

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
Mean Recruitment	60384.956	8760.711	45439.712	80245.733
NAA σ (age 1)	0.518	0.073	0.392	0.684
NAA σ (age 2-11+)	0.271	0.021	0.233	0.315
NAA residual AR1 ρ age	0.000	—	—	—
NAA residual AR1 ρ year	0.000	—	—	—
Index 1 fully selected q	0.000	0.000	0.000	0.000
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
Index 4 fully selected q	0.000	0.000	0.000	0.000
Block 1: Mean a_{50}	4.225	0.157	3.921	4.537
Block 1: Mean 1/slope (increasing)	0.549	0.030	0.494	0.610
Block 2: Selectivity for age 1	0.012	0.003	0.007	0.021
Block 2: Selectivity for age 2	0.240	0.062	0.139	0.381
Block 2: Selectivity for age 3	0.542	0.139	0.282	0.780
Block 2: Selectivity for age 4	1.000	—	—	—
Block 2: Selectivity for age 5	0.957	0.261	0.000	1.000
Block 2: Selectivity for age 6	0.979	0.268	0.000	1.000
Block 2: Selectivity for age 7	0.837	0.226	0.166	0.993
Block 2: Selectivity for age 8	0.624	0.171	0.284	0.874
Block 2: Selectivity for age 9	0.652	0.167	0.306	0.888
Block 2: Selectivity for age 10	0.700	0.182	0.299	0.927
Block 2: Selectivity for age 11+	0.612	0.124	0.363	0.814

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 1	0.080	0.015	0.054	0.116
Block 3: Selectivity for age 2	0.335	0.061	0.228	0.463
Block 3: Selectivity for age 3	0.716	0.119	0.445	0.888
Block 3: Selectivity for age 4	0.981	0.144	0.000	1.000
Block 3: Selectivity for age 5	1.000	—	—	—
Block 3: Selectivity for age 6	0.793	0.116	0.490	0.939
Block 3: Selectivity for age 7	0.709	0.113	0.454	0.877
Block 3: Selectivity for age 8	0.676	0.113	0.432	0.852
Block 3: Selectivity for age 9	0.633	0.109	0.407	0.812
Block 3: Selectivity for age 10	0.595	0.105	0.384	0.775
Block 3: Selectivity for age 11+	0.532	0.073	0.390	0.669
Block 4: Selectivity for age 1	0.132	0.019	0.099	0.174
Block 4: Selectivity for age 2	0.383	0.053	0.285	0.491
Block 4: Selectivity for age 3	0.696	0.094	0.490	0.845
Block 4: Selectivity for age 4	0.844	0.106	0.529	0.963
Block 4: Selectivity for age 5	0.768	0.086	0.563	0.894
Block 4: Selectivity for age 6	0.661	0.067	0.521	0.777
Block 4: Selectivity for age 7	0.429	0.041	0.351	0.510
Block 4: Selectivity for age 8	0.401	0.037	0.332	0.475
Block 4: Selectivity for age 9	0.394	0.038	0.323	0.469
Block 4: Selectivity for age 10	0.533	0.059	0.417	0.646
Block 4: Selectivity for age 11+	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 5: Selectivity for age 1	0.373	0.140	0.156	0.658
Block 5: Selectivity for age 2	0.550	0.199	0.202	0.856
Block 5: Selectivity for age 3	1.000	—	—	—
Block 5: Selectivity for age 4	0.868	0.311	0.031	0.999
Block 5: Selectivity for age 5	0.948	0.342	0.000	1.000
Block 5: Selectivity for age 6	0.713	0.260	0.171	0.968
Block 5: Selectivity for age 7	0.577	0.218	0.191	0.887
Block 5: Selectivity for age 8	0.515	0.200	0.181	0.837
Block 5: Selectivity for age 9	0.511	0.201	0.178	0.835
Block 5: Selectivity for age 10	0.758	0.270	0.149	0.982
Block 5: Selectivity for age 11+	0.442	0.129	0.222	0.688
Block 1: Selectivity RE σ	0.291	0.040	0.223	0.380
Fleet 1 age comp, logistic-normal: σ	4.533	0.254	4.062	5.059
Index 1 age comp, logistic-normal: σ	6.896	0.339	6.261	7.594
Index 2 age comp, logistic-normal: σ	2.053	0.256	1.607	2.622
Index 3 age comp, logistic-normal: σ	2.971	0.241	2.534	3.483
Index 4 age comp, logistic-normal: σ	6.098	0.480	5.227	7.114

Table 2. Abundance at age (1000s).

