

## 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
B-H a	17.224	9.798	5.648	52.522
B-H b	0.000	0.000	0.000	0.000
NAA $\sigma$ (age 1)	1.103	0.114	0.900	1.350
NAA residual AR1 $\rho$ year	0.000	—	—	—
Index 1 fully selected q	0.004	0.001	0.003	0.005
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: $a_{50}$	1.097	1.701	0.040	7.892
Block 1: 1/slope (increasing)	0.045	0.780	0.000	10.000
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	—	—	—
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	—	—	—

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 4	0.544	0.230	0.162	0.881
Block 3: Selectivity for age 5	0.306	0.132	0.115	0.599
Block 3: Selectivity for age 6	0.318	0.108	0.149	0.553
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	0.750	0.197	0.276	0.959
Block 4: Selectivity for age 5	0.583	0.145	0.303	0.818
Block 4: Selectivity for age 6	0.565	0.110	0.351	0.757
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: $\sigma$	15.814	0.545	14.780	16.920
Index 2 age comp, logistic-normal: $\sigma$	52.205	6.876	40.327	67.580
Index 3 age comp, logistic-normal: $\sigma$	15.330	1.384	12.844	18.297

Table 2. Abundance at age (1000s).

	1	2	3	4	5	6	7	8	9	10+
1968	4390026	1475877	245960	64409	35927	30659	24029	9757	73609	770
1969	1845202	3530200	1012032	168659	44166	24636	21023	16477	6691	51003
1970	2652709	1491037	2539644	728061	121334	31774	17723	15124	11854	41505
1971	926996	2124628	982849	1674060	479917	79980	20944	11683	9969	35172
1972	848364	734011	1251098	578756	985779	282602	47097	12333	6879	26582
1973	1077652	668184	410131	699054	323381	550807	157904	26315	6891	18697
1974	1694364	830342	300677	184555	314569	145519	247858	71056	11842	11514
1975	1398779	1289823	331622	120084	73708	125633	58117	98990	28378	9328
1976	164522	1062393	503714	129508	46897	28785	49063	22697	38658	14725
1977	46460	123787	378156	179296	46098	16693	10246	17464	8079	19002
1978	22111	36676	70741	216105	102462	26344	9539	5855	9980	15476
1979	75189	17844	26052	50249	153503	72781	18712	6776	4159	18082
1980	27593	60339	11991	17506	33766	103151	48907	12574	4553	14945
1981	105049	22206	41700	8287	12098	23336	71287	33800	8690	13476
1982	269417	83845	14146	26564	5279	7707	14865	45412	21531	14120
1983	1872316	214977	53264	8986	16875	3353	4896	9443	28849	22648
1984	69682	1497606	139869	34655	5847	10980	2182	3185	6144	33505
1985	139287	56472	1108724	103550	25656	4329	8128	1615	2358	29354
1986	104371	111810	38060	747236	69788	17291	2917	5478	1089	21373
1987	96155	83571	73505	25021	491240	45880	11367	1918	3601	14766
1988	390389	76028	48522	42678	14527	285220	26638	6600	1114	10665
1989	631906	303840	37779	24111	21207	7219	141730	13237	3280	5853
1990	126725	494892	160567	19965	12742	11207	3815	74898	6995	4826
1991	230927	98449	241494	78352	9742	6218	5469	1862	36548	5768
1992	146392	179886	49340	121030	39268	4883	3116	2741	933	21208
1993	54972	115630	103386	28357	69560	22568	2806	1791	1575	12725
1994	141161	43327	65052	58163	15953	39133	12697	1579	1008	8045
1995	62699	108971	19862	29822	26664	7313	17940	5821	724	4150
1996	333134	48887	55119	10047	15084	13487	3699	9074	2944	2465
1997	138985	241403	12011	13542	2468	3706	3314	909	2229	1329
1998	75111	106081	98955	4924	5551	1012	1519	1358	373	1459

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

	1	2	3	4	5	6	7	8	9	10+
1999	102586	56431	37214	34714	1727	1947	355	533	476	642
2000	1172444	71571	9538	6290	5867	292	329	60	90	189
2001	156787	887726	27107	3612	2382	2222	111	125	23	106
2002	130167	125672	589639	18005	2399	1582	1476	73	83	85
2003	491423	102612	70836	332353	10149	1352	892	832	41	95
2004	685693	377987	45388	31332	147007	4489	598	395	368	60
2005	315087	509534	118995	14289	9864	46280	1413	188	124	135
2006	519325	237588	185287	43271	5196	3587	16829	514	68	94
2007	163802	370262	49734	38786	9058	1088	751	3523	108	34
2008	354967	121034	110243	14808	11548	2697	324	224	1049	42
2009	191363	255633	27972	25478	3422	2669	623	75	52	252
2010	74238	132819	41059	4493	4092	550	429	100	12	49
2011	126959	47609	9782	3024	331	301	40	32	7	4
2012	90337	85623	5760	1184	366	40	36	5	4	1
2013	75232	64780	18973	1276	262	81	9	8	1	1
2014	76740	53778	13914	4075	274	56	17	2	2	0
2015	132250	54910	11663	3018	884	59	12	4	0	0
2016	255974	95647	13233	2811	727	213	14	3	1	0
2017	41592	192522	33915	4692	997	258	76	5	1	0
2018	130365	31851	81565	14369	1988	422	109	32	2	1
2019	80911	96204	9365	23981	4225	584	124	32	9	1
2020	77182	61598	38452	3743	9585	1689	234	50	13	4
2021	65360	57000	18246	11390	1109	2839	500	69	15	5
2022	177410	49029	19695	6304	3935	383	981	173	24	7

Table 3. Total fishing mortality at age.

