

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 a_{50}	2.793	0.146	2.515	3.089
Block 1: Mean 1/slope (increasing)	0.865	0.091	0.702	1.062
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	—	—	—
Block 3: Selectivity for age 4	0.413	0.174	0.147	0.742
Block 3: Selectivity for age 5	0.241	0.105	0.093	0.494
Block 3: Selectivity for age 6	0.295	0.102	0.138	0.522
Block 3: 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 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	0.709	0.179	0.307	0.930
Block 4: Selectivity for age 5	0.521	0.127	0.287	0.747
Block 4: Selectivity for age 6	0.531	0.101	0.338	0.715
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	0.000	0.052	0.000	Inf
Fleet 1 age comp, logistic-normal: σ	30.428	1.035	28.465	32.525
Index 2 age comp, logistic-normal: σ	36.933	4.783	28.655	47.604
Index 3 age comp, logistic-normal: σ	33.268	3.000	27.877	39.700

Table 2. Abundance at age (1000s).

	1	2	3	4	5	6	7	8	9	10+
1968	4761165	1811038	299941	80068	45127	39463	31186	11323	86890	763
1969	2406910	3781914	1372383	211035	52761	28737	24803	19515	7075	54746
1970	2686093	1918195	2890186	981698	142396	34532	18590	15982	12559	39765
1971	823836	2124821	1438293	1991794	627971	87615	20933	11213	9624	31489
1972	649527	643464	1542315	930102	1163109	347695	47531	11278	6028	22083
1973	795710	507865	468349	1002762	547344	649771	190406	25855	6122	15245
1974	1038996	610905	352791	277886	517629	262741	303345	88062	11922	9841
1975	1052894	788205	411595	197154	131653	224990	110492	126157	36493	9007
1976	138366	778798	497802	202647	77905	46382	75855	36705	41710	15019
1977	35474	97373	433069	190986	56018	18150	10120	16190	7779	11993
1978	16264	27452	69029	267387	104372	28725	9082	5023	8014	9778
1979	71755	13074	21446	51552	191906	73371	20033	6317	3491	12360
1980	20893	57416	10095	15653	35805	129876	49165	13379	4214	10570
1981	88727	16762	44629	7465	11077	24762	89033	33604	9136	10092
1982	275171	70554	12737	31571	4957	7117	15711	56249	21201	12125
1983	2283617	217873	53028	8818	20329	3074	4349	9554	34153	20223
1984	57910	1807878	163697	36690	5673	12591	1876	2642	5794	32959
1985	122445	46260	1389968	118489	25180	3787	8315	1235	1737	25460
1986	83606	97266	35060	978194	78105	16041	2381	5205	772	16991
1987	76933	66716	74577	25241	666163	51669	10494	1552	3389	11558
1988	343264	60831	49968	51283	16096	408395	31202	6305	931	8960
1989	586135	268274	44224	32413	30079	8957	222749	16903	3408	5342
1990	112774	454785	191461	27666	18050	15763	4586	113160	8566	4430
1991	256442	84788	299454	102289	12289	7281	6129	1761	43279	4963
1992	146227	196283	58441	174982	51659	5752	3310	2759	790	21625
1993	43755	114223	142507	37810	102249	28625	3123	1785	1484	12049
1994	126813	34222	83196	92781	22294	57252	15713	1703	971	7358
1995	40353	98013	24182	51043	50246	11313	28335	7712	833	4072
1996	323873	31396	70442	15337	28989	26939	5933	14750	4005	2545
1997	84216	240893	20112	35659	6306	10694	9533	2070	5124	2272
1998	33210	61140	145050	9018	12324	1903	3063	2683	579	2066