	1	2	3	4	5	6	7	8	9	10	11+
1980	72292	64806	52187	34418	26582	19191	18105	7763	5749	3650	5051
1981	40639	69800	42257	37740	28103	19820	12478	10050	3729	2763	4340
1982	35645	38200	45076	28366	19859	14629	10417	6439	4801	2359	2672
1983	49158	36942	29010	37234	20789	12378	7731	4181	2477	1522	2616
1984	25085	50737	25344	17382	18453	10676	5250	2896	1229	773	1409
1985	53758	20531	35705	17056	12623	9978	6149	2435	1162	514	387
1986	38581	36081	13305	17987	8806	6370	4008	2322	822	340	364
1987	52008	33354	20399	8730	9211	4439	3097	1851	1109	346	304
1988	132868	45432	23805	10890	5310	3663	1928	1334	817	543	254
1989	38083	97251	29051	11607	4325	2264	1492	1012	607	342	453
1990	50533	34518	62002	17437	5933	2325	1377	962	617	284	359
1991	35835	43469	21783	24399	9844	3367	1313	891	537	289	289
1992	45310	30060	27151	14855	15110	5986	1876	932	591	336	323
1993	122441	34996	23666	19028	9180	8016	3067	876	600	356	365
1994	95941	99559	26344	15634	10276	4242	3198	1480	407	316	349
1995	40038	74168	57822	23781	12940	5048	1867	1247	553	192	237
1996	47448	28869	38207	34805	13426	6138	1938	963	524	254	262
1997	34665	41116	22023	25255	18864	6351	2562	720	460	238	266
1998	75175	25440	28701	17737	18142	11384	2711	1314	339	213	204
1999	82484	59136	24605	21045	14450	11702	5921	918	679	220	170
2000	32749	57250	41479	19618	16526	11380	8156	3460	730	388	209
2001	26598	26720	36715	26589	14793	10265	7045	4529	2078	490	295
2002	49598	18565	17961	25823	15494	7726	5297	3102	1921	915	626
2003	39314	39598	11912	11529	12238	7141	3753	2215	1153	745	697
2004	69044	33733	23567	11757	9467	7123	3744	2014	982	484	348
2005	66186	51770	18583	14771	8267	5850	3316	1772	989	387	446
2006	111284	53271	33610	17293	11275	5304	3582	1639	813	451	343
2007	86123	82578	38264	24348	12619	7306	3089	1652	598	468	277
2008	99136	46463	51564	29391	17319	8847	4934	1713	1014	420	466
2009	81247	69173	24263	31639	22995	13134	6138	3198	1195	545	761
2010	50813	62193	39759	18709	23188	19530	9816	3827	2281	913	681

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

	1	2	3	4	5	6	7	8	9	10	11+
2011	69052	37737	29801	22633	14678	17596	16593	8334	2975	1769	1200
2012	51603	49665	23422	15974	17032	10593	12703	11275	5537	1581	2113
2013	73117	39009	31747	14880	9744	15115	6876	7800	6702	3536	1748
2014	111659	60726	30752	23191	11848	7482	12867	4825	5056	4273	4138
2015	30505	126829	52922	24795	16049	8245	5991	9160	3415	3222	3961
2016	56273	27446	100996	35021	17232	11121	5243	4515	6330	2659	5818
2017	16223	34591	16858	61044	24475	12750	8575	4010	2987	4356	5434
2018	74674	10310	20062	10774	38684	17041	8808	5610	3105	2359	8169
2019	45332	60314	7559	14441	7834	21730	10118	5514	2835	1651	4989

Table 3. Total fishing mortality at age.