	1	2	3	4	5	6	7	8	9	10+
1968	0.018	0.177	0.177	0.177	0.177	0.177	0.177	0.177	0.177	0.177
1969	0.013	0.129	0.129	0.129	0.129	0.129	0.129	0.129	0.129	0.129
1970	0.022	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217	0.217

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

	1	2	3	4	5	6	7	8	9	10+
1971	0.033	0.330	0.330	0.330	0.330	0.330	0.330	0.330	0.330	0.330
1972	0.039	0.382	0.382	0.382	0.382	0.382	0.382	0.382	0.382	0.382
1973	0.061	0.599	0.599	0.599	0.599	0.599	0.599	0.599	0.599	0.599
1974	0.073	0.718	0.718	0.718	0.718	0.718	0.718	0.718	0.718	0.718
1975	0.075	0.740	0.740	0.740	0.740	0.740	0.740	0.740	0.740	0.740
1976	0.084	0.833	0.833	0.833	0.833	0.833	0.833	0.833	0.833	0.833
1977	0.036	0.360	0.360	0.360	0.360	0.360	0.360	0.360	0.360	0.360
1978	0.014	0.142	0.142	0.142	0.142	0.142	0.142	0.142	0.142	0.142
1979	0.020	0.198	0.198	0.198	0.198	0.198	0.198	0.198	0.198	0.198
1980	0.017	0.169	0.169	0.169	0.169	0.169	0.169	0.169	0.169	0.169
1981	0.025	0.251	0.251	0.251	0.251	0.251	0.251	0.251	0.251	0.251
1982	0.026	0.254	0.254	0.254	0.254	0.254	0.254	0.254	0.254	0.254
1983	0.023	0.230	0.230	0.230	0.230	0.230	0.230	0.230	0.230	0.230
1984	0.010	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101	0.101
1985	0.020	0.195	0.195	0.195	0.195	0.195	0.195	0.195	0.195	0.195
1986	0.022	0.219	0.219	0.219	0.219	0.219	0.219	0.219	0.219	0.219
1987	0.035	0.344	0.344	0.344	0.344	0.344	0.344	0.344	0.344	0.344
1988	0.051	0.499	0.499	0.499	0.499	0.499	0.499	0.499	0.499	0.499
1989	0.044	0.438	0.438	0.438	0.438	0.438	0.438	0.438	0.438	0.438
1990	0.052	0.517	0.517	0.517	0.517	0.517	0.517	0.517	0.517	0.517
1991	0.050	0.491	0.491	0.491	0.491	0.491	0.491	0.491	0.491	0.491
1992	0.036	0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.354	0.354
1993	0.038	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375	0.375
1994	0.059	0.580	0.580	0.580	0.580	0.580	0.580	0.580	0.580	0.580
1995	0.049	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482	0.482
1996	0.122	1.204	1.204	1.204	1.204	1.204	1.204	1.204	1.204	1.204
1997	0.070	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.692	0.692
1998	0.086	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848	0.848
1999	0.160	1.578	1.578	1.578	1.578	1.578	1.578	1.578	1.578	1.578
2000	0.078	0.771	0.771	0.771	0.771	0.771	0.771	0.771	0.771	0.771
2001	0.021	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209	0.209

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

	1	2	3	4	5	6	7	8	9	10+
2002	0.038	0.373	0.373	0.373	0.373	0.373	0.373	0.373	0.373	0.373
2003	0.062	0.616	0.616	0.616	0.616	0.616	0.616	0.616	0.616	0.616
2004	0.097	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956	0.956
2005	0.082	0.812	0.812	0.812	0.812	0.812	0.812	0.812	0.812	0.812
2006	0.138	1.364	1.364	1.364	1.364	1.364	1.364	1.364	1.364	1.364
2007	0.103	1.012	1.012	1.012	1.012	1.012	1.012	1.012	1.012	1.012
2008	0.128	1.265	1.265	1.265	1.265	1.265	1.265	1.265	1.265	1.265
2009	0.165	1.629	1.629	1.629	1.629	1.629	1.629	1.629	1.629	1.629
2010	0.244	2.408	2.408	2.408	2.408	2.408	2.408	2.408	2.408	2.408
2011	0.194	1.912	1.912	1.912	1.912	1.912	1.912	1.912	1.912	1.912
2012	0.133	1.307	1.307	1.307	1.307	1.307	1.307	1.307	1.307	1.307
2013	0.136	1.338	1.338	1.338	1.338	1.338	1.338	1.338	1.338	1.338
2014	0.135	1.328	1.328	1.328	1.328	1.328	1.328	1.328	1.328	1.328
2015	0.124	1.223	1.223	1.223	1.223	1.223	1.223	1.223	1.223	1.223
2016	0.085	0.837	0.837	0.837	0.837	0.837	0.837	0.837	0.837	0.837
2017	0.067	0.659	0.659	0.659	0.659	0.659	0.659	0.659	0.659	0.659
2018	0.104	1.024	1.024	1.024	1.024	1.024	1.024	1.024	1.024	1.024
2019	0.073	0.717	0.717	0.717	0.717	0.717	0.717	0.717	0.717	0.717
2020	0.103	1.017	1.017	1.017	1.017	1.017	1.017	1.017	1.017	1.017
2021	0.087	0.863	0.863	0.863	0.863	0.863	0.863	0.863	0.863	0.863
2022	0.018	0.178	0.178	0.178	0.178	0.178	0.178	0.178	0.178	0.178