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

	1	2	3	4	5	6	7	8	9	10+
1999	88353	23727	35337	60022	2778	3255	474	748	651	640
2000	1643755	56717	10431	8555	8580	302	318	45	70	120
2001	143553	1239899	37660	5665	3891	3557	121	126	18	75
2002	109804	111169	880529	23333	3111	2007	1791	60	63	46
2003	346513	85320	79630	554820	13128	1650	1040	921	31	56
2004	615766	268969	60953	49915	309848	6903	848	530	469	44
2005	204811	460177	174399	31597	21235	118900	2546	309	192	186
2006	528992	149079	278938	79226	11126	6547	34837	733	88	108
2007	134876	367333	80117	100094	19900	2320	1271	6604	138	37
2008	216494	96543	213328	33467	31255	5338	587	315	1629	43
2009	81688	157955	58874	98062	11986	9826	1597	173	92	488
2010	49542	54704	77371	17617	18988	1849	1390	219	23	79
2011	134941	29465	19785	12779	1456	1094	93	67	10	5
2012	90475	87166	13163	4943	1911	167	113	9	7	1
2013	65663	57755	37778	3099	679	198	16	10	1	1
2014	73626	43621	27716	10859	566	98	26	2	1	0
2015	156598	50159	22325	9038	2378	101	16	4	0	0
2016	266317	108530	26822	7933	2239	488	19	3	1	0
2017	28779	190547	62960	11180	2470	598	123	5	1	0
2018	122748	20548	109951	25971	3429	649	148	30	1	0
2019	71484	88365	12109	47261	8448	964	173	39	8	0
2020	88683	52483	54759	5744	17706	2798	305	54	12	3
2021	96395	63338	30306	22620	1765	4663	695	74	13	3
2022	430476	71299	39999	14919	8936	622	1572	231	25	5

Table 3. Total fishing mortality at age.

	1	2	3	4	5	6	7	8	9	10+
1968	0.030	0.077	0.152	0.217	0.251	0.264	0.269	0.270	0.271	0.271
1969	0.027	0.069	0.135	0.193	0.224	0.236	0.239	0.241	0.241	0.241
1970	0.034	0.088	0.172	0.247	0.286	0.301	0.306	0.307	0.308	0.308

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

	1	2	3	4	5	6	7	8	9	10+
1971	0.047	0.120	0.236	0.338	0.391	0.412	0.418	0.421	0.421	0.422
1972	0.046	0.118	0.231	0.330	0.382	0.402	0.409	0.411	0.412	0.412
1973	0.064	0.164	0.322	0.461	0.534	0.562	0.571	0.574	0.575	0.575
1974	0.076	0.195	0.382	0.547	0.633	0.666	0.677	0.681	0.682	0.682
1975	0.102	0.260	0.509	0.729	0.843	0.887	0.902	0.907	0.908	0.909
1976	0.151	0.387	0.758	1.086	1.257	1.322	1.344	1.352	1.354	1.354
1977	0.056	0.144	0.282	0.404	0.468	0.492	0.501	0.503	0.504	0.504
1978	0.018	0.047	0.092	0.132	0.152	0.160	0.163	0.164	0.164	0.164
1979	0.023	0.059	0.115	0.165	0.190	0.200	0.204	0.205	0.205	0.205
1980	0.020	0.052	0.102	0.146	0.169	0.178	0.181	0.181	0.182	0.182
1981	0.029	0.075	0.146	0.209	0.242	0.255	0.259	0.261	0.261	0.261
1982	0.033	0.086	0.168	0.240	0.278	0.292	0.297	0.299	0.299	0.300
1983	0.034	0.086	0.168	0.241	0.279	0.294	0.299	0.300	0.301	0.301
1984	0.025	0.063	0.123	0.176	0.204	0.215	0.219	0.220	0.220	0.220
1985	0.030	0.077	0.151	0.217	0.251	0.264	0.268	0.270	0.270	0.270
1986	0.026	0.066	0.129	0.184	0.213	0.224	0.228	0.229	0.230	0.230
1987	0.035	0.089	0.174	0.250	0.289	0.304	0.309	0.311	0.312	0.312
1988	0.046	0.119	0.233	0.334	0.386	0.406	0.413	0.415	0.416	0.416
1989	0.054	0.137	0.269	0.385	0.446	0.469	0.477	0.480	0.481	0.481
1990	0.085	0.218	0.427	0.611	0.708	0.745	0.757	0.761	0.762	0.763
1991	0.067	0.172	0.337	0.483	0.559	0.588	0.598	0.601	0.602	0.603
1992	0.047	0.120	0.235	0.337	0.390	0.411	0.418	0.420	0.421	0.421
1993	0.046	0.117	0.229	0.328	0.380	0.400	0.406	0.409	0.409	0.409
1994	0.058	0.147	0.289	0.413	0.478	0.503	0.512	0.514	0.515	0.516
1995	0.051	0.130	0.255	0.366	0.423	0.445	0.453	0.455	0.456	0.456
1996	0.096	0.245	0.481	0.689	0.797	0.839	0.853	0.857	0.859	0.859
1997	0.120	0.307	0.602	0.862	0.998	1.050	1.068	1.073	1.075	1.076
1998	0.136	0.348	0.682	0.977	1.131	1.190	1.210	1.217	1.219	1.219
1999	0.243	0.622	1.218	1.745	2.020	2.125	2.161	2.172	2.176	2.177
2000	0.082	0.209	0.410	0.588	0.681	0.716	0.728	0.732	0.733	0.733
2001	0.056	0.142	0.279	0.399	0.462	0.486	0.494	0.497	0.498	0.498

