, logistic-normal: $\sigma$	36.740	4.736	28.537	47.301
Index 3 age comp, logistic-normal: $\sigma$	33.559	3.012	28.146	40.013

Table 2. Abundance at age (1000s).

	1	2	3	4	5	6	7	8	9	10+
1968	4751352	1829458	303260	79563	45146	39300	31028	11271	86508	763
1969	2461804	3785652	1371686	213743	55528	28565	24866	19633	7131	55219
1970	2684741	1968073	2869505	984903	152156	36274	18661	16244	12825	40731
1971	820904	2126892	1448617	1959873	664730	91204	21743	11185	9737	32102
1972	634421	641382	1496917	916722	1219457	349437	47944	11430	5880	21994
1973	718665	497271	456107	964140	581215	660791	189351	25980	6194	15104
1974	1048967	553081	333295	265596	549007	264797	301051	86266	11836	9703
1975	1123808	800111	360163	184780	143525	229859	110866	126044	36118	9018
1976	139969	836437	481321	174464	86475	47640	76297	36800	41838	14982
1977	35120	99481	433455	180860	62287	18544	10216	16361	7891	12185
1978	16098	27226	68271	262767	107497	30411	9054	4988	7988	9802
1979	71551	12933	20968	50364	192523	73568	20812	6196	3414	12175
1980	20730	57349	9885	15271	36399	128881	49249	13932	4148	10435
1981	88764	16655	44176	7295	11193	24928	88263	33727	9541	9987
1982	275323	70715	12483	31118	5088	7075	15756	55789	21318	12344
1983	2292536	218309	52200	8568	21112	3076	4277	9524	33723	20348
1984	58013	1818930	161476	35951	5834	12837	1870	2601	5791	32879
1985	122086	46515	1391981	117846	26040	3919	8624	1256	1747	25979
1986	83060	97174	34761	975602	81756	16318	2456	5404	787	17374
1987	74329	66044	72381	24227	672811	50742	10128	1524	3354	11272
1988	336301	59000	48920	49971	16540	410833	30984	6184	931	8931
1989	594356	263693	42005	31571	31749	8993	223374	16847	3362	5362
1990	117067	462979	183788	26144	19299	16220	4594	114119	8607	4457
1991	265507	88768	295784	98631	13647	7641	6421	1819	45179	5172
1992	155336	203692	58896	169285	55138	6035	3379	2840	804	22267
1993	44155	121375	143397	37287	105380	29007	3175	1778	1494	12137
1994	129572	34697	87017	93645	23991	58477	16096	1762	986	7564
1995	47005	100346	23732	52453	55325	11600	28274	7783	852	4134
1996	292837	36760	70839	15097	32818	29344	6152	14996	4128	2645
1997	94196	220168	22848	36278	7497	11987	10718	2247	5478	2474
1998	38424	69564	129146	10602	16218	2311	3695	3304	693	2451

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

	1	2	3	4	5	6	7	8	9	10+
1999	87694	27997	39069	55651	4380	4402	627	1003	897	853
2000	1667612	54294	9287	6867	8842	254	255	36	58	102
2001	134752	1263396	34589	4960	3566	3472	100	100	14	63
2002	105233	105629	898656	22287	3146	1934	1883	54	54	42
2003	319448	82186	74245	567432	13835	1648	1013	986	28	50
2004	612723	245791	55046	43181	322693	6290	749	460	448	36
2005	222227	462911	155182	28952	22061	123401	2405	286	176	185
2006	546463	163791	269806	71231	12794	6675	37338	728	87	109
2007	120375	382201	80584	92801	23144	2356	1229	6877	134	36
2008	217021	87050	209476	33311	36677	5848	595	311	1738	43
2009	87637	159782	50561	95585	14628	10985	1752	178	93	533
2010	50389	59240	70405	14414	25426	1951	1465	234	24	84
2011	135758	30523	18311	10974	2015	1200	92	69	11	5
2012	89916	87202	11404	3942	2164	166	99	8	6	1
2013	68389	59336	35550	2848	910	230	18	10	1	1
2014	74861	45660	25120	9467	705	108	27	2	1	0
2015	154841	51187	20880	7628	2694	105	16	4	0	0
2016	268407	108132	25059	7121	2456	489	19	3	1	0
2017	28984	194306	59468	10419	2832	627	125	5	1	0
2018	126553	20970	106661	24648	4130	719	159	32	1	0
2019	74361	91140	11341	43097	9508	1003	175	39	8	0
2020	86093	54806	53116	5205	19041	2876	304	53	12	2
2021	94091	62266	30049	21971	2058	4817	728	77	13	4
2022	462995	69871	37182	14374	10145	669	1565	236	25	6

Table 3. Total fishing mortality at age.