	1	2	3	4	5	6	7	8	9	10	11+
1980	0.000	0.001	0.015	0.117	0.307	0.360	0.366	0.366	0.366	0.366	0.366
1981	0.000	0.008	0.106	0.242	0.257	0.258	0.258	0.258	0.258	0.258	0.258
1982	0.001	0.009	0.095	0.348	0.440	0.449	0.450	0.450	0.450	0.450	0.450
1983	0.001	0.007	0.056	0.271	0.488	0.538	0.545	0.546	0.546	0.546	0.546
1984	0.000	0.003	0.025	0.197	0.563	0.685	0.700	0.701	0.702	0.702	0.702
1985	0.002	0.008	0.030	0.109	0.313	0.584	0.743	0.796	0.810	0.814	0.815
1986	0.003	0.016	0.080	0.254	0.397	0.438	0.446	0.447	0.447	0.447	0.447
1987	0.002	0.024	0.182	0.452	0.523	0.531	0.532	0.532	0.532	0.532	0.532
1988	0.005	0.030	0.154	0.384	0.494	0.515	0.519	0.519	0.519	0.519	0.519
1989	0.001	0.017	0.144	0.328	0.364	0.367	0.367	0.367	0.367	0.367	0.367
1990	0.002	0.013	0.068	0.225	0.368	0.413	0.422	0.424	0.424	0.424	0.424
1991	0.000	0.004	0.086	0.355	0.400	0.402	0.402	0.402	0.402	0.402	0.402
1992	0.001	0.009	0.070	0.286	0.430	0.455	0.458	0.458	0.458	0.458	0.458
1993	0.002	0.011	0.045	0.154	0.334	0.452	0.490	0.499	0.501	0.502	0.502
1994	0.001	0.007	0.031	0.123	0.329	0.507	0.572	0.588	0.592	0.592	0.593
1995	0.006	0.023	0.080	0.200	0.322	0.380	0.398	0.402	0.404	0.404	0.404
1996	0.008	0.032	0.101	0.204	0.268	0.289	0.295	0.296	0.297	0.297	0.297
1997	0.003	0.011	0.040	0.124	0.246	0.324	0.350	0.357	0.359	0.359	0.359

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

	1	2	3	4	5	6	7	8	9	10	11+
1998	0.000	0.002	0.016	0.107	0.253	0.295	0.300	0.300	0.300	0.300	0.300
1999	0.000	0.001	0.006	0.047	0.161	0.224	0.235	0.236	0.236	0.236	0.236
2000	0.000	0.001	0.013	0.105	0.186	0.196	0.197	0.197	0.197	0.197	0.197
2001	0.001	0.006	0.028	0.098	0.188	0.228	0.237	0.239	0.240	0.240	0.240
2002	0.000	0.000	0.004	0.026	0.126	0.243	0.275	0.280	0.280	0.280	0.280
2003	0.002	0.007	0.025	0.074	0.156	0.220	0.247	0.255	0.258	0.258	0.259
2004	0.000	0.001	0.007	0.030	0.101	0.192	0.234	0.244	0.246	0.247	0.247
2005	0.001	0.004	0.015	0.051	0.108	0.145	0.158	0.161	0.162	0.162	0.162
2006	0.000	0.002	0.008	0.030	0.079	0.132	0.157	0.164	0.166	0.166	0.166
2007	0.001	0.003	0.011	0.031	0.064	0.090	0.102	0.106	0.107	0.107	0.107
2008	0.000	0.001	0.004	0.015	0.048	0.095	0.122	0.130	0.132	0.132	0.132
2009	0.000	0.002	0.006	0.021	0.055	0.094	0.115	0.122	0.124	0.125	0.125
2010	0.001	0.002	0.006	0.016	0.036	0.065	0.092	0.108	0.116	0.119	0.120
2011	0.001	0.003	0.009	0.022	0.040	0.053	0.058	0.060	0.060	0.060	0.060
2012	0.000	0.004	0.024	0.054	0.062	0.063	0.063	0.063	0.063	0.063	0.063
2013	0.000	0.002	0.009	0.028	0.048	0.056	0.058	0.058	0.059	0.059	0.059
2014	0.000	0.001	0.006	0.024	0.040	0.044	0.045	0.045	0.045	0.045	0.045
2015	0.000	0.001	0.004	0.019	0.037	0.042	0.043	0.043	0.043	0.043	0.043
2016	0.000	0.000	0.002	0.013	0.028	0.031	0.032	0.032	0.032	0.032	0.032
2017	0.000	0.001	0.003	0.012	0.024	0.029	0.030	0.030	0.030	0.030	0.030
2018	0.000	0.000	0.003	0.013	0.023	0.026	0.027	0.027	0.027	0.027	0.027
2019	0.000	0.001	0.005	0.017	0.029	0.033	0.034	0.034	0.034	0.034	0.034