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

	1	2	3	4	5	6	7	8	9	10+
2002	0.052	0.134	0.262	0.375	0.434	0.457	0.464	0.467	0.468	0.468
2003	0.053	0.136	0.267	0.383	0.443	0.466	0.474	0.476	0.477	0.477
2004	0.091	0.233	0.457	0.655	0.758	0.797	0.811	0.815	0.816	0.817
2005	0.118	0.301	0.589	0.844	0.977	1.028	1.045	1.050	1.052	1.053
2006	0.165	0.421	0.825	1.182	1.368	1.439	1.463	1.471	1.473	1.474
2007	0.134	0.343	0.673	0.964	1.116	1.174	1.194	1.200	1.202	1.202
2008	0.115	0.295	0.577	0.827	0.957	1.007	1.024	1.029	1.031	1.031
2009	0.201	0.514	1.007	1.442	1.669	1.756	1.785	1.795	1.798	1.799
2010	0.320	0.817	1.601	2.293	2.654	2.793	2.839	2.854	2.859	2.861
2011	0.237	0.606	1.187	1.700	1.968	2.071	2.105	2.117	2.120	2.121
2012	0.249	0.636	1.246	1.785	2.067	2.174	2.211	2.222	2.226	2.227
2013	0.209	0.534	1.047	1.499	1.735	1.826	1.856	1.866	1.869	1.870
2014	0.184	0.470	0.921	1.319	1.526	1.606	1.633	1.641	1.644	1.645
2015	0.167	0.426	0.835	1.196	1.384	1.456	1.480	1.488	1.491	1.491
2016	0.135	0.345	0.675	0.967	1.119	1.178	1.197	1.204	1.206	1.206
2017	0.137	0.350	0.686	0.982	1.137	1.196	1.216	1.222	1.224	1.225
2018	0.129	0.329	0.644	0.923	1.068	1.124	1.143	1.149	1.151	1.151
2019	0.109	0.279	0.546	0.782	0.905	0.952	0.968	0.973	0.975	0.975
2020	0.137	0.349	0.684	0.980	1.134	1.193	1.213	1.220	1.222	1.222
2021	0.102	0.260	0.509	0.729	0.843	0.887	0.902	0.907	0.909	0.909
2022	0.016	0.042	0.082	0.117	0.135	0.142	0.145	0.145	0.146	0.146