	1	2	3	4	5	6	7	8	9	10+
1968	0.027	0.088	0.150	0.160	0.258	0.258	0.258	0.258	0.258	0.258
1969	0.024	0.077	0.131	0.140	0.226	0.226	0.226	0.226	0.226	0.226
1970	0.033	0.106	0.181	0.193	0.312	0.312	0.312	0.312	0.312	0.312

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

	1	2	3	4	5	6	7	8	9	10+
1971	0.047	0.151	0.258	0.274	0.443	0.443	0.443	0.443	0.443	0.443
1972	0.044	0.141	0.240	0.256	0.413	0.413	0.413	0.413	0.413	0.413
1973	0.062	0.200	0.341	0.363	0.586	0.586	0.586	0.586	0.586	0.586
1974	0.071	0.229	0.390	0.415	0.671	0.671	0.671	0.671	0.671	0.671
1975	0.095	0.308	0.525	0.559	0.903	0.903	0.903	0.903	0.903	0.903
1976	0.141	0.457	0.779	0.830	1.340	1.340	1.340	1.340	1.340	1.340
1977	0.055	0.176	0.301	0.320	0.517	0.517	0.517	0.517	0.517	0.517
1978	0.019	0.061	0.104	0.111	0.179	0.179	0.179	0.179	0.179	0.179
1979	0.021	0.069	0.117	0.125	0.201	0.201	0.201	0.201	0.201	0.201
1980	0.019	0.061	0.104	0.111	0.179	0.179	0.179	0.179	0.179	0.179
1981	0.027	0.088	0.150	0.160	0.259	0.259	0.259	0.259	0.259	0.259
1982	0.032	0.104	0.176	0.188	0.303	0.303	0.303	0.303	0.303	0.303
1983	0.031	0.102	0.173	0.184	0.297	0.297	0.297	0.297	0.297	0.297
1984	0.021	0.068	0.115	0.123	0.198	0.198	0.198	0.198	0.198	0.198
1985	0.028	0.091	0.155	0.166	0.267	0.267	0.267	0.267	0.267	0.267
1986	0.029	0.095	0.161	0.172	0.277	0.277	0.277	0.277	0.277	0.277
1987	0.031	0.100	0.170	0.182	0.293	0.293	0.293	0.293	0.293	0.293
1988	0.043	0.140	0.238	0.254	0.409	0.409	0.409	0.409	0.409	0.409
1989	0.050	0.161	0.274	0.292	0.472	0.472	0.472	0.472	0.472	0.472
1990	0.077	0.248	0.422	0.450	0.727	0.727	0.727	0.727	0.727	0.727
1991	0.065	0.210	0.358	0.382	0.616	0.616	0.616	0.616	0.616	0.616
1992	0.047	0.151	0.257	0.274	0.442	0.442	0.442	0.442	0.442	0.442
1993	0.041	0.133	0.226	0.241	0.389	0.389	0.389	0.389	0.389	0.389
1994	0.056	0.180	0.306	0.326	0.527	0.527	0.527	0.527	0.527	0.527
1995	0.046	0.148	0.252	0.269	0.434	0.434	0.434	0.434	0.434	0.434
1996	0.085	0.276	0.469	0.500	0.807	0.807	0.807	0.807	0.807	0.807
1997	0.103	0.333	0.568	0.605	0.977	0.977	0.977	0.977	0.977	0.977
1998	0.117	0.377	0.642	0.684	1.104	1.104	1.104	1.104	1.104	1.104
1999	0.279	0.904	1.539	1.640	2.647	2.647	2.647	2.647	2.647	2.647
2000	0.078	0.251	0.427	0.455	0.735	0.735	0.735	0.735	0.735	0.735
2001	0.044	0.141	0.240	0.255	0.412	0.412	0.412	0.412	0.412	0.412

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

	1	2	3	4	5	6	7	8	9	10+
2002	0.047	0.153	0.260	0.277	0.447	0.447	0.447	0.447	0.447	0.447
2003	0.062	0.201	0.342	0.364	0.588	0.588	0.588	0.588	0.588	0.588
2004	0.080	0.260	0.443	0.472	0.761	0.761	0.761	0.761	0.761	0.761
2005	0.105	0.340	0.579	0.617	0.995	0.995	0.995	0.995	0.995	0.995
2006	0.158	0.509	0.867	0.924	1.492	1.492	1.492	1.492	1.492	1.492
2007	0.124	0.401	0.683	0.728	1.176	1.176	1.176	1.176	1.176	1.176
2008	0.106	0.343	0.585	0.623	1.006	1.006	1.006	1.006	1.006	1.006
2009	0.192	0.620	1.055	1.124	1.815	1.815	1.815	1.815	1.815	1.815
2010	0.301	0.974	1.659	1.768	2.853	2.853	2.853	2.853	2.853	2.853
2011	0.243	0.785	1.336	1.424	2.298	2.298	2.298	2.298	2.298	2.298
2012	0.216	0.697	1.187	1.265	2.043	2.043	2.043	2.043	2.043	2.043
2013	0.204	0.660	1.123	1.197	1.932	1.932	1.932	1.932	1.932	1.932
2014	0.180	0.582	0.992	1.057	1.706	1.706	1.706	1.706	1.706	1.706
2015	0.159	0.514	0.876	0.933	1.506	1.506	1.506	1.506	1.506	1.506
2016	0.123	0.398	0.678	0.722	1.166	1.166	1.166	1.166	1.166	1.166
2017	0.124	0.400	0.681	0.725	1.171	1.171	1.171	1.171	1.171	1.171
2018	0.128	0.415	0.706	0.753	1.215	1.215	1.215	1.215	1.215	1.215
2019	0.105	0.340	0.579	0.617	0.996	0.996	0.996	0.996	0.996	0.996
2020	0.124	0.401	0.683	0.728	1.174	1.174	1.174	1.174	1.174	1.174
2021	0.098	0.316	0.537	0.573	0.924	0.924	0.924	0.924	0.924	0.924
2022	0.015	0.049	0.084	0.090	0.145	0.145	0.145	0.145	0.145	